ARNOLD LAROCHELLE MATHEWS
VANCONAS & ZIRBEL LLP
Robert N. Kwong (State Bar No. 121839)
rkwong@atozlaw.com
300 Esplandade Drive, Suite 2100
Oxnard, CA 93036
Telephone: 805-988-9886
Facsimile: 805-988-1937

Co-Counsel:
RUTAN & TUCKER, LLP
David B. Cosgrove (State Bar No. 115564)
dcosgrove@rutan.com
Douglas J. Dennington (State Bar No. 173447)
ddennington@rutan.com
18575 Jamboree Road, 9th Floor
Irvine, CA 92612
Telephone: 714-641-5100
Facsimile: 714-546-9035

Attorneys for Cross-Defendant
CASITAS MUNICIPAL WATER DISTRICT,
a California special district

Exempt From Filing Fees Pursuant to Government Code §6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES - SPRING STREET COURTHOUSE

SANTA BARBARA CHANNELKEEPER, a California non-profit corporation,

Petitioner,

v.

STATE WATER RESOURCES CONTROL BOARD, a California State Agency; CITY OF SAN BUENA VENTURA, a California municipal corporation, incorrectly named as CITY OF BUENA VENTURA,

Respondents.

CITY OF SAN BUENA VENTURA, a California municipal corporation,

Cross-Complainant,

v.

DUNCAN ABBOTT, et al.

Cross-Defendants.

Case No. 19STCP01176

Hon. William F. Highberger; Dept: 10

NOTICE OF ERRATA RE STATUS CONFERENCE REPORT OF CROSS-DEFENDANT CASITAS MUNICIPAL WATER DISTRICT

Further Status Conference Hearing:
DATE: March 15, 2021
TIME: 1:30 p.m.
DEPT.: 10

Date Action Filed: September 19, 2014
Trial Date: None Set

TO THE COURT, ALL PARTIES, AND ALL COUNSEL OF RECORD:

PLEASE TAKE NOTICE that Cross-Defendant CASITAS MUNICIPAL WATER DISTRICT, a California special district ("Casitas"), hereby provides notice of errata and correction as follows:

1. On March 10, 2021, Casitas submitted to this Court for filing a STATUS CONFERENCE REPORT OF CROSS-DEFENDANT CASITAS MUNICIPAL WATER DISTRICT ("Status Conference Report"). At that time the Status Conference Report inadvertently failed to include its Exhibit A. A corrected version of the Status Conference Report (including its Exhibit A) is attached hereto as **EXHIBIT A**.

Casitas respectfully requests the Court have the document replaced with the corrected version of the Status Conference Report attached hereto as **EXHIBIT A**.

Dated: March 11, 2021

RUTAN & TUCKER, LLP
DOUGLAS J. DENNINGTON
DAVID B. COSGROVE

By: David B. Cosgrove
David B. Cosgrove
Attorneys for Cross-Defendant
CASITAS MUNICIPAL
WATER DISTRICT,
a California special district

ARNOLD LAROCHELLE MATHEWS
VANCONAS & ZIRBEL LLP
Robert N. Kwong (State Bar No. 121839)
rkwong@atozlaw.com
300 Esplandade Drive, Suite 2100
Oxnard, CA 93036
Telephone: 805-988-9886
Facsimile: 805-988-1937

Co-Counsel:
RUTAN & TUCKER, LLP
David B. Cosgrove (State Bar No. 115564)
dcosgrove@rutan.com
Douglas J. Dennington (State Bar No. 173447)
ddennington@rutan.com
18575 Jamboree Road, 9th Floor
Irvine, CA 92612
Telephone: 714-641-5100
Facsimile: 714-546-9035

Attorneys for Cross-Defendant
CASITAS MUNICIPAL WATER DISTRICT,
a California special district

Exempt From Filing Fees Pursuant to Government Code §6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES - SPRING STREET COURTHOUSE

SANTA BARBARA CHANNELKEEPER, a California non-profit corporation, Petitioner, v. STATE WATER RESOURCES CONTROL BOARD, a California State Agency; CITY OF SAN BUENA VENTURA, a California municipal corporation, incorrectly named as CITY OF BUENA VENTURA, Respondents.	Case No. 19STCP01176 *Hon. William F. Highberger; Dept: 10* **STATUS CONFERENCE REPORT OF CROSS-DEFENDANT CASITAS MUNICIPAL WATER DISTRICT** Further Status Conference Hearing: DATE: March 15, 2021 TIME: 1:30 p.m. DEPT.: 10
CITY OF SAN BUENA VENTURA, a California municipal corporation, Cross-Complainant, v. DUNCAN ABBOTT, et al. Cross-Defendants.	Date Action Filed: September 19, 2014 Trial Date: None Set

STATUS CONFERENCE REPORT

Cross-Defendant CASITAS MUNICIPAL WATER DISTRICT, a California special district ("Casitas"), submits this Status Conference Report ("Report") in advance of the Status Conference scheduled for March 15, 2021.

I. INTRODUCTION

While the Brief of Proposing Parties Regarding the Physical Solution Doctrine (the "Proposing Parties' Brief") provides a generally accurate overview of the physical solution doctrine in California, a few additional points are worth emphasizing.

First, while it is true that a physical solution need not account for all existing water rights within a basin, it must account for those with rights that might threaten the efficacy or future workability of the solution, *e.g.*, pueblo rights or pre-1914 rights holders. (*Cf. California Am. Water v. City of Seaside* (2010) 183 Cal.App.4th 471, 482 [affirming a trial court's rejection of a water district's environmental permitting requirements that would "conflict[] with the provisions of the physical solution and thereby disrupt[] the carefully established groundwater production rights of the parties to that solution"].) If the solution fails to do so, then water rights holders with allegedly superior priority could effectively unwind the solution – to the surprise and frustration of the stipulating parties – by asserting paramount entitlement.

Second, as to this case specifically, the physical solution must acknowledge Casitas' ongoing obligation to maintain federal flow requirements imposed upon it by the National Marine Fisheries Service to protect endangered steelhead trout. Should the solution fail to acknowledge this critical obligation, federal stakeholders whose interests would be affected will necessarily complicate this litigation, as the concurrent jurisdiction of this Court and State agencies is subject to the overriding jurisdiction of federal authority.

Third, the public trust doctrine is an important consideration, but the doctrine is not absolute. (*National Audubon Soc'y v. Super. Ct.* (1983) 33 Cal.3d 419, 426 ["The state must have the power to grant nonvested usufructuary rights to appropriate water even if diversions harm public trust uses."].) Instead, that doctrine, as it relates to water in California, is limited by constitutional principles of beneficial use. (*Id.* at p. 442 [noting that Article X, section 2 of the

California Constitution "established the doctrine of reasonable use as an overriding feature of California water law"].)

Finally, costs assigned to support the physical solution must account for Propositions 26 and 218, and how those laws interact with the capability of all public agencies subject to the physical solution to finance its costs.

II. The Physical Solution Must Account for All Entities with Rights that Might Threaten the Workability of the Solution.

The Proposing Parties' Brief correctly notes that a court "may impose a physical solution without quantifying all the rights of all the parties." (Proposing Parties' Brief at p. 9 [citing *City of Santa Maria v. Adam* (2012) 211 Cal.App.4th 266, 299].) At the same time, however, "[t]he solution must not . . . unreasonably or adversely affect the existing legal rights and respective priorities of the parties." (*California Am. Water*, *supra*, 183 Cal. App. 4th at p. 480; *see also City of Barstow*, *supra*, 23 Cal.4th at p. 1250 ["a court may neither change priorities among the water rights holders nor eliminate vested rights in applying the solution without first considering them in relation to the reasonable use doctrine"].) As explained below, this Court must account for all entities with paramount rights that may threaten the viability of the solution. Otherwise, the solution risks becoming ineffective should a rights holder with allegedly superior entitlement exercise its claims, to the disruption of the balance of other recognized rights that any physical solution may strike.

Physical solutions are "designed to alleviate overdrafts and the consequential depletion of water resources in a particular area, consistent with the constitutional mandate to prevent waste and unreasonable water use and to maximize the beneficial use of this state's limited resource." (*California Am. Water*, *supra*, 183 Cal.App.4th at p. 480 [citing Cal. Const., art. X, § 2].) Because a court sits in equity when crafting a physical solution, it "possess[es] broad powers and should exercise them to do substantial justice." (*Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.* (1935) 3 Cal.2d 489, 574.) "Each case must turn on its own facts, and the power of the court extends to working out a fair and just solution, if one can be worked out, of those facts." (*Rancho Santa Margarita*, *supra*, 11 Cal. 2d at p. 560–61.)

Critical to the formulation of a physical solution here is this Court's identification and recognition of the extent of water resources available, and how these will be balanced among municipal, agricultural, and environmental use demands. This includes the need to account for any potential future assertion of superior rights, in derogation of the rights now being exercised by current users in the watershed. So, while it may be true the Court need not quantify or determine the precise rights of all the parties, any sustainable physical solution must account for any future claim of rights, particularly pre-1914 or pueblo rights, whose priority could realign legal rights among users, and threaten the long term workability of the solution, and the balances it strikes based on current uses and currently-exercised rights.

This principle is illustrated in *California American Water v. City of Seaside*, *supra*. There, the Court of Appeal considered whether a trial court exceeded its jurisdiction by preventing a water management district from requiring environmental review pursuant to the California Environmental Quality Act ("CEQA") of permit applications by water producers subsequent to an adjudicated physical solution. (*California Am. Water*, *supra*, 183 Cal.App.4th at p. 473–74.) The trial court had found that "although the [water district] had authority to issue water distribution permits, it 'cannot exercise that authority in contravention of the Physical Solution . . . .'" (*Id.* at p. 478.) As such, the trial court ruled that "the Physical Solution governs the environmental aspects of Seaside Basin [groundwater] usage, and . . . no [p]arty to this adjudication can require environmental review under [CEQA] with regard to such usage . . . ." (*Ibid.*) The Court of Appeal affirmed, holding that the trial court "acted within its jurisdiction and properly exercised its discretion in adhering to its prior rulings to minimize conflict with and frustration of the physical solution. In so doing, it facilitated both the exercise of the parties' water rights and the beneficial use of the Seaside Basin." (*Id.* at p. 481.) The Court of Appeal likewise agreed with the trial court that "the District's power must not be used in a way that conflicts with the provisions of the physical solution and thereby disrupts the carefully established groundwater production rights of the parties to that solution." (*Id.* at p. 482.)

California American Water thus shows that courts must remain cognizant of potentially frustrating, future-asserted interests, and how those interests interact with the physical solution.

While that case dealt with how CEQA permitting interacts with an already-established physical solution, the principle applies with equal force in other contexts, including the definition of, and if necessary advance allowance for, claims of the parties to water rights superior to those of other rights holders within a basin.

III. The Physical Solution Must Acknowledge Casitas' Obligation to Maintain Ongoing Federal Flow Requirements to Preserve the Endangered Steelhead Trout.

As concerns Casitas, neither this litigation, nor any physical solution to resolve it, writes on a clean slate. As a practical matter, any physical solution here must acknowledge Casitas' ongoing obligations to maintain certain federal flow requirements as required by the Biological Opinion issued by the National Marine Fisheries Service ("NMFS") in connection with Casitas' Robles diversion. (*Cf. Hillside Mem'l Park & Mortuary v. Golden State Water Co.*, 205 Cal.App.4th 534, 551 ["In exercising its broad equitable powers in seeking a physical solution, the trial court may and should take into account environmental concerns raised by the opposing parties."].) From Casitas' perspective, recognition and maintenance of these flow requirements is critical not only to the protection and preservation of the endangered steelhead trout, but of the justiciability of this case as presently postured, as well. If a physical solution affected Casitas' ability to meet these obligations, federal stakeholders will necessarily become involved and further complicate the litigation. Keeping Casitas free to meet these requirements should be considered a "baseline" requirement of any prospective physical solution. This priority is particularly apt, since through these measures Casitas is already contributing to the biological demands of the steelhead, and has been for nearly twenty years.

In 1997, the NMFS listed the west coast steelhead trout as an endangered species under the Endangered Species Act. Due to concerns over the incidental "take" of steelhead in connection with its diversion canal (the "Robles Diversion Dam"), Casitas, with other local water agencies, commissioned a study to identify potential mitigation measures to minimize the impact of its facility on the steelhead population. The study concluded that a "fish passageway" and related measures would restore the steelhead habitat and increase population size. On March 31, 2003, NMFS issued a biological opinion (the "Biological Opinion"), finding that the proposed fish

passage facility would not jeopardize the continued existence of the steelhead, although it could result in the incidental take of the fish. (*See,* Biological Opinion at p. 53. A copy is attached hereto as Exhibit "A". Judicial notice is requested under Evidence Code sections 452(c),(g).)

The Biological Opinion already requires Casitas to provide in-stream flows for the benefit of the steelhead in the Ventura River. (*See generally id.* at pp. 6–13.) Although Casitas is authorized under its State Board license to divert up to 107,800 acre feet per year (provided it maintained downstream flows in the Ventura River at 20 cfs or higher), NMFS requires Casitas to maintain downstream flows in the Ventura River at significantly higher volumes during the fish passage augmentation season, from January 1st through June 30th. Specifically, Casitas may only divert water for the first 10 days after every migratory storm event if downstream flows could be maintained at 50 cfs. At no time during the fish passage augmentation season may Casitas divert water if the diversion would reduce downstream flows to under 30 cfs. Only after the fish passage augmentation season may Casitas' diversions revert back to the State-Board-authorized "20 cfs bypass."

These federally-mandated flow rates must be maintained, and any physical solution must acknowledge these continuing obligations. Not only are the measures protective of the endangered steelhead trout, but if a physical solution hereunder impinges Casitas' ability to comply with the Biological Opinion, then federal stakeholders, and federal jurisdiction, may have to be implicated.

IV. The Public Trust Doctrine is Not Absolute, but is Instead Limited in Water-Related Contexts by the Constitutional Principle of Beneficial Use.

As discussed in the Proposing Parties' Brief, the Court of Appeal has recognized that "public trust interests, like other interests in water use in California, are not absolute." (*Santa Barbara Channelkeeper*, *supra*, 19 Cal.App.5th at p. 1186.) Indeed, the California Supreme Court opining on the interaction between state water law principles and the public trust doctrine held that Article X, section 2 of the California Constitution "established the doctrine of reasonable use as an overriding feature of California water law." (*National Audubon*, *supra*, 33 Cal.3d at p. 442.) Accordingly, "[a]ll uses of water, including public trust uses, must now conform to the standard of

reasonable use." (*Id.* at p. 443.)

In *National Audubon*, the plaintiffs alleged a violation of the public trust doctrine from environmental degradation to Mono Lake as a result of permitted tributary diversion by the City of Los Angeles. (*Id.* at pp. 424–25.) The parties took absolutist positions as to whether the public trust doctrine or prior permitted use controlled. The plaintiffs argued that "the public trust is antecedent to and thus limits all appropriative water rights," an argument the court considered to "impl[y] that most appropriative water rights in California were acquired and are presently being used unlawfully." (*Id.* at p. 445.) The City's position was that "the recipient of a [state water] board license enjoys a vested right in perpetuity to take water without concern for the consequences to the trust." (*Ibid.*) The Court disagreed with both and charted a third course, stating that "[t]o embrace one system of thought and reject the other would lead to an unbalanced structure, one which would either decry as a breach of trust appropriations essential to the economic development of this state, or deny any duty to protect or even consider the values promoted by the public trust." (*Ibid.*)

Accordingly, the Court reached three conclusions: (1) the state "retains continuing supervisory control over its navigable waters and the lands beneath," which "prevents any party from acquiring a vested right to appropriate water in a manner harmful to the interests protected by the public trust"; (2) the state "has the power to grant usufructuary licenses that will permit an appropriator to take water from flowing streams . . . even though this taking does not promote, and may unavoidably harm, the trust uses at the source stream"; and (3) "[t]he state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible." (*Ibid.*) Put another way, the *National Audubon* Court balanced the two positions to reach its primary contention: "Just as the history of this state shows that appropriation may be necessary for efficient use of water despite unavoidable harm to public trust values, it demonstrates that an appropriative water rights system administered without consideration of the public trust may cause unnecessary and unjustified harm to trust interests." (*Ibid.*)

In sum, the Supreme Court has cabined the public trust doctrine to conform to the dictates

of overarching constitutional principles of beneficial use. While the doctrine remains an important consideration, it is not the sole or even primary inquiry. Instead, the lodestar is, as *National Audubon* recognizes, whether the appropriated water is put to beneficial use. (*See also Fullerton v. State Water Res. Control Bd.* (1979) 90 Cal.App.3d 590, 596 [noting that "[t]he constitutional amendment was adopted to . . . apply the doctrine of reasonable use to all water rights enjoyed or asserted in this state and every method of diversion"].)

V. Costs Assigned to Support the Physical Solution Must Account for Propositions 26 and 218 as Those Laws Relate to Casitas' Municipal Finance Structure.

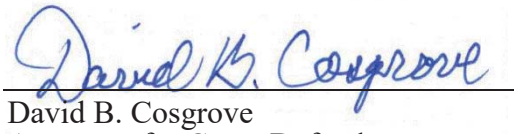
Last, Casitas offers a cautionary note that the costs of any physical solution that must be borne by any public user themselves must have identifiable benefits to that entity's users, and ratepayers, to meet the limitations of Proposition 218 and Proposition 26. It is self-evident that costs assigned to any municipal or special district participant will have to be recovered through rates or charges. To the extent such costs are recouped from direct water service commodity charges, they constitute "property related charges," and must meet the requirements of California Constitution Article XIII D Sec. 6. (*Bighorn-Desert View Water Agency v. Verjil* (2006) 39 Cal.4th 205, 214.) Among the showings required of rate setting in this context are that the charges for service must actually be used by, or immediately available to, those subject to the charge, and charges may not be imposed for general government services, available to the public in substantially the same manner as it is to property owners. (Cal. Const., art. XIII D, § 6(b).) To the extent such visited charges are passed through by groundwater sustainability agencies as groundwater charges, they must still not exceed the costs of service, and must be reasonably proportional to the benefit conferred on the property charged. (*City of San Buenaventura v. United Water Conservation Dist.* (2017) 3 Cal.5th 1191, 1214.)

To the extent any physical solution here imposes costs to water service providers or groundwater management agencies that reflect general governmental services, or confer broader public benefits not really relatable to specific properties bearing the charges to recoup them (like devoting limited water supplies to public trust uses, for example), it may be institutionalizing a finance problem. Absent discernible, proportionate benefit to such agencies' property-based

payors, the physical solution could be stranding such costs on agencies without the means or legal path to collect and remit them.

Dated: March 10, 2021

RUTAN & TUCKER, LLP
DOUGLAS J. DENNINGTON
DAVID B. COSGROVE

By: 
David B. Cosgrove
Attorneys for Cross-Defendant
CASITAS MUNICIPAL
WATER DISTRICT,
a California special district

PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF ORANGE

I am employed by the law office of Rutan & Tucker, LLP in the County of Orange, State of California. I am over the age of 18 and not a party to the within action. My business address is 18575 Jamboree Road, 9th Floor, Irvine, CA 92612. My electronic notification address is mslobodien@rutan.com.

On March 10, 2021, I served on the interested parties in said action the within:

STATUS CONFERENCE REPORT OF CROSS-DEFENDANT CASITAS MUNICIPAL WATER DISTRICT

as stated below:

☒ By transmission via E-Service to File & ServeXpress as listed on File & ServeXpress service list.

Executed on March 10, 2021, at Irvine, California.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Mia R. Slobodien
(Type or print name)

Mia R. Slobodien
(Signature)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

In reply refer to:
151422SWR02PR6168:FR

MAR 31 2003

Mr. Bill Luce
U.S. Bureau of Reclamation
South-Central California Area Office
1243 N Street
Fresno, California 93721-1813

Dear Mr. Luce:

Enclosed with this letter is the National Marine Fisheries Service's (NOAA Fisheries) Biological Opinion for the proposed Robles Diversion Fish Passage Facility project. The Biological Opinion addresses effects from the construction and operation of the diversion and Fish Passage Facility on endangered steelhead in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U. S. C. 1531 *et seq.*).

The Biological Opinion concludes the Bureau of Reclamation's (Reclamation) construction and operation of the Robles Diversion Fish Passage Facility are not likely to jeopardize the continued existence of the federally endangered Southern California Evolutionarily Significant Unit (ESU) of steelhead. NOAA Fisheries believes the proposed action may result in take of steelhead and therefore an Incidental Take Statement is attached to the Biological Opinion. The Incidental Take Statement includes Reasonable and Prudent Measures that are necessary and appropriate to minimize the incidental take of steelhead. Rick Rogers is the principal contact for this specific consultation. Please call him at (562) 980-4199 if you have a question concerning the Biological Opinion or if you would like additional information.

Sincerely,

for Rodney R. McInnis
Acting Regional Administrator

Enclosure

BIOLOGICAL OPINION

Agency: United States Bureau of Reclamation

Action: Authorization for the construction and future operation of the Robles Diversion Fish Passage Facility

Consultation Conducted by: National Marine Fisheries Service, Southwest Region

Date Issued: MAR. 3 1 2003

I. CONSULTATION HISTORY

Subsequent to the federal listing of southern California steelhead (*Oncorhynchus mykiss*) as endangered in 1997, and in response to a 60-day letter of intent-to-sue by California Trout, Inc., the Casitas Municipal Water District (Casitas) embarked on an effort in 1999 to provide fish passage at the Robles Diversion Facility, located on the Ventura River near the town of Ojai, Ventura County, California (CalTrout 1998; KMZ Rosenman 2002). In a letter dated March 8, 1999, the Bureau of Reclamation (Reclamation) requested initiation of informal consultation on the design and engineering of a future fish pass at the diversion site. National Marine Fisheries Service (NOAA Fisheries) engineers and biologists, as well as qualified personnel from other resource agencies and non-governmental organizations, participated within a Technical Advisory Group (TAG) over the course of the next two years, meeting on a regular basis to discuss and guide the design of the Fish Passage Facility. After the design of the proposed Fish Passage Facility was 90% complete, Reclamation submitted a preliminary draft Biological Assessment (BA) on December 15, 2000, to NOAA Fisheries.

Issues concerning future operation and downstream flow release below the diversion structure were not fully addressed during the TAG design meetings. Therefore, NOAA Fisheries commented on both the December 15, 2000, preliminary draft BA and subsequent September 14, 2001, draft BA requesting acceptable diversion operations ensuring successful upstream and downstream migration between the Ventura River estuary and the Robles facility be crafted and included within any future BA. A Final BA was submitted to NOAA Fisheries from Reclamation on November 20, 2001. However, the Final BA proposed diversion and Fish Passage Facility operations that were deemed insufficient to ensure successful upstream and downstream steelhead migration and/or maintain spawning and rearing habitat below the Robles Diversion Facility. Other key information was also not included within the BA, such as a description of the interrelated and interdependent facilities linked to the Robles Diversion Facility. These omissions were described in detail within a February 26, 2002, NOAA Fisheries comment letter to Reclamation. Included within the Final BA comment letter were recommended operating criteria and downstream releases deemed sufficient, based upon the best

available scientific and commercial information, to ensure successful steelhead migration through the lower river below the diversion, as well as between storm flows to sustain available spawning and rearing habitat within the lower river. Following several months of discussion between NOAA Fisheries and Reclamation/Casitas, suitable operating criteria were developed and agreed upon in February, 2003. A revised BA was submitted to NOAA Fisheries by Reclamation on February 24, 2003, along with a request for formal consultation (U.S. Bureau of Reclamation 2003). Further revisions to the proposed Cooperative Decision Making Process, Interim Operations, and Low Reservoir Storage Protection Measures were received by NOAA Fisheries from Reclamation by letter dated March 27, 2003. A complete administrative record of this consultation is on file at the NOAA Fisheries Southwest Regional Office in Long Beach, California.

II. DESCRIPTION OF THE PROPOSED ACTION

Reclamation proposes to authorize Casitas to modify the design and operation of the Robles Diversion to allow fish passage through the facility and maintain downstream steelhead habitat. Casitas intends to implement the following actions at the Robles Diversion Facility: 1) fish passage facility construction; 2) future operation of the diversion and Fish Passage Facility; 3) diversion and Fish Passage Facility maintenance; 4) interim diversion operations for the 2003 steelhead migration season; 5) implementation of a monitoring and evaluation program for the diversion and Fish Passage Facility; and 6) formation of a Cooperative Decision Making Process. Each of the six proposed actions noted above are described in greater detail below, followed by a summary of three interrelated and interdependent actions linked with the proposed action. In-channel construction activities will occur seasonally between June 1 and October 31, and are expected to last two summer seasons (2003 and 2004). The design and function of the proposed fish ladder is fully described within the BA (U.S. Bureau of Reclamation 2003).

The area affected by the proposed action includes the following sections of the Ventura River watershed outlined below (Figure 1). See Appendix A for photographs of representative stream sections.

- the 16 miles of mainstem Ventura River from the confluence of NF Matilija Creek and Matilija Creek to the Pacific Ocean;
- the 2 miles of Matilija Creek between its confluence with NF Matilija Creek and the Matilija Dam;
- the 4 miles of lower NF Matilija Creek below the Wheeler Gorge Campground crossing;
- the San Antonio Creek watershed (approximately 8 miles of habitat);

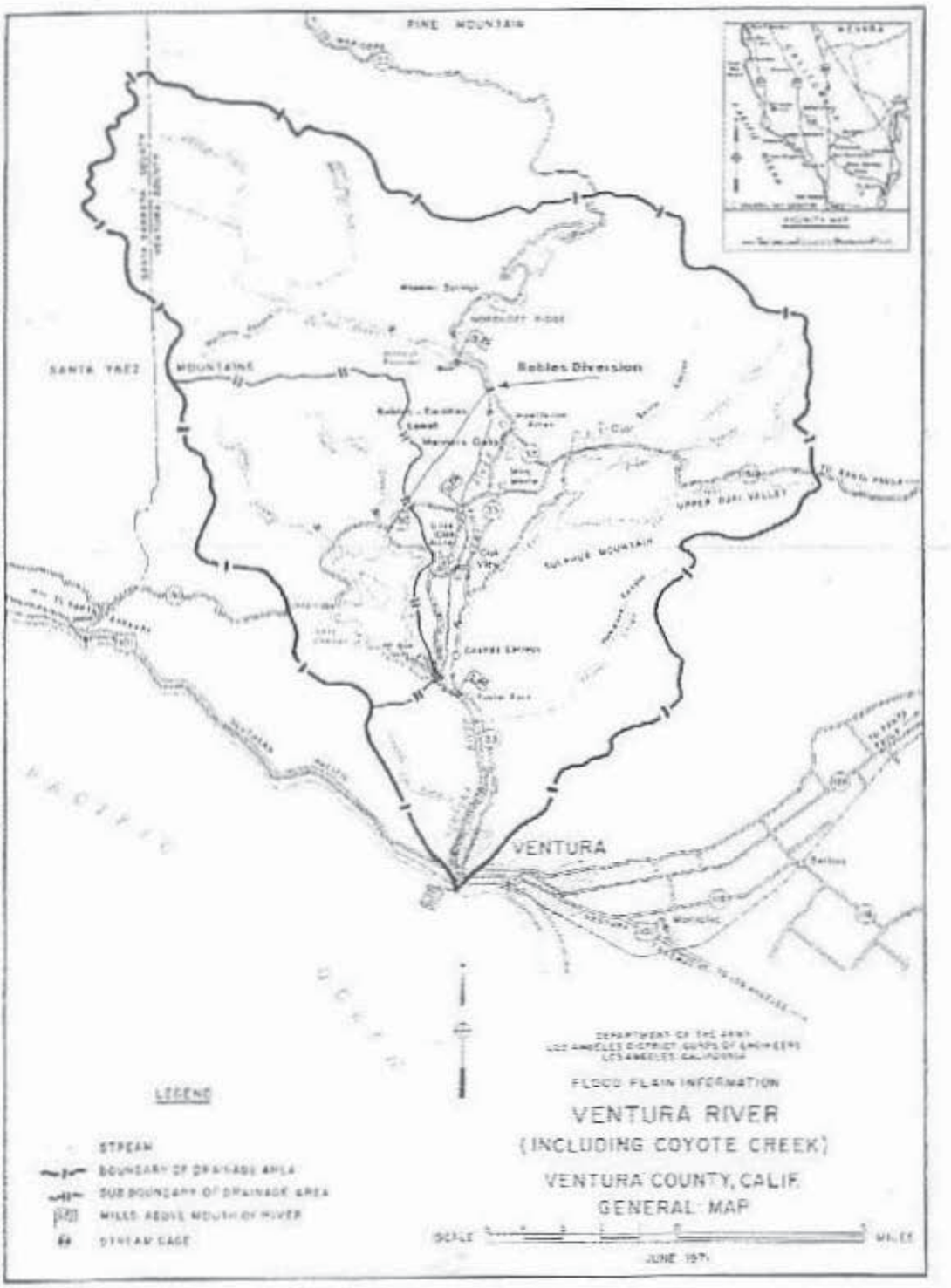


Figure 1. Ventura River Watershed

- the lower 3 miles of Coyote Creek below Casitas Dam and the 11 miles of inaccessible spawning and rearing habitat (7 miles in Coyote Creek and 4 miles in Santa Ana Creek) located above the dam.

1) **Construction of the Fish Passage Facility**

Earth movement for the above-mentioned facilities will involve the use of hydraulic excavators and loaders, bulldozers, and off-road earth-hauling trucks. All construction equipment will be well maintained to prevent leaks of fuels, lubricants or other fluids into the river and to ensure that exhaust is minimized. No hazardous materials will be stored on site. Refueling of heavy equipment and vehicles will occur only within a designated, paved area where potential spills can be readily contained. All equipment, while not in use, will be stored at two staging areas, one on each side of the river.

The main staging area will be located southwest of the Robles Diversion Dam, between the existing access road and the Robles Diversion canal on a large flat approximately 1.4 acres in size. An additional staging area, of approximately 0.75 acres in size, will be located east of the spillway channel. Some vegetation (grasses and scrub) exists on the staging areas and could be damaged or destroyed by staging activities. It is anticipated that the natural recovery process will lead to a rapid re-colonization of this area after the end of construction activities. Limited riparian vegetation also exists along the banks of the channel which will likely be damaged or destroyed during installation of the low-head weirs and construction of features on the channel banks. Revegetation will be conducted to replace riparian trees and shrubs that will be removed or destroyed by construction work. All replacement vegetation will be native and could include willows (*Salix* spp.), mulefat (*Baccharis salicifolia*), sycamore (*Platanus racemosa*) or cottonwood (*Populus fremonti*). Revegetated areas will be monitored for five years.

The concrete supply will probably be accomplished with placements ranging from approximately 50 to 150 cubic yards per day. The existing concrete canal lining will be broken, crushed, and placed with the excavation spoil. Approximately 75 cubic yards of reinforced concrete from demolishing the Parshall flume will be disposed at a facility appropriately licensed to accept the material. All excess excavated material for the entire construction project will be spoiled on-site, at the existing spoil area located on the west bank approximately 500 feet upstream from the Robles Diversion Facility. This spoil area is located completely outside the high-flow channel, and separated from the river channel by a raised berm. The spoil material will be used by local construction contractors at a later time for construction of roads and/or slope and embankment maintenance, and will not affect the capacity of the existing spoil area.

Work within or adjacent to the waterway includes the fish exit structure on the west bank approximately 200 feet upstream of the existing spillway structure, the low-flow fish exit in the forebay, excavation for construction of the fish ladder entrance on the west bank just downstream of the spillway structure, incorporation of the baffled apron into the existing spillway structure, and modification of approximately 800 feet of the existing spillway channel via incorporation of low-head stone weirs and the low-flow crossing.

In-channel work will occur during the low flow season, typically June 1st through October 31st. It is anticipated that work within the forebay or spillway channel, downstream of the existing spillway structure, will be performed during periods of no flow, when no steelhead are present. This would also ensure that water quality is not adversely impacted and that erosion is

minimized. The start date of construction and the likelihood that the channel will be dry when construction starts will depend on the runoff this winter. As in-channel construction is estimated to take four months, construction should begin during July, if possible, to allow for completion during the low-flow season which ends in November. If drier conditions occur next year, construction may begin as early as June.

Should water continue to flow when in-channel work commences, then the following provisions will be implemented. Reclamation, Casitas and their contractor would first consider potentially delaying the start date for the in-channel work. Casitas would discuss this option with NOAA Fisheries and CDFG to determine if this is an appropriate action to minimize or avoid potential adverse effects on steelhead. If postponement is not an option, then the measures described below will be executed to minimize potential steelhead take.

If the contractor cannot avoid construction when surface flow is present below the diversion, a temporary diversion structure would be installed upstream of the work site prior to initiation of construction activities in the river channel. A coffer dam would be installed using native materials that accumulate in the diversion forebay and would require heavy equipment to construct. The isolation area would extend from just upstream of the high-flow fish exit downstream approximately 1,000 feet. The Casitas fisheries biologist and the construction contractor would determine the specific site. The height of the coffer dam would be determined by the contractor at the start of the in-channel construction work. The size of the area to be dewatered and the location of the coffer dam would depend on the configuration of the sediment in the forebay after the winter rains. Water will be passed around the construction zone and re-join the existing river channel downstream of the work site. The length and height of the dam and the size of the construction zone would be minimized to the maximum extent practicable while still maintaining functionality.

Prior to passing water around the in-channel construction zone, the Casitas fisheries biologist would make observations to determine if there are any fish inhabiting the river channel. CDFG and NOAA Fisheries staff would be invited to participate in this survey process. If steelhead are observed, then a fish rescue would be initiated. The Casitas fisheries biologist would contact Reclamation, NOAA Fisheries and CDFG to notify them of the need to initiate a fish rescue. The protocol for the fish rescue would be developed by Reclamation and Casitas and approved by NOAA Fisheries and CDFG prior to implementation. NOAA Fisheries and CDFG staff would be invited to participate in the fish rescue operations. Before any fish rescue activities begin, the reach would be isolated by installing nets across the flowing channel upstream of the coffer dam site, and at the downstream end of the construction zone. It is anticipated that fish would initially be captured using seines and/or fyke nets. After this effort, the reach would be fished using backpack electroshockers to capture any remaining fish. Trapped fish would be released into a perennial portion of the river upstream of the temporary diversion dam or into North Fork Matilija Creek. The release site(s) would be approved by NOAA Fisheries and CDFG biologists.

After the fish rescue, water would be routed around the in-channel construction zone. The Casitas fisheries biologist would be onsite when the re-routing is initiated to continually survey the reach for any steelhead that may have been missed during the rescue activities. Any steelhead sighted would be rescued and transferred to perennial habitat. Casitas would prepare a

report summarizing the results of the fish rescue operation including the number of fish rescued, the location of their release, and any mortalities that occurred.

A storm water pollution and prevention plan will be prepared and implemented for construction activities. In addition, all construction personnel will be informed of the potential for sensitive species to be present (and cursory identification) and will be instructed to inform the biological contact if suspected sensitive species are located. This plan would provide specific measures that would minimize potential sediment erosion into the channel and may include installation of silt fences, hay bales, straw roles and other methods. Prior to restoring flow in the work reach, all debris that has been deposited in the in-channel construction zone during construction would be removed. After all in-channel construction activities are completed, the temporary diversion dam would be removed.

Fish Passage Facility construction is anticipated to take 2 years to complete. Due to funding and timing constraints, the downstream weirs may not be constructed along with the rest of the project if construction begins in summer, 2003. If ladder construction does begin in summer 2003, then downstream weir construction would likely take place the following summer, assuming funding is available.

1) **Future Diversion and Fish Passage Facility Operation**

Fish passage augmentation parameters

Described below are the fish passage augmentation operations proposed by Reclamation for implementation upon the completed construction of the Fish Passage Facility. The operations described in this section will be revisited at a time not sooner than five years after the initiation of fish passage operations.

Fish passage augmentation season: The fish passage augmentation season will be January 1 through June 30 each year. Operations outside the fish passage augmentation season will revert back to the historic Trial Operating Criteria (Casitas Municipal Water District, 1959), meaning flows up to 20 cfs are generally released downstream.[1] To ensure that migrating fish are in the system and benefitting from the increased flow, the fish passage augmentation season will commence after the sand bar has breached at least once during the current year's fish flow operations season.

Definition of a storm event: Storm events during the months of January through June are considered potential migration events if the resulting peak discharge rate (a) exceeds 149 cfs as measured at the Robles Diversion, and (b) results in at least double the flow of any of the three days preceding the storm peak. Storm events satisfying the above storm event definition will augment stream flows as described below.

[1] According to the water rights permit/license issued by the State Water Resources Control Board (SWRCB) to the Casitas, the sole purpose of the current "Trial Operation Criteria for Robles-Casitas Diversion Facilities" is to "prevent the unreasonable interference with the prior rights to the use of underground water." The by-pass flows were not intended to, nor do they have the effect of, facilitating migration through or protecting historic spawning and rearing habitat in the lower river. NOAA Fisheries previously addressed this issue in a February 2002 letter to Reclamation (see NMFS 2002a).

Minimum fish migration flow: The *minimum* flow rate providing successful steelhead migration through the lower river is 50 cfs. Therefore, downstream released flows at the diversion must be maintained at or above 50 cfs during the first 10 days of each migratory storm event (i.e., storms generating flows 150 cfs or greater, as measured at the Robles Diversion). If the natural inflow at the diversion drops below 50 cfs during the first 10 days, then downstream flows will be ramped down as on Day 11 and 12 of Table 1 in order to smoothly close the migration window.

Between storm flow: During the fish passage augmentation season, downstream flow releases between storm events will be maintained at 30 cfs as long as incoming flows at the diversion are greater than 30 cfs. The 30 cfs flow between storm events will commence following the initial storm event of the migration season.

Fish passage augmentation flow release scenario: Following each storm event which generates a peak flow greater than 150 cfs (measured at the diversion), downstream release flows will be maintained over a 12-day window according to the ramp down schedule outlined in Table 1. Downstream flows during a storm migration window must be maintained at or above 50 cfs for the first 10 days of the 12-day period. The flow rates on Days 11 and 12 (40 and 30 cfs, respectively) will ramp down to the between storm flow of 30 cfs to smoothly close the migration window.

Table 1. Ramp-down Flows for Initial Storm Events

Day After Peak	Downstream Release (cfs)	Inflows to Determine the Initial Downstream Release to Start Ramp-Down
1	171	334 to < 671
2	100	274 to < 334
3	82	247 to < 274
4	74	227 to < 247
5	68	207 to < 227
6	62	187 to < 207
7	56	167 to < 187

8	56	NA
9	50	50 to < 167
10	50	NA
11	40	NA
12	30	NA

The required downstream flow release on the first day of flow augmentation will be determined from Table 1. For example, a storm event with a peak flow of 1500 cfs, followed by 800 cfs and 300 cfs on Day 1 and 2 following the peak would be treated as follows: The first *potential* augmentation day would be Day 1 (i.e., the first day following the peak day of the storm) with a flow of 800 cfs. However, since the 300 cfs naturally spilling downstream (800 cfs minus the 500 cfs maximum diversion volume) is greater than the maximum potential Day 1 augmentation of 171 cfs, no augmentation is needed for this day. Examining the second day following the peak, the 300 cfs inflow fits within the Table 1 inflow range so augmentation releases for this hypothetical storm would start on the second day following the storm peak at 100 cfs and continue regressing downward according to Table 1. Days 11 and 12 flows will be 40 cfs and 30 cfs, respectively, to close out the migration event and ramp down flows to the between storm flow of 30 cfs[2]. Note that additional days at 50 cfs may need to be added at the back-end of the recession curve to ensure that minimum fish migration flows are maintained for 10 days following a storm peak (in the example above, one extra day of 50 cfs would be added). If natural inflow drops below 50 cfs during the initial 10 days of the migration window, then downstream flows will be ramped down to 30 cfs to smoothly close the shortened migration window.

Operations for Back-to-Back Storm Events: Back-to-back storms are a series of storms closely spaced in time. For the purpose of this Biological Opinion, a back-to-back storm event arises when a second storm peak occurs between Day 6 and Day 12 of an initial storm event. Also, to be recognized as a back-to-back storm event, peak flows resulting from the second or any subsequent storm event must be greater than 149 cfs and at least double the largest flow measurement from the previous three days. When a back-to-back storm event occurs between Day 6 and Day 12 of the initial storm event, the ramp down schedule outlined in Table 2 will be used in the same manner as the original flow release scenario. Flows at or above 50 cfs will again be maintained throughout the first 8 days following the peak of the second storm, assuming inflow into the diversion is at or above 50 cfs. If inflows drop below 50 cfs prior to completion of the end of the second 8 day window, then flows can be ramped down as on Days 9 and 10 in order to close the migration window.

Table 2. Ramp-down Flows for Overlapping Storm Events

[2] The Day 11 flow will be either 40 cfs or the midpoint between the day 10 flow and 30 cfs. Ramping down in this manner allows for a smoother tailing off of the migration window should Day 10 flows be appreciably higher than 50 cfs.

Day After Peak	Downstream Release (cfs)	Inflows to Determine the Initial Downstream Release to Start Ramp-Down
1	100	247 to < 600
2	74	204 to < 247
3	61	181 to < 204
4	54	150 to < 181
5	50	NA
6	50	NA
7	50	NA
8	50	NA
9	40	NA
10	30	NA

Consult the BA (U.S. Bureau of Reclamation 2003) for a more detailed explanation of the proposed fish augmentation protocol, complete with numerous flow rampdown tables to guide diversion operations.

Flow Routing Through the Robles Facility

Inflows into the Robles Diversion forebay are not constant and therefore operations will change as inflows change over the course of a storm event. The following sections present a description of the magnitude and pathways for flow during facility operations over a range of inflows.

Diversion Operations Within the Fish Flow Operations Season

To commence diversion operations, the radial gates are closed to begin ponding water. During smaller storm events, the gates will typically be closed to begin diversion operations as soon as inflow is greater than the minimum post-storm flow. During larger storm events, which may carry a larger debris load, the diversion and Fish Passage Facility may remain closed to protect the facilities until the majority of the debris has passed through.

Six new structures have been designed to facilitate fish passage: the high-flow fish exit structure, a fish screen, fishway and fish bypass channel, fish guidance device, an auxiliary water supply pipeline, and a low-flow fish exit. At the beginning of diversion activities, the low-flow fish exit

will be closed to allow the forebay to fill to elevation 764.5 feet above mean sea level. Once the forebay has reached the necessary elevation, the headworks of the diversion structure will be opened. At inflow ranges of 10 to 671 cfs, fish will move up- and downstream through the diversion structures via the fishway, fish bypass channel and the diversion headworks gate. The fishway is designed to meet established fish passage criteria at flows of 20 cfs. Passage may be possible at lower flows.

The fish screen is designed to direct the downstream migrants and up to 50 cfs of flow into the fish bypass channel, which conducts water to the fishway and into the Ventura River. Downstream releases above 50 cfs will first be routed through the auxiliary water supply pipeline up to a total release of 121 cfs. The combination of the fishway (50 cfs) and the auxiliary supply pipeline (121 cfs) will provide the necessary downstream release capacity to meet the stormflow supplementation operations criteria. Water not released downstream for fish will be diverted to Lake Casitas up to the canal capacity of 500 cfs. Diverted water will pass through the fish screen, the water level flow control gate, and into the Robles-Casitas canal. Thus, the Robles Diversion and Fish Passage Facility would operate at flows up to 671 cfs without opening the radial gates (50 cfs through the fishway, 121 cfs through the auxiliary pipeline, and 500 cfs diverted to Lake Casitas).

The radial gates will be opened when the system capacity is exceeded (i.e. flow greater than 671 cfs). At flows above the system capacity, the radial gates must be opened to release the excess flow directly downstream. Prior to opening the radial gates, the high-flow exit channel will be opened, and the fish guidance device will be activated to direct up-migrants to the high-flow exit. This will provide a more suitable upstream migration route for adult steelhead and minimize fall-back downstream over the spillway. Downstream migrants may move downstream through the high flow fish exit, by entering the diversion headworks, or by going over the spillway. The fish guidance device is designed to allow downstream migrants, both adult and juvenile, to negotiate around the end and into the fish bypass channel. Flow will enter the high flow fish exit through the upstream end located about 200 feet upstream of the spillway in the forebay. This exit channel has been designed to operate at flow rates of 30 to 50 cfs. When the radial gates are open and water is passing under them, the high flow fish exit structure and the fish guidance device will be functional unless the facilities are likely to be damaged.

Once the radial gates are open, inflows into the Robles facility may continue to increase during peak storm runoff periods. The capacity of the Robles Diversion Dam spillway is 7,000 cfs. Therefore, the maximum theoretical capacity of the facility, before water overtops the earthen dam, is 7,650 cfs. If flows continue to increase, then the earthen dam will be overtopped and flow will move downstream into the overflow channel which returns shortly to the main Ventura River.

Diversion Operations Outside the Fish Flow Operations Season

Diversion operations can also occur during July through December, which is outside the fish flow operations season. During this time, operations are governed by the Trial Operating Criteria (Casitas 1954) and downstream release requirements are typically 20 cfs or lower. No releases designed to augment steelhead passage or maintain downstream habitat will occur during the July through December period. Any downstream release required under the Trial Operating Criteria will flow downstream past the fish screen and into the fishway. Any

additional inflow, once Trial Operating Criteria releases are met and diversions are taken (up to 500 cfs), will also be bypassed downstream. Under this latter scenario, the fish passage structures will be engaged, as necessary, to route any excess flow downstream.

Under these conditions, the radial gates will be lowered to pond water in anticipation of diversion activities. The downstream release requirements, established by the Trial Operating Criteria, will be met through water channeled into the diversion headworks, fish bypass channel, fishway, and ultimately to the Ventura River downstream of the dam. This will provide a pathway for any fish that are present to move past the diversion dam. Diverted water will continue to be screened prior to entering the diversion canal for transport to Lake Casitas. As inflow increases beyond approximately 520 cfs (20 cfs for Trial Operating Criteria and 500 cfs for diversion), additional inflow will be routed through the fishway. As inflow increases beyond approximately 550 cfs (500 cfs diversion, 50 cfs fishway), the auxiliary supply line will be operated to carry up to 121 cfs downstream. Once the diversion, the fishway, and the auxiliary supply line capacities have been exhausted, then the radial gates will be opened, as necessary, to accommodate additional inflow. Both the high flow fish exit and the fish guidance device will be activated once the radial gate is open.

Non-Diversion Operations

There are three conditions under which diversion operations may be terminated: (1) too little flow in the river to allow diversion operations, (2) sufficient flow levels for diversion operations but the diversion is not needed to achieve full pool at Lake Casitas (i.e., there is no available storage in Lake Casitas), and (3) unforeseen or emergency conditions.

During diversion operations, the radial gates are lowered to create a forebay pool. In order to avoid trapping steelhead in the forebay pool after diversions have ended, a low-flow fish exit pathway will be installed in the forebay just downstream of the diversion headworks structure. The low flow fish exit can be used to drain the forebay or to provide an exit for fish under, as the name suggests, low flow conditions. The use of the low flow fish exit will be based on flow conditions within the watershed, predictions of near-term precipitation, and anticipated diversions. If it is likely that diversions will commence again within the near-term, then the forebay pool will be maintained, while inflow is released downstream through the low flow fish exit. If diversions have ended for the season or for a substantial period of time, then the forebay pool will be drained through releases through the low flow fish exit. The low flow fish exit will remain open until inflow levels increase enough so that diversions can commence. The low-flow fish exit channel will empty into the diversion flume downstream of the diversion headworks. Fish and downstream flow will be channeled into the fish bypass channel and fishway. Thus, under low flow, non-diversion conditions, all inflows to the forebay will be passed around the Robles Dam and into the Ventura River downstream.

During the majority of the year, lower flow conditions persist and the type of operation described above will be in effect. However, in addition to releasing these lower inflows, water is not diverted during every storm event. As mentioned above, when there is no storage available in Lake Casitas, diversion operations cease. Under higher flow conditions without diversions, the water level control gate at the head of the diversion canal can be closed while the diversion headworks gates will remain open, allowing the Fish Passage Facility to continue to operate without diversions occurring. Whenever these conditions are present, the diversion headworks

gate(s) will be open to allow up to 50 cfs to move down the fishway thus providing a pathway for fish around Robles Dam. Up to 121 cfs would then be released downstream through the auxiliary water supply pipeline (the low-flow fish exit will be closed). If inflows are greater than 171 cfs, the remaining inflow will be passed downstream through the opened radial gates. If the radial gates are opened and water is moving downstream through them, then the high flow fish exit will also be opened and the fish guidance device activated. At least 30 to 50 cfs will move down the high flow fish exit so that it operates properly under these conditions. Thus, even under these higher flow, but non-diversion conditions, the Fish Passage Facility will remain operational to provide passage opportunities.

Critical Drought Protection Measures

Reservoir protection measures have been developed to ensure that fish operations at the Robles facility "minimize" effects on Lake Casitas water storage during a critical long-term drought period (i.e., a drought period in which Casitas implements conservation measures as defined within their Water Efficiency and Allocation Program [WEAP])[3]. The measures are designed to prevent storage from dropping below a critical level (17,000 AF) and facilitate the re-filling of the reservoir should it drop to a level where increased water charges and reduced allocations are imposed upon Casitas water customers. The measures include:

1) On an annual basis, Casitas will summarize all water diversions from Robles, water releases downstream of Robles, water deliveries to the conveyance system, Lake Casitas storage, and water allocations to customers. Based on this information, Casitas will determine what actions precipitated the reservoir draw down. All of this information would be presented to the Management and Biology committees.

1) If Lake Casitas reaches a water storage volume of approximately 127,000 AF, and in the event that Casitas implements Stage 2 of the WEAP, Casitas would evaluate the effectiveness of the conservation measures on an annual basis. This information would be presented to the Management and Biology committees.

In preparation for the need to implement fish flow operations reductions, the Biology Committee would begin meeting to investigate how fish flow operations may be modified to address anticipated reduction needs once Casitas implements Stage 2 of the WEAP. This would allow for implementation of modified fish flow operations targeted at achieving release reductions upon approval by Reclamation once the reservoir reached 100,000 AF.

1) If Lake Casitas reaches a water storage volume of 100,000 AF, the Management Committee would review the analysis and recommendations provided by the Biology Committee, which would include an analysis of drought specific data and a discussion of temporary options to protect the Ventura River Project water supply. After considering input from the Management Committee, Reclamation would then advise or

[3] The Casitas Water Efficiency and Allocation Program was adopted by the Casitas Board of Directors on January 9, 1992 (Ordinance 92-1). The purpose of the plan is to "establish, through a staged process, Casitas' customer allocation program and associated rate schedules which will result in a balance between supplies and demand through an equitable distribution of the existing supplies". The second and fifth stages of the program serve as triggers for the Critical Drought Protection Measures outlined above.

direct Casitas to implement any changes or other actions. Any flow reduction resulting from modification to the fish flow operations would be based upon an equitable sharing of the temporary reduction in water allocations to customers, as identified in an assessment by Reclamation and Casitas of the WEAP.

1) If Lake Casitas reaches a water storage volume, which triggers implementation of Stage 5 of the WEAP (65,000 AF of water storage), the Biology Committee would again prepare a recommendation for a temporary reduction to the volume of water provided for fish flow operations for review by the Management Committee. The Biology Committee would again be tasked with recommending to the Management Committee how the fish flow operations should be temporarily revised to achieve the necessary reduction in fish flow releases. After considering input from the Management Committee, Reclamation would then advise or direct Casitas to implement any changes or other actions. Any flow reduction resulting from modification to the fish flow operations would be based upon an equitable sharing of the temporary reduction in water allocations to customers, as identified in an assessment by Reclamation and Casitas of the WEAP.

If Lake Casitas reaches a water storage volume of 17,000 AF, all fish flow operations would cease until the reservoir refills to 65,000 AF. Once the lake refills to above 65,000 AF, the temporary fish flow operations suspension would be terminated, and fish flow operations would revert to the operations previously established for lake levels between 100,000 and 65,000 AF. When the lake refills above 100,000 AF, any temporary fish flow reductions would be terminated, and full fish flows would be re-initiated based upon the proposed Fish Passage Facility Operations outlined above.

3) **Diversion and Fish Passage Facility Maintenance**

A number of maintenance operations are conducted on the facilities at the Robles Diversion Dam to ensure that it functions properly. The addition of the Fish Passage Facility will increase the maintenance requirements. Anticipated types and levels of maintenance are described below.

A shallow channel is often created at the Robles Diversion forebay to direct low flows to the diversion structure. This shallow channel is re-constructed after high runoff events, and may not be required every year. In addition, excess sediment that accumulates along the upstream face of the earthen dam is periodically removed. This effort occurs approximately every three years but varies depending on stormflow and sediment load. The creation of the shallow channel and removal of excess sediment is accomplished by heavy equipment when the channel is dry. When flows are sufficiently high to overtop the cut-off wall, erosion of the wall and the banks of the overflow channel downstream occurs. Therefore, sediment removed during forebay maintenance activities is first used to restore these storm-eroded areas. Any remaining sediment from the maintenance operations will then be deposited at an on-site spoil area located completely outside the high-flow channel and separated from the river channel by a raised berm. Sediment stored at the spoil area is later used by Casitas for road and other maintenance activities and by construction contractors for offsite construction projects through an agreement with Casitas.

In addition to maintaining the volume of the forebay for effective diversion and fish ladder operations, the earthen dam, sides of the forebay basin, road, road embankments, trash rack, and spillway abutments also require periodic maintenance. Maintenance involves using heavy equipment to shore up locations that have been eroded by heavy storms and involves the placement of sediment and rock by heavy equipment. This type of effort is conducted on an as-needed basis during dry conditions. Typically this maintenance work occurs after wet years

when large storms have passed through the facility and may have caused some erosion of the earth dam and forebay wall when large spill events occurred.

Timber Cutoff Wall Restoration and Repairs

The timber wall is an original feature of the Robles Diversion Dam that traverses the Ventura River from the diversion gates structure to the east embankment of the river. The timber wall is lined with impervious compacted backfill and protected by a surface rock layer. The timber wall has been damaged in the past by extremely high river flows and will occasionally need maintenance repairs to exposed timber and protective rock surface.

The maintenance of the timber wall is generally performed on an as-needed basis during the summer or fall months, or during restoration of the Robles Diversion basin. The work usually includes the replacement of surface exposed timbers and replacement of rock rip-rap where washed out, and the downstream channel surface restored to desired slope.

As noted above, the timber wall has been severely damaged by extremely heavy river flows (e.g., 1969 event). This type of damage can be expected in the future with similar storm events. The recovery of the timber wall may require the natural recession of stream flows in order to access and reconstruct the timber wall. The reconstruction may require the excavation of the timber wall to the foundation elevation, replacement of timbers in the damaged section, straightening of the wall, placement and re-compaction of the impervious backfill and replacement of the protective rock layer. If work must occur in a flowing channel in order to restore the timber cut-off wall, and thereby make the Robles facilities functional again, best management practices would be applied to control water entering the work site and limit turbidity leaving the work site. Equipment that may be used includes an excavator, dozer(s), dump trucks, and backhoe(s). The probable duration of the work is dependent on the extent of damage and the required remedy. The restoration work could last as long as ninety days.

Fish Passage Facility Debris Removal

During the fish flow operations season, January through June, the Robles Diversion Facility will be monitored for large debris by on-site staff. The high-flow fish exit entrance will be fitted with a sloped trash rack. The diversion headworks already has a sloped trash rack that will remain in place. In addition, upstream of the diversion headworks in the forebay there is a wooden debris fence. The racks and fence will collect large woody debris and allow the debris to be removed. The low-flow fish exit is not fitted with a trash rack and it will need to be monitored when in use and cleared if necessary. The low flow fish exit is downstream of the existing debris fence.

Because of the trash racks/debris fence, it is not anticipated that large debris will be a problem for diversion and fish passage facility maintenance. However, these facilities have been designed to provide easy access for any needed maintenance activities. The fish guidance device will be removable for maintenance. Any accumulated debris will be removed using a rake by personnel standing on the walkway above. The fish screens will be frequently swept clean by automated brushes. The fishway will be monitored regularly for debris and sediment accumulation. Small debris will be removed by hand via the access grate above the fishway.

The facilities have been designed to minimize the potential for damage and for easy maintenance. It is anticipated that the facility can operate throughout a single fish passage season without the need for any extensive repairs or maintenance. Depending on flow conditions, sediment may need to be removed mechanically from the fishway. Whenever possible, extensive maintenance or repairs will be performed during the dry season when the fishway is not in operation. The potential still exists, however, for substantial damage to result from debris accumulation. Should this happen during the fish flow operations season, the portion of the facilities requiring repair or maintenance will be shut down. The necessary repairs or maintenance on the facility will be conducted as soon as possible and the structure(s) will be put back in service once it is fixed.

Streambed Structures Maintenance

The spillway baffle apron, the low-head stone weirs and the low-flow road crossing will be periodically monitored during and following large storm events. Maintenance should be minimal and limited to debris removal, and will occur only during dry conditions when the channel is dewatered. Inspections will be conducted early in the service life of the system and on an ongoing basis following significant flood events. The inspections will examine the weirs for undercutting or flanking around the weirs and will evaluate the steps for repair, as necessary. To the extent possible large and medium sized woody debris will be removed by hand however heavy equipment may be required. The cut into the bank at the low-flow road crossing must also be periodically maintained.

Radial Gate Maintenance

The radial gates are painted periodically to prevent deterioration (rusting). Painting is anticipated to occur approximately once every three years. This effort will occur when the spillway area is dry. Care is taken during this maintenance work to minimize deposition of debris (i.e. paint chips) and other materials into the Ventura River.

Low-Flow Road Crossing

An existing low-flow concrete measuring weir, that doubles as a road crossing, will be removed and replaced with the low-head stone weirs. Road crossing will continue to occur at this site during low-flow conditions to access the Robles facility for maintenance and operations. This crossing will typically be used by light trucks and passenger vehicles at flows under 15 cfs. In the past, vehicle crossings have occurred, on average, one time per day. However, the maintenance and monitoring requirements of the new Fish Passage Facility are uncertain and therefore substantially more crossings may be required during these periods.

4) <u>Interim diversion operations prior to project completion</u>

On March 27, 2003, NOAA Fisheries received a letter from Reclamation amending their proposed interim operations for the Robles Fish Passage Facility project. Per the March 27, 2003 letter, Reclamation will provide 50 cfs, if available, during the ten days following a storm peak at the Robles Diversion Dam, followed by a two day ramp-down to a between storm release

of 30 cfs, if available. The definition of a storm peak is the same as that outlined in the "Future Diversion and Fish Passage Facility Operations" detailed earlier in the proposed action. These operations would likewise occur from January 1st through June 30th. The post-storm downstream release requirement will commence after the first storm peak within the January 1st through June 30th time-frame; prior to this first storm peak, the downstream release requirement will be 20 cfs.

During interim operations, when downstream flows drop below 50 cfs and transition to the between storm flow of 30 cfs, Reclamation will conduct field surveys to determine if steelhead are stranded or may become stranded below in the Robles Reach below the diversion. If steelhead are observed, Reclamation will contact both NOAA Fisheries and CDFG to determine if relocation is necessary. If relocation is necessary, NOAA Fisheries and CDFG will assist Reclamation in establishing and carrying out the fish rescue operations.

5) <u>Monitoring and research of the diversion and Fish Passage Facility</u>

Modifications to the Robles Diversion Facility and associated operating criteria have been targeted at improving fish passage conditions within the Robles Reach of the Ventura River while maintaining suitable conditions through the Fish Passage Facility. Therefore, the proposed evaluation and monitoring activities have been developed to achieve the following objectives:

I. Monitor Fish Passage Facility operations and performance
II. Determine if the Fish Passage Facility functions and operates in such a fashion that migrating steelhead:
    a. Successfully navigate into and through the facility, and
    b. Move through the facility in good physical condition.
III. Determine if the operations at the Robles Diversion are enhancing the opportunity for:
    a. Adult steelhead to migrate upstream to the Robles facility, and
    b. Smolts and kelts to migrate downstream through the Robles Reach.

Initial (5-Year) Operating Period Evaluations

Initiation of the proposed evaluation activities would occur in 2004 and would continue until 5 years after construction was completed. The evaluation activities would be implemented concurrently with the proposed Cooperative Decision Making Process. The Biological and Management Committees will recommend to Casitas the date upon which research and monitoring is deemed complete. Evaluations outlined below include both assessments of physical conditions in the Ventura River and evaluation of biological response. It must be noted that the latter are subject to fish being present within the system which, given the small population size for this watershed, may affect the success of these efforts. Depending on the results of the initial evaluations, evaluation protocols, strategies for obtaining the information, or other approaches may be necessary.

Within the 5-year period, on a year-to-year basis, all relevant data gathered during the previous year would be reviewed, evaluated, and ultimately recommended to continue or discontinue

through the Cooperative Decision Making Process. In the event all of the evaluations could not be completed within the five year time frame, Reclamation would make a recommendation on whether or not the information is critical to establishing long-term fish flow operating criteria, establish a defined process for obtaining any required information, and implement the process in subsequent years.

Upstream Fish Migration Impediment Evaluation (Physical Evaluation)

River conditions, during the upstream fish migration season, would be evaluated for up to a five-year period to assess factors that may impede the ability of fish to migrate to the Robles Diversion and Fish Passage Facility. The first year of evaluation would be initiated in 2003 to provide some of information on upstream fish migration conditions prior to initiation of the Robles Fish Passage Facility operational criteria. The ability of fish to migrate upstream can be reduced at low river flows and therefore these conditions would be the focus of this evaluation. However, observations would be made at a range of flow conditions.

All locations that are potential impediments to upstream fish migration would be identified and monitored closely during the fish migration season to better understand fish passage limitations at these sites. Information collected at these sites would include levels of flow, velocity, depth, and width of the passage channel. Additionally, observations would be made of other factors that influence upstream fish migration such as instream or riparian cover, and resting/holding areas. Flow information at these transects would be collected at a range of watershed conditions and Robles bypass flows to better understand the relationship between releases at the Robles facility and flows in the downstream river.

A number of potential low-flow passage impediments have already been identified (ENTRIX 1999) and these sites would be re-visited to determine their current status. The assessment of upstream fish migration impediments under the proposed operating criteria would focus on the Robles Reach. Conditions in this reach have the greatest potential for low flows to impede upstream fish passage. It should be noted that results of this evaluation could be influenced by the ability of the investigator to access study locations. The results of this monitoring component would be provided to NOAA Fisheries and CDFG on an annual basis.

Observations would also be made of the sand bar at the mouth of the Ventura River to determine the timing and frequency of sand bar breaching during the current fish flow operations season. This information would be collected to determine if the criteria established for initiation of the fish flow operations has been met. These observations, or a similar indicator of the status of the sand bar, would be ongoing to provide information on the initiation of the fish flow operational criteria.

Evaluate Fish Movement Through The Passage Facility

Water Velocity and Depth Validation Evaluation (Physical Evaluation)

Water velocities and depths would be monitored inside the fish passage facility for a one to two-year period. The purpose of this program component is to determine if conditions throughout the

fish passage facility are suitable for upstream migration of adult steelhead and downstream migration of smolts and kelts. It is anticipated that this program would include monitoring flow velocities and depths throughout the structure at a variety of flow levels. The results of this monitoring component would be reported to NOAA Fisheries and CDFG on an annual basis.

Fish Attraction Evaluation (Biological Evaluation)

Snorkel surveys and/or bank surveys would be conducted in the area immediately downstream of the diversion dam. It is anticipated that this component may need from one to five years to evaluate an appropriate range of flow patterns. If adequate flows occur, it is possible that all of the required information could be collected within one year. The purpose of these surveys is to determine if migrants are holding immediately downstream of the Robles Dam during the period of time that downstream releases are provided to enhance fish migration. It is anticipated that upstream migrants would be attracted into the fishway. The proposed snorkel/bank surveys in the area in question would allow for confirmation of this assumption. Similarly, there is a possibility that some downstream migrants may congregate in this area towards the end of the out-migration season when flows are declining. Snorkel/bank surveys of this reach would determine if this is a problem. The results of this monitoring component would be provided to NOAA Fisheries and CDFG on an annual basis.

Downstream Fish Passage Evaluation (Biological Evaluation)

The number of downstream migrants passing through the Robles Fish Passage Facility would be evaluated for a two to five-year period depending upon discharge patterns. A trap would be placed in the area immediately downstream from the fish passage facility. The purpose of the trap would be two-fold. First, the trapping activity could assess if downstream migrants are successfully navigating through the facility. Second, smolts and kelts captured at this trap could be examined to determine if there are any abrasions or other indications that these fish are being hurt during passage through the facilities. The results of this monitoring component would be provided to NOAA Fisheries and CDFG on an annual basis.

As noted above, additional discussions are necessary to work out the details of the migrant-trapping program. Migrant trapping has several potential drawbacks that must be addressed to fully understand the data that would result from the trapping program and to therefore, understand how to utilize the results of the monitoring program to assess operational performance and potentially propose operational changes to the Robles facility. Points to address in the final protocols for this component of the monitoring program include: a) capture methodology; b) capture efficiency and related stress on fish due to warm water conditions, predators, etc.; c) analysis of data (i.e., sampling size for statistical analysis); and d) number and source of fish to evaluate.

Evaluate Downstream Fish Migration Through the Robles Reach (Biological Evaluation)

The number of downstream migrants passing through the Robles Reach would be evaluated annually for a two to five-year period. A trap would be placed at a location in the lower end of the Robles Reach. The purpose of this trap would be to develop an understanding of the number

of fish that are successfully migrating through the reach. A comparison of the number of downstream migrants captured immediately below the Robles Fish Passage Facilities and the number of downstream migrants captured at this location may provide a relative estimate of the numbers of downstream migrants successfully migrating through the Robles Reach. The results of this monitoring component would be provided to NOAA Fisheries and CDFG on an annual basis.

As with the other evaluation programs, additional discussions are necessary to work out the details of the migrant-trapping program. Further, the same constraints and considerations apply to this downstream migrant trap as those identified above for the downstream migrant trap immediately downstream of the Robles Fish Passage Facility. Namely, migrant trapping has several potential drawbacks that must be addressed to fully understand the data that would result from the trapping program and to therefore, understand how to apply the results of the monitoring program to propose operational changes to the Robles facility. Points to address in the final protocols for this component of the monitoring program include:

1) Type of trap to use given the geomorphology, hydrology, and storm flow conditions in the mainstem,
2) Trapping efficiency (i.e., is trap "fishing" enough of the flow to provide useful information),
3) Location of the trap (e.g., finding suitable locations to install the traps; access issues; potential for vandalism of the traps and take of captured steelhead; safety for monitoring crew),
4) Stress on fish due to warm water conditions, predators, double-trapping, etc.,
5) Analysis of data (i.e., sampling size for statistical analysis), and
6) Associated data collection to assess operational implications (e.g., other water extraction activities in the river, unimpaired runoff, status of upper basin aquifer, rainfall, and runoff)

Long-Term Monitoring Components

Long-term monitoring components are anticipated to occur for the life of the proposed action, or until such time as Reclamation, with the agreement of NOAA Fisheries and CDFG, determine through the Cooperative Decision Making Process that such efforts are no longer necessary. These efforts are targeted at (1) providing a long-term index of the steelhead population in the Ventura River (through annual fish counts at the Robles Fish Passage Facility) and (2) providing data to show that the Robles facility has been operated in compliance with the operations approved through this consultation.

Monitor Robles Facility Operations

Data would be collected to document that the Robles Diversion Dam and Fish Passage Facility are being operated in compliance with the operations approved by NOAA Fisheries through this consultation. This monitoring component would continue annually for as long a period of time as participants of the Cooperative Decision Making Process recommend. It is currently anticipated that the sensory equipment proposed for installation during construction of the facilities would provide suitable information to allow for calculation of inflow into the Robles forebay, diversion amount, and flow routed through the fishway, auxiliary water supply pipeline, and the spillway. Information collected for this monitoring program component would be provided to NOAA Fisheries and CDFG on an annual basis.

Fish Passage Monitoring

A Vaki Riverwatcher would be installed in the fish passage facility and operated to monitor fish passage through the facility. This monitoring component would continue annually for as long as recommended by the Cooperative Decision Making Process. The equipment would be operated whenever flows through the fish bypass channel are greater than 10 cfs. It would be located in the fish bypass channel, midway between the downstream end of the fish screens and the upstream end of the fishway. The Riverwatcher would count upstream migrants as they move through the fish passage structures. The Riverwatcher would also count kelts as they move downstream should they pass through the fish passage structures rather than over the spillway. The Riverwatcher has the capability of counting smaller, smolt-sized fish, however there are some concerns as to how well the Riverwatcher would be able to discern a smolt from debris in the system.

The Riverwatcher counts fish using infra-red and therefore does not function as effectively in extremely turbid waters. Vaki has not tested the Riverwatcher to determine, in NTUs, the turbidity at which the system no longer reliably counts fish (Vaki-DNG 2000). Monitoring on the Thorsa River (Iceland) suggests that the Riverwatcher would function suitably at least to a secchi depth of 4 inches (Vaki-DNG 2000). While there is no direct correlation between secchi depth and NTU, a secchi depth of 4 inches corresponds to highly turbid water. During high flow events, the Ventura River can be highly turbid. Therefore, it is anticipated that at peak stormflow, the Riverwatcher may not accurately count adult steelhead migrants.

It is currently unknown how frequently this would be a problem, however using the 4-inch secchi depth criteria, it is anticipated that this problem would be limited to peak flows of large storms when migrating steelhead frequently hold in rivers. Therefore, it is anticipated that the Riverwatcher would count the vast majority of adult steelhead that migrate through the fish passage facilities. However, an evaluation of the accuracy of the information obtained from the Riverwatcher would be needed. Further, monitoring devices such as the Riverwatcher can experience downtime and calibration difficulties. Reclamation would work with Casitas, NOAA Fisheries and CDFG to evaluate and calibrate the Riverwatcher. This process would be designed to better understand the capabilities of the Riverwatcher including (1) whether adults and smolts can be successfully counted and (2) at what flows and/or turbidity levels the Riverwatcher counts steelhead migrants. The results of this monitoring component would be provided to NOAA Fisheries and CDFG on an annual basis.

6) **Implement Cooperative Decision Making Process**

This section describes the cooperative process that will be used to make joint decisions and/or recommendations on any temporary or long-term modifications to the Robles operations (Figure 2). This section identifies participants, outlines the committee structure, and describes how the process will operate. The success of this endeavor will be dependent upon the commitment of each participant to rely upon the cooperative process as set forth herein. All participants recognize that each participant has statutory responsibilities that cannot be delegated. This cooperative process does not and is not intended to abrogate the statutory responsibility of any committee participant.

Cooperative Process Participants

The following parties are invited to participate in the Cooperative Decision Making Process: Reclamation, CDFG, and Casitas. Participants recognize that other entities, governments, associations, and individuals have an interest in water resources of the Ventura River basin and this cooperative process. Moreover, Reclamation recognizes that NOAA Fisheries and U.S. Fish and Wildlife Service (USFWS) can provide valuable technical information and therefore their expertise would be sought during the cooperative decision making process. Meaningful, constructive participation by such entities is encouraged as outlined below.

Three committees would be established for the cooperative process. The Management Committee governs the process, with Reclamation heading the committee and making final decisions or recommendations on all actions. The Biology Committeee provides technical evaluations and recommendations to the Management Committee.

Management Committee

The primary responsibility of the Management Committee is to oversee and administer the cooperative decision making process. Also, the committee would be responsible for guiding activities of technical-level staff participating in the Biological Committee. Reclamation shall serve as Chair of the Management Committee. Members include Casitas and CDFG. As Chair, Reclamation will receive information and recommendations from the Biological Committee and make a determination of whether a proposed action would trigger a "may affect" or "no affect" for any listed species. If a may affect is determined then Reclamation would consult with either NOAA Fisheries or USFWS. Reclamation will make final decisions and/or recommendations regarding Robles Operations. Reclamation will advise or direct Casitas to implement changes or other actions. Such changes are anticipated to be minor modifications to monitoring studies, data acquisition and analysis procedure, or minor changes to the timing, duration of flow releases or ramping schedules. These minor modifications are actions that would likely not trigger a "may

affect" to steelhead. Accordingly, Reclamation would notify NOAA Fisheries in advance of those actions that we believe to be no affect.

Actions that "may affect" steelhead or any other listed species would require consultation with the NOAA Fisheries or FWS before implementation.

Biology Committee

The Biological Committee serves in an advisory role to the Management Committee and has primary responsibility of providing technical recommendations to the Management Committee on all steelhead issues. The Biological Committee consists of a representative from Reclamation, Casitas, NOAA Fisheries, USFWS and CDFG. Each member shall have one voice in the cooperative decision making process. Participation will not be restricted to one person from each participating groups; rather, professional expertise from different backgrounds (e.g., hydrology, engineering and water quality) will be sought. Reclamation will serve as Chair of the Biology Committee. The Biology Committee will meet annually each summer to review monitoring data from the preceding season's monitoring studies. Additional meetings will be scheduled based upon the need to evaluate new information.

Operations and Reports

Two reports will be generated annually to provide the necessary foundation for the Cooperative Decision Making Process: an annual work plan outlining what will be accomplished in the next year and a summary of what was accomplished in the previous year. These reports are outlined in more detail below and will be prepared for as long as the Management Committee recommends it necessary.

Annual Work Plan

An annual work plan will be developed and updated each year by Reclamation. Work plans will be developed prior to the year of implementation. The annual work plan will identify the monitoring and evaluation activities, or other activities associated with the fish passage facilities, to be accomplished for the year and the associated schedule. Reclamation will submit the draft work plan to the Biology committee for review on or before October 1 of each year. The committees will have 1 month to review the report and submit recommended changes to Casitas for elements of and amendments to the annual work plan. Based upon these recommendations, available funding, agency participation, and any other considerations which it may identify, the Management Committee will recommend which elements of the annual work plan to be completed. Reclamation will then finalize the annual work plan.

Annual Progress Report

In addition to the annual work plan, Reclamation will prepare an annual progress report on efforts to provide successful upstream and downstream migration of Southern California steelhead at the Robles Diversion. This report will include an update of the status of each activity (both operational and monitoring), costs associated with the activity, and an assessment of the effectiveness of these activities toward providing adequate fish passage at the Robles facility. This report will also include recommendations regarding prioritization of future activities as well as recommendations on any revisions deemed necessary to the operations. The annual progress report will be provided to the Biology Committee as a basis for any recommendations to the monitoring program or the operations the committee may deem necessary.

As needed, the annual progress report will also include an annual assessment of the effectiveness of the drought protection measures at meeting the need for providing adequate water supplies to sustain domestic, industrial, agricultural, recreational, and wildlife needs.

Based upon the annual progress report, evaluations, recommendations of the Biology Committee, and any other considerations it may identify, the Management Committee will finalize the annual progress report. This report will summarize the effectiveness of the facility, progress toward desired conditions, and whether revisions to operations are warranted. A draft report will be provided by September 1 and the final will be completed by November 1 of each year. This assessment report will cover the fish flow operations season for that year.

5-Year Re-Visitation of Initial Fish Flow Operations

The first five years of operation of the Robles Fish Passage Facility will be the primary period used for the adaptive management approach. Five specific evaluations have been proposed for completion during the first five years of operation. These include: 1) upstream fish migration impediment evaluation, 2) water velocity and depth validation evaluation, 3) fish attraction evaluation, 4) downstream fish passage evaluation, and 5) downstream fish migration evaluation.

Based on information obtained from these evaluations, information obtained from long-term monitoring activities, and any other pertinent information, the biology committee will recommend adjustments to the initial fish flow operating criteria to Casitas on an as needed basis. At the end of the five year period, the Management Committee will recommend to Casitas any changes to the initial-operating criteria. The operations resulting from this 5-Year Re-Visitation process will be termed the "long-term fish flow operations."

In the event that all proposed evaluations could not be completed within the five year time frame, the Biological Committee will recommend to Casitas whether or not the information is critical to establishing long-term fish flow operating criteria, and develop a study plan for obtaining any required information (i.e., evaluations to occur, and schedule for their completion and evaluation). The study plan will include evaluations that need to occur, and a time frame for making a decision on the information. The Management Committee would then recommend to Casitas the appropriate manner in which to proceed.

Interrelated and Interdependent Actions

The Ventura River Project, which Casitas operates under contract from Reclamation, was completed in 1957 and includes the following three key components: 1) the Robles Diversion, which diverts surface flow from the Ventura River approximately 14 miles upstream of the ocean, 2) Casitas Reservoir, where streamflow diverted at the Robles Diversion is stored, and 3) the Robles-Casitas Canal, which conveys the diverted streamflow from the Robles Diversion to Casitas Reservoir, mainly by gravity feed (Figure 1).

Three interrelated/interdependent actions are associated with the proposed operation of the Robles Diversion Facility: 1) operation of Casitas Dam and reservoir, 2) operation of the Robles-Casitas Canal, and 3) operation of Matilija Dam. What follows is a general description of each of these project actions and their relationship with the Ventura River Project, of which the Robles Diversion is a key component.

Casitas Dam

Lake Casitas is a water supply reservoir created by Casitas Dam, located approximately two miles upstream from the Ventura River on Coyote Creek. The lake receives runoff from 34.3 square miles of direct drainage from Coyote and Santa Ana creeks, and from 74.3 square miles of indirect drainage from Matilija, North Fork Matilija, Upper North Fork Matilija, and Murietta creeks via the Robles Diversion Dam and Robles-Casitas Canal on the upper Ventura River. Water storage in Lake Casitas takes place under the Ventura River Project license (No. 11834) issued by the SWRCB in 1986. The license is based on the August 16, 1954 priority water right held by Casitas and provides for a combined diversion and storage of up to 107,800 AFY through (1) diversion of Ventura River water at the Robles facility to storage in Lake Casitas and (2) storage in Lake Casitas of runoff from Coyote Creek, Santa Ana Creeks, and other small tributary streams. The maximum storage in Lake Casitas permitted by this license is 254,000 AF.

Water leaves Lake Casitas through three pathways: 1) delivery of water through the conveyance system to meet local demand, 2) evaporation of water in the lake, and 3) water that goes over the spillway. The amount of water delivered each year through the conveyance system is measured by a gage at the treatment plant. Water leaving the reservoir through surface evaporation or through the spillway is estimated based on surface elevation, storage volume, and the amount of water flowing into the reservoir. Since operations began in 1959, inflow to Lake Casitas has averaged approximately 25,775 AF per year. Of this total, approximately 12,500 AF was water diverted at the Robles Diversion, 13,226 AF was natural inflow from lake tributaries, and 4,373 was direct rainfall on the lake. Total reservoir outflow has averaged approximately 25,122 AF over the same period and includes customer deliveries (14,494 AF), water spilling over Casitas Dam (2,652 AF) and evaporative loss (7,976 AF). A more in-depth discussion of Lake Casitas operations can be found in the BA (U.S. Bureau of Reclamation 2003).

Vegetation and sediment are managed to maintain channel capacity in Coyote Creek from the Casitas Dam spillway to the property line (approximately 1,500 feet downstream of the dam). This requires infrequent maintenance to remove vegetation and sediment blocking the channel. This work has been performed three times since the construction of the dam. Casitas also

removes debris and sediment from the stilling basin beyond the spillway periodically. Additionally, Casitas maintains pipes and control valves under the dam, and a trolley gate system on the water-side of the dam. Casitas maintains areas near the dam to be sure erosion and plant debris do not inhibit drainage or undermine dam facilities, in which case the material is removed or the facility reinforced.

Robles-Casitas Canal

The Robles-Casitas Canal connects the Robles Diversion Facility on the upper Ventura River to Lake Casitas (Figure 1). Since water year 1960, Robles Dam has diverted water via this canal to Lake Casitas. The canal enters Lake Casitas west of Highway 150 near where Santa Ana Creek enters the reservoir. The canal is concrete lined (typically 3 inches unreinforced). The canal prism is 7 feet wide at the bottom, approximately 27.5 feet wide at the top, has a water depth of 5.56 feet and a freeboard of 15 inches. The canal is approximately 27,500 feet long with an additional boxed inverted siphon that is approximately 5,400 feet long. No screens currently exist on the entrance to the canal at the Robles facility, however installation of a fish screen is proposed as part of the fish passage project. The capacity of the canal is 600 cfs. For the majority of its length, an access road parallels the canal and several small bridges provide locations for vehicles to travel over the canal.

Periodic maintenance to repair the concrete panels lining the canal is conducted. Additional minor maintenance activity is further explained within the BA (U.S. Bureau of Reclamation 2003).

Matilija Reservoir and Dam

Matilija Dam is a concrete arch structure located approximately 0.6 miles upstream of the confluence of Matilija Creek and approximately 18 miles upstream from the ocean (Figure 1). The Ventura County Watershed Protection District (VCWPD) constructed Matilija Dam in 1947 as a flood control reservoir. Matilija Reservoir initially had a storage capacity of about 7,000 AF. In 1965, the spillway crest was lowered (from 1,125 to 1,095 feet) to meet dam safety requirements. As a result of sediment deposition and lowering of the spillway crest, the active storage capacity had been reduced to approximately 3,350 AF by 1965. Sedimentation has continued to reduce the active storage in Matilija. Present active storage is estimated to be about 420 AF.

The maximum release through the valves at Matilija Dam is 250 cfs. Due to the high sediment loads experienced in the Matilija watershed, the release is operated at full capacity (250 cfs) during high runoff conditions. This operation is to prevent sediment deposits from building up in the valve/intake and closing the valve, hindering dam operation. During the low-flow season, lower releases (as low as 2-5 cfs) occur as sediment settles out in the reservoir and valve problems are unlikely.

Casitas has managed water releases from Matilija Reservoir under agreement with Ventura County since 1959, with Matilija Dam identified as the point of water diversion and the Robles Diversion Facility identified as the point of re-diversion. The agreement between the county and

Casitas terminates on January 1, 2009. State Water Resources Control Board License No. 10133 issued to Casitas allows for up to 4,300 AFY to be collected from Matilija Creek between January 1 and December 31 of each year. The maximum annual withdrawal in any given year cannot exceed 4,570 AF, and maximum storage at any one time in Matilija Reservoir is limited to 2,470 AF under this license.

From Matilija Reservoir; water is released into Matilija Creek where it flows into the Ventura River. Depending on hydrologic and groundwater conditions, this water may either flow into the groundwater aquifer, be diverted to Lake Casitas at the Robles Diversion Dam, or be bypassed downstream at the Robles Diversion. Releases from the reservoir occur throughout the year and vary according to hydrologic events in the watershed. During wet phases in the Matilija watershed, Casitas will begin to increase releases from Matilija Dam as Matilija Reservoir begins to fill. Once the watershed runoff exceeds 250 cfs, the reservoir fills and spills over Matilija Dam in an uncontrolled manner. As the storm recession occurs, releases through the Matilija Dam valves are usually maintained at the maximum (250 cfs) until the spill condition has ceased. Once the spill condition has ceased, Casitas will adjust the valve releases to maintain a constant lake elevation.

During the low-flow season, typically late spring to fall, pass through operations occur at Matilija Dam such that any inflow is released downstream of the dam. Flow is released from Matilija Dam to balance reservoir inflow and outflow. Generally, the releases are less than 5 cfs, and more commonly less than 3 cfs.

III. STATUS OF THE LISTED SPECIES

Status

Steelhead, an ocean-going form of rainbow trout, are native to Pacific Coast streams from Alaska south to northwestern Mexico (Moyle 1976; National Marine Fisheries Service 1997). Wild steelhead populations in California have decreased significantly from their historic levels (Swift et al. 1993). This decline prompted listing of the Southern California ESU of steelhead as endangered on August 18, 1997 (National Marine Fisheries Service 1997), for naturally spawned populations of steelhead and their progeny residing below long-term impassible barriers.

Estimated run sizes for the major rivers in the Southern California ESU are listed below (Busby et. al., 1996).

Santa Ynez River.....< 100
Ventura River.....< 200
Santa Clara River.....< 100
Malibu Creek.....< 100

Extensive habitat loss due to water development, land use practices, and urbanization are largely responsible for the current population status. In addition, hatchery practices and rainbow trout planting may have led to genetic introgression, but adequate documentation is lacking to fully

assess the situation (Hard et al. 1992; Nielsen 1994; Busby et. al. 1996; Nielsen et al. 1996; California Department of Fish and Game et al. 2002; Chilcote 2002; Zimmerman 2002).

Life History and Habitat Requirements

The major life history stages of steelhead, relative to this discussion, involve freshwater rearing and emigration of juveniles to the ocean, upstream migration of adults, spawning, and incubation of embryos (Shapovalov and Taft 1954; Moyle 1976; Cederholm and Martin 1983; Barnhart 1991; Meehan and Bjornn 1991; Busby et al. 1996; National Marine Fisheries Service 1997). Steelhead rear in freshwater for one to three years before migrating to the ocean, usually in the spring, where they may remain for up to four years. Steelhead grow and reach maturity at age two to four while in the ocean. Adults immigrate to natal streams for spawning during October through March, but some adults do not enter coastal streams until spring. Adults may migrate several miles, hundreds of miles in some watersheds, to reach their spawning grounds. Adult immigration appears to be associated with winter/spring storm events, with upstream migration triggered by changing flow conditions (Alabaster 1970). Although spawning may occur from December to June, the specific timing of spawning may vary among and between years, as well as streams, within a region. Migration and life history patterns of Southern California steelhead depend more strongly on rainfall and stream flow than is the case for steelhead populations farther north (Moore 1980a). Recent observations on the Santa Clara River suggest that spawning peaks in February and March, and smolt outmigration can continue into mid-June if sufficient flow persists (M. McEachern, United Water Conservation District, pers. comm., March 2003). Steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more years. Female steelhead dig a nest (redd) in the stream and then deposit their eggs. After fertilization by the male, the female covers the nest with a layer of gravel; the embryos incubate within the gravel pocket. Hatching time varies from about three weeks to two months depending on water temperature. The young fish emerge from the nest about two to six weeks after hatching.

Habitat requirements of steelhead in streams generally vary with life history stage (Cederholm and Martin 1983; Bjornn and Reiser 1991). Generally, stream flow, water temperature, and water chemistry must be appropriate for adult immigration and juvenile emigration (specific habitat requirement data can be found in Bjornn and Reiser 1991). Low stream flow, high water temperature, physical barriers, low dissolved oxygen, and high turbidity can delay or halt upstream migration of adults and timing of spawning, and downstream migration of juveniles and subsequent entry into estuary, lagoon, or ocean. Suitable water depth and velocity, and substrate composition are the primary requirements for spawning, but water temperature and turbidity are also important. Dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. Fine sediment, sand and smaller particles, can fill interstitial spaces between substrate particles, thereby reducing water-flow through and dissolved oxygen levels within a nest. Juvenile steelhead require living space (different combinations of water depth and velocity), shelter from predators and harsh environmental conditions, food resources, and suitable water quality and quantity, for development and survival. Young-of-the-year and yearling steelhead generally use riffles and runs (Roper et al. 1994) during much of a given year where these habitats exist. However, young-of-the-year and

older juveniles may seek cover and cool water in pools during the summer (Nielsen et al. 1994), particularly as discharge and, therefore, space declines in summer and fall (Kraft 1972).

IV. ENVIRONMENTAL BASELINE

Status of Species in the Action Area

Steelhead populations in the Ventura River system have not been well studied (Moore 1980a; Chubb 1997). Prior to the completion of Matilija Dam in 1947, CDFG personnel estimated that a minimum of 4,000 to 5,000 steelhead spawned in the Ventura River system in normal water years (Clanton and Jarvis 1946; Clanton and White 1946). Observations of small numbers of adult steelhead in the Ventura River have continued through the present, including documented steelhead sightings in 1974, 1975, 1978, 1979, 1991, 1993, and 2001 (Titus et al. 1994; Zimmerman 2002). NOAA Fisheries' estimated run size of <200 adults (Busby et al. 1996) is the most recent estimate of the Ventura River steelhead population. However, in light of the continued pressures exerted upon the population and the paucity of recent sightings in the drainage, NOAA Fisheries fears the Ventura River steelhead population is likely less than 100 adult individuals at the current time. The above estimate is similar to the more conservative predictions offered by other researchers (Moore 1980a; Nehlsen et al. 1991; Titus et al. in prep).

The BA includes a characterization regarding the origin and magnitude of the reported historic steelhead runs in the Ventura River watershed. Specifically, it characterizes the CDFG's estimated run size before the construction of the Matilija Dam as "speculated to be up to 4,000 to 5,000 adults during normal water years." What Clanton and Jarvis (1946) actually reported was that the Matilija Creek system supported a minimum of 2,000 to 2,500 fish in normal years, and that this represented approximately half of the total run in the Ventura River system. These estimates were not speculation as the BA indicates, but were based upon direct, historic observations by CDFG personnel. Further, Clanton and Jarvis (1946) did not suggest that the numbers of adult fish reported were influenced by artificial stocking, as the BA does. In fact, a review of the California Department of Fish and Game records confirms there never has been a stocking program on the Ventura River intended to support or supplement the native anadromous fish runs; all stocking programs were intended only to support a put-and-take fishery during the spring and summer. Additionally, the number of fish recorded as being stocked in the Ventura River (even if they were all from anadromous stock) would likely be insufficient in number to account for the large runs of adult steelhead, or even to materially affect the run size. Efforts to artificially sustain or increase native anadromous runs in other parts of California have generally proven unsuccessful, and oftentimes counter-productive (California Department of Fish and Game et al. 2001). On the contrary, the periodic planting of non-native fish probably adversely affected run sizes by competing with juvenile steelhead for food and cover, adding to natural predation, and inter-breeding with native stocks, thus reducing overall species fitness. Studies have documented that introduction of non-native stocks has also been a source of pathogens that further reduce the natural productivity of native fish populations, particularly in a warmer water environment such as that which occurs in portions of the Ventura River system (Hard et al. 1992; California Department of Fish and Game et al. 2001; Chilcote 2002).

Because steelhead population data for the Ventura watershed is lacking for the most part, surrogate variables, such as available habitat and potential spawning days, will be used within this Biological Opinion in an attempt to describe and quantify existing and project related effects. The amount of habitat available to steelhead likely has a direct affect on population size, since loss of access to habitat resulting from dams and other upstream barriers is a primary cause of the steelhead's precipitous decline in southern California (Busby et al. 1996). During times of sufficient rainfall, steelhead historically had access to approximately 54 miles of spawning and rearing habitat within the mainstem Ventura River (16 miles), Matilija Creek (12 miles), Coyote/Santa Ana Creek (14 miles), and San Antonio Creek (8 miles) (Clanton and White 1946; Clanton and Jarvis 1946; Fugro West, Inc. 1996b). Prior to completion of Matilija, Robles and Casitas Dams, the prime steelhead spawning and rearing habitat was located within the upper Coyote Creek and Matilija Creek watersheds (Clanton and Jarvis 1946). Presently, steelhead are limited to the fourteen miles of mainstem river below Robles Diversion, three miles of lower Coyote Creek below Casitas Dam, and eight miles of San Antonio Creek. The 25 miles of habitat currently available to steelhead represents less than half of the historic total, and ranges from poor (lower Coyote Creek) to marginal (mainstem Ventura River and San Antonio Creek) quality for spawning and rearing activities. But while much of the prime spawning and rearing habitat historically occurred in the currently inaccessible upper reaches of Matilija and Coyote Creek, steelhead within the Ventura system have adapted to the current river condition by utilizing available mainstem habitat when the preferred headwater habitat was made inaccessible by insufficient migration flows or anthropogenic barriers (i.e., Matilija Dam and Casitas Dam). During the below average rainfall year of 1947, CDFG biologists noted an abundance of spawning activity throughout the 5 mile section of river from Foster Park downstream to the Ventura River estuary (Evans 1947). During the 1947 survey, biologists estimated that 250-300 adults were holding in scattered pools throughout the 5 mile reach. Furthermore, mainstem spawning habitat has been well documented within river sections below the Robles Diversion both prior to (Clanton and Jarvis 1946) and following (ENTRIX 1997) the 1958 construction of the Robles diversion. Likewise, recent surveys have documented steelhead rearing habitat, as well as utilization of this habitat by juvenile fish, throughout the stretch of river between the Robles Diversion and the Ventura River estuary (Moore 1980a; Capelli 1997).

Factors Affecting Species Environment within the Action Area

As mentioned previously, the area affected directly and/or indirectly by the proposed action encompasses the entire mainstem Ventura River; the section of Matilija Creek below Matilija Dam; the lower 4 miles of NF Matilija Creek; the lower 10 miles of Coyote Creek and lower 4 miles of Santa Ana Creek (a tributary of Coyote Creek); and (~ 8 miles) San Antonio Creek.

Mainstem Ventura River

The 16 mile reach of Ventura from the confluence of Matilija Creek and NF Matilija Creek downstream to the Ventura River estuary is affected by numerous anthropogenic disturbances and modifications. Historical operation of the Robles Diversion, located approximately 14 miles upstream of the Ventura River mouth, has profoundly impacted steelhead migration, spawning and rearing throughout the lower Ventura River. In general, flows up to 20 cfs are released downstream during diversion operations. Historic operation of the Robles Diversion has greatly

diminished most natural migratory opportunities within the lower river. The historic 20 cfs downstream bypass is insufficient for successful upstream migration nor is it likely to adequately maintain available spawning and rearing habitat in the lower river. Conversely, data supports a minimum flow of approximately 50 cfs for steelhead passage into the Casitas Springs/Foster Park[4] and Robles reach where the majority of mainstem spawning habitat exists (ENTRIX 1999). Under historic conditions with natural, unimpeded flow conditions in the lower river, there was an average of approximately 44 steelhead passage days (i.e., days > 50 cfs) per year according to the BA (U.S. Bureau of Reclamation 2003). Operations at the Robles Diversion have reduced this number to 13, representing a 70% decrease in available migration days for steelhead in the lower Ventura River. The diversion effect is even greater when one considers that the 12 days likely do not represent consecutive days, but instead reflect two or three storms of 3-4 days length each. It is unlikely that 3-4 days of flows greater than 50 cfs would allow any but the few fastest migrating fish to successfully reach the diversion.

Truncating natural downstream flow via diversion operations has also resulted in reduced groundwater infiltration downstream of the diversion, thus altering the natural hydrologic process responsible for recharging the aquifer underlying the lower river. Late summer surface flow in the Casitas Springs/Foster Park reach which naturally emanates from this aquifer is critical to maintaining available steelhead rearing habitat in the lower river. Finally, upstream passage past the Robles Diversion has been precluded since completion of the diversion dam in 1958, thus depriving adult steelhead access to suitable spawning and rearing habitat in lower Matilija Creek and North Fork Matilija Creek.

Pumping of subsurface alluvial groundwater occurs at several points close to or within the active channel along much of the 11 miles directly below the diversion. The City of Ventura operates a well field and surface water diversion in the Foster Park area, which between 1980 and 1990 extracted an annual average of approximately 6,800 AF of surface flow and groundwater (Richard C. Slade and Associates n.d.)[5]. Several smaller water districts and individual water extractors drew an average of approximately 3,200 AF per year out of the alluvial aquifer between Foster Park and the Robles Diversion during the same time period. When factoring all water extractions and diversions occurring within the upper Ventura River basin (including Casitas), approximately 18,000 AF of water is withdrawn annually. The substantial amount of water diverted from the Ventura River during winter and spring storm events combines with Robles operations to substantially abbreviate the duration and magnitude of river flow necessary for successful steelhead migration. Furthermore, extracting water from the alluvial aquifer underlying the Ventura River can dramatically diminish available surface flow and in turn

---

[4] The BA uses the term "Live Reach" which is described as the reach of river extending from 1/3 mile upstream of the confluence of San Antonio Creek downstream to Foster Park. This is allegedly used to describe that portion of the main stem of the Ventura River that maintains a perennial surface flow. This is a confusing misnomer, since the reach of the lower river currently maintaining a natural perennial surface flow extends from above San Antonio Creek all the way to the Pacific Ocean. The so-called "Live Reach" referenced in the BA actually should be called the "Casitas Springs/Foster Park Reach", which is more accurate and therefore the term that NOAA Fisheries has used consistently in previous correspondence.

[5] The Foster Park well field and surface diversion take advantage of rising groundwater resulting from a natural sub-surface impervious rock formation. The sub-surface dam adjacent to the diversion was placed in its location below the natural impermeable rock formation to take advantage of this naturally rising groundwater. Further, the artificial subsurface dam does not extend completely across the alluvial channel but only extends to the existing surface diversion that is located approximately in the middle of the channel; the eastern half of the channel is unaffected by the subsurface dam, and the naturally rising groundwater can freely flow around it.

negatively affect instream habitat characteristics (EDAW et al. 1981). The effects from groundwater extraction are further exacerbated by reduced groundwater infiltration resulting from Robles Diversion operations as noted above. Aquatic habitat in the lower Ventura River is especially vulnerable to subsurface water extraction during the summer/fall period, when natural surface flow is already at seasonally low levels and rearing fish and aquatic organisms are confined into the Casitas Springs/Foster Park reach where perennial flows historically existed in most years. Fish and aquatic organisms isolated by receding streamflow face the dangers of increased predation, compromised water quality, and outright dessication once flows disappear. Complete dewatering of the channel above the Foster Park bridge by subsurface water extraction in the Casitas Springs/Foster Park area has been observed by NOAA Fisheries personnel during recent dry years (Rick Rogers, NOAA Fisheries, pers. obs.).

Surface water extraction at the City of Ventura's Foster Park Diversion (completed 1906) and the Robles Diversion has also adversely affected steelhead by entraining fish at the diversion entrance. Fish entrained within the unscreened surface diversions at the Foster Park and Robles Diversion were conveyed into water delivery pipes/canals and likely killed or injured during the process. Even in the best case scenario, fish transported through the Robles-Casitas Canal would have ended up in Lake Casitas, effectively removed from the anadromous population and forced to exist within a lacustrine environment.

Flood plain encroachment and development has been a problem within the communities of Foster Park, Casitas Springs, Oak View, and Meiners Oaks. Flood plain development usually requires some degree of streambank armoring in order to protect structures from naturally occurring flood flows. The riprap/cement structures frequently employed for protective purposes tend to create a hardened point within a dynamic and constantly changing fluvial environment. As the natural riverine processes adjust to these static hard-points, geomorphic conditions adjacent to and downstream of the armored area likely become disrupted, reducing available fish habitat by decreasing large woody debris (LWD) recruitment, precipitating unnatural streambed scouring, and generating elevated fine sediment concentrations in downstream reaches (Schmetterling et al. 2001). For example, the 1978 construction of a 5,350 foot earthen levee in the Casitas Springs/Foster Park reach has interfered with the natural meandering of the Ventura River channel and dramatically altered the riparian habitat adjacent to the project.

Discharge from the Ojai Valley Wastewater Treatment Facility, along with the point source contributions from the many floodplain level septic systems and industrial complexes, has degraded the overall water quality within the lower Ventura River (however, the wastewater treatment facility has recently upgraded to tertiary treatment). Agricultural development and accelerated urban growth within the last 50 years has also increased the amount of non-point source pollution affecting river water quality.

Matilija Creek below Matilija Dam

The reach of Matilija Creek between the Matilija/NF Matilija confluence upstream to Matilija Dam is represented by a deeply incised, moderate gradient stream reach relatively unaffected by human development save for the small frontage road that follows a majority of its length. This stream reach is, however, adversely affected to a high degree by the long standing Matilija Dam,

which has greatly altered historic flow patterns and sediment transport processes within Matilija Creek since its completion in 1948. Alteration of the natural fluvial processes present below the dam (i.e., sediment transport and recruitment, natural storm flow patterns, etc.) has starved the stream reach of suitable spawning substrate and interrupted fish migratory patterns. Yet, the reach currently contains ample rearing habitat for juvenile fish, and small pockets of potential spawning habitat exist (M. Capelli, NOAA Fisheries, pers. comm., March 2003).[6] Finally, the frequent spill events have promoted the establishment of non-native predatory species (i.e., largemouth bass, sunfish and catfish) within the reach directly below the dam structure.

Matilija Dam does not have the capacity to attenuate very large flow events, but because the practice of Casitas is to draw down the reservoir in anticipation of winter storms, it effectively attenuates moderate sized storms (which constitute the largest majority of storm events in a typical year). Similarly, the Robles Diversion, while not having any effective storage capacity, can divert up to 500 cfs and because the majority of Ventura River storm flows range between 500 and 1500 cfs, the diversion can effectively reduce the peaks of these storm events between 30% and 100%. Reducing peak storm flow has a number of impacts relevant to steelhead and steelhead habitat in the Ventura River system. First, these peak flows provide a stimulus to fish to enter the river and migrate upstream (Shapovalov and Taft 1954). Storm flow conditions facilitate efficient steelhead migration by alleviating natural barriers such as shallow riffles, natural step pools, and exposed channel bottoms. Second, these peak flows flush out potential spawning gravels overlain with fine sediment as well as transport new spawning sediments into the main stem (Beschta and Jackson 1979). Third, these peak flows likely remove annual instream aquatic vegetation (including algae) which displace spawning and rearing space, and rejuvenate riparian vegetation by thinning younger, less well-rooted individual plants. Removal of annual vegetation types allows perennial species to better compete for soil nutrients and water, favoring formation of a mature habitat which provides more effective shading, and more productive allochthonous drift (Scott et al. 1996).

Reclamation and the U.S. Army Corps of Engineers, in cooperation with several local and state agencies and environmental groups, are currently investigating alternatives for the future removal of the Matilija Dam structure. If the dam removal project ultimately comes to fruition and the natural fluvial processes below the dam are restored, fish habitat will likely improve as a result.

North Fork Matilija Creek

Bordering Highway 33 for much of its entire length, North Fork Matilija Creek flows into the Ventura River 16 miles upstream of the Ventura River estuary and drains a watershed spanning approximately 25 square miles (Moore 1980a). Due to the steep gradient and corresponding pool/riffle habitat that dominates the watershed, large areas of quality spawning and rearing habitat were historically available to steelhead. Since the watershed is relatively unaffected by human development, much of this quality habitat still remains in sections of the main creek as

[6] The BA asserts that the reach of Matilija Creek below Matilija Dam "goes dry during the summer months, eliminating most of its value as habitat, although this reach may still provide some spawning and spring rearing habitat." (Reclamation 2003. page 5-73) Matilija Creek, from Matilija Dam downstream, is a perennial stream, and provides year round rearing habitat, as well as seasonal spawning habitat.

well as some of the larger tributaries of the system such as Bear Creek and Cannon Creek (R. Franklin, ENTRIX Inc, pers. comm., June 2002). Upstream fish migration is currently blocked by a degraded arizona stream crossing within the Wheeler Gorge Campground located approximately 4 miles upstream of the NF confluence. Therefore, only habitat downstream of the campground would be available to steelhead passing through the Robles Fish Ladder at the current time. However, the U.S. Forest Service is supposedly considering options for removing the barrier (A. Spina, NOAA Fisheries, pers. comm., March 2003).

Coyote Creek and Santa Ana Creek

The Coyote Creek watershed originates on the southern slopes of the Santa Ynez Mountains and flows in a southeast direction until joining the Ventura River approximately 6 miles upstream from the Pacific Ocean. The 14 miles of stream channel within Upper Coyote Creek and its main tributary, Santa Ana Creek, once comprised approximately half of the high quality steelhead habitat available to steelhead within the entire Ventura River watershed, with the other half located further upstream in the Matilija Creek watershed (Clanton and White 1946). The approximately 11 miles of high quality spawning habitat in these two creeks supported an average of 3,000 adult fish until the completion of Casitas Dam in 1952 completely blocked steelhead access into the area. A recent survey of both Coyote and Santa Ana Creek by the USGS Biological Resources Division documented extremely productive spawning and rearing habitat (R. Reisenbichler, U.S. Geologic Survey, pers. comm., March 31, 2003). Currently, steelhead have limited access to the lower 3 miles of creek below the dam when high rainfall events spill the reservoir (Casitas Dam has spilled eight times since it filled in 1978). However, the habitat available to steelhead in lower Coyote Creek is highly sedimented and in generally poor condition due to chronic streambank erosion and insufficient storm-related flushing flows. The lower creek is also plagued by meager base flow for much of the year since water is rarely released through the Lake Casitas headworks and into the stream channel below to maintain downstream aquatic habitat.

Much like Matilija Dam, Casitas Dam effectively eliminates almost all the high flushing flows generated by Coyote and Santa Creeks, which constitutes approximately 20% of the total flow in the main stem of the Ventura River below the confluence of Coyote Creek. However, when natural run-off from Coyote and Santa Ana Creek (coupled with input from the Robles Diversion) results in spillage at Casitas Dam, non-native species of fish and other aquatic organisms are introduced into lower Coyote Creek and Ventura River.

San Antonio Creek and Tributaries

San Antonio Creek originates on the southern slopes of the Topa Topa Mountains and Nordhoff Ridge in the northeast portion of the Ventura River Basin. The watershed drains an area of approximately 83.9 square miles, with the mainstem creek flowing approximately 11 miles from Senior Canyon to its confluence with the Ventura River approximately 8 miles upstream of the Pacific Ocean. A 1996 steelhead habitat characterization study performed for the VCWPD documented suitable spawning substrate and moderate to high quality rearing habitat for steelhead throughout a 16,000 foot reach of lower San Antonio Creek (Fugro West 1996b). However, increased urban encroachment into the San Antonio Creek riparian corridor has led to

the alteration and destruction of overhanging vegetation cover critical to juvenile steelhead survival. The loss of riparian cover has also likely increased water temperatures throughout significant reaches of the creek. Furthermore, the proliferation of horse corrals and stables built adjacent to the creek channel has likely increased nutrient loading and fine sediment deposition into the surface waters of San Antonio Creek, further lowering water quality already hampered by increased urban runoff. For the most part, steelhead are currently limited to the7 miles of creek below the Ojai Valley Golf Course, where a failed stream crossing likely presents a migrational barrier to adult steelhead under most natural flow scenarios. However, the VCFCD is currently investigating methods for removing or altering this barrier to allow unfettered steelhead passage. Of the main San Antonio Creek tributaries, Lion Canyon Creek would appear to contain the best steelhead habitat owing to its deeply incised channel and pool/riffle morphology. However, much of the upper half of the watershed is inaccessible to steelhead due to a 40 foot high dam located just upstream of the Highway 150 crossing.

V. EFFECTS OF THE PROPOSED ACTION

Methodology for Effects Analysis

To determine a species' needs, NOAA Fisheries often looks to historical conditions as a guide to conditions associated with self-sustaining and self-regulating populations. Where used, these conditions are not necessarily management goals. Instead, they serve as an important reference point for gauging the effects of projects on the species' ability to survive in the current ecosystem. In such cases, a project often has fewer adverse impacts on a threatened or endangered species if it minimizes or avoids changes to, and/or mimics, the natural conditions necessary for the species' long-term survival. This approach has been used in evaluating this project, specifically with regard to proposed diversion operations. In light of this approach, an operational scheme enacted at the Robles Diversion should furnish a downstream flow regime that adequately mimics the natural storm recession rate, and thus the inherent migratory triggers and cues, to which Ventura River steelhead have grown accustomed during their evolutionary development. Furthermore, downstream releases should also ensure that the volume of released water is of sufficient duration and depth to ensure successful migration conditions for the majority of migrating steelhead. Finally, released flows should be structured to maintain existing spawning and rearing habitat within the lower river between storm events.

Effects to steelhead arising from the proposed action will be discussed in regard to the following components of the proposed action: 1) Fish Passage Facility construction and Robles Diversion modification; 2) future operations of the Robles Diversion and Fish Passage Facility; 3) Robles Diversion and Fish Passage Facility maintenance; 4) interim Robles Diversion operations; 5) monitoring and evaluation activities; and 6) the Cooperative Decision Making Process. A discussion of the effects arising from the interrelated and interdependent actions associated with the proposed action will conclude the section.

1) Fish Passage Facility Construction and Robles Diversion Modification

The proposed action includes construction of fish passage and bypass facilities at the existing Robles Diversion Dam. New and modified structures include a fish screen, flow control structure, flow measurement section, fish guidance device, fishway, fish bypass channel,

auxiliary water supply pipeline, two fish exit channels, a baffled apron, and a series of low-head stone weirs. Potential construction-related effects include 1) direct effects on steelhead located at the construction site; 2) indirect effects on steelhead migration habitat quality; and 3) indirect effects on steelhead habitat downstream of the diversion facility. The discussion that follows demonstrates that the proposed minimization measures will likely result in no adverse direct or indirect effects on steelhead if construction occurs in a dry channel. More pronounced adverse effects may occur if conditions are not dry when in-channel construction commences.

Installation of the low-head stone weirs and construction staging may result in the removal of some riparian vegetation. Riparian vegetation is important to rearing steelhead because it provides shade to keep water temperatures cool and can improve shelter for rearing fish (Meehan et al. 1987). Vegetation along the banks of the Ventura River will be restored in locations where removal is necessary. Since fish may be rearing in the reach below the dam during the construction season, there is the possibility that some steelhead may be present in the area if flows are present. Steelhead discovered in either the construction area or any downstream habitat deteriorated by project activities will likely be at risk of take unless captured and transferred to appropriate habitat elsewhere in the drainage. In this case, harassment resulting from capture and relocation would be the most likely form of take. However, instream construction activities may cause direct mortality from crushing or extremely poor water quality if fish relocation is not undertaken immediately.

The river banks downstream of the spillway consist of large boulders, cobble and large gravel maintained at a 2:1 slope to minimize erosion. Erosion can cause infilling of pool habitat and sedimentation of spawning gravels, reducing habitat suitability (Bjornn et al. 1997). Construction of the low-head weirs will temporarily modify the banks as the 15 weirs are keyed into the embankment 4 to 6 feet. Construction will occur when the channel is dry. Following construction the bank slope will be returned to the pre-construction grade (2:1) to minimize erosion. Because there will be no steelhead present, this activity is not anticipated to affect steelhead. The low-head weirs are anticipated to result in improved migratory habitat in this small reach of river by creating a series of pools that can provide holding/resting areas for fish during their migration. They are also anticipated to provide in-stream cover and food input within this reach resulting in a small improvement in habitat conditions for steelhead.

In order to complete construction of the proposed structures, some work will have to occur in the channel. In-channel work has the potential to affect steelhead and their habitat if performed during the winter or spring migration season or when water is present under low-flow conditions. If possible, to eliminate potential impacts on steelhead, work taking place in the channel will be limited to no flow conditions, when the channel is dewatered. This will ensure the absence of steelhead, maintain water quality, and minimize erosion. Work within or adjacent to the waterway includes construction of the high- and low-flow fish exit structures, excavation for construction of the fish ladder entrance, incorporation of the baffled apron into the existing spillway structure, and modification of approximately 800 feet of the existing spillway channel to construct the low-head stone weirs and modify the low-flow crossing.

During the construction phase of the proposed action, priority will be given to completing instream work while the channel is dry. All remaining construction activities (e.g., fish screen,

fish ladder, and auxiliary water supply pipeline) can be accomplished during other months without potential impact to the fishery because the work will take place outside of the wetted channel. A storm water pollution prevention plan will be developed for the construction process to ensure that water quality is maintained during construction operations. Equipment used during construction will be well maintained to minimize the potential for hazardous materials (e.g., oil) to be deposited in the dry river bed. This and other standard construction best management practices will result in no adverse effects on steelhead habitat from the use of heavy equipment in the channel.
Every attempt will be made to construct in-channel features when the channel is dry to eliminate potential impacts. Should there be water flowing in the construction reach when in-channel construction is set to begin, there is the potential for construction activities to adversely affect steelhead. Both direct and indirect adverse effects are possible. Direct effects would result if steelhead were present in the construction reach during initiation of activities to isolate the work area. Any fish present at this time would be removed and transferred to high quality, perennial habitat upstream. Rescued fish would, however, be subjected to the stress of capture, transport, and release. Adverse effects associated with fish rescue can range from harassment due to the stress of the rescue activity, more severe harm due to abrasions from handling, or electrical burns if electro-fishing is needed, or even possible mortality. The fish rescue protocol would be designed to minimize the potential adverse effects for fish that must be transferred. In addition, heavy equipment would be working in the wet channel to create the coffer dam. Fish would be rescued from these work areas prior to the use of heavy equipment; however, it is possible that fish may avoid capture and therefore may be crushed, buried, or injured during these activities.

Indirect impacts to steelhead can also occur due to short-term mobilization of sediment into flowing water caused by the use of heavy equipment. High concentrations of suspended sediment have been shown to lower overall fitness of stream dwelling salmonids by disrupting normal feeding behavior (Berg and Northcote 1985) and reducing growth rates (Crouse et al. 1981). Excessive fine sediment in the streambed can also interfere with proper development and emergence of salmonid fry, leading to lower fish recruitment (for review see Chapman 1988). However, proposed construction activities are expected to result in only a localized, short-term increase in turbidity. Once the construction site has been isolated, no appreciable increase in turbidity is anticipated as all construction activities would take place outside flowing water and the sediment control best management practices would minimize any additional mobilization of sediment to flowing water. The minor increase in turbidity over a few days is unlikely to adversely affect steelhead.

In summary, the risk of steelhead being injured or killed by construction activity for the ladder is low. The in-channel construction will likely occur in a dry channel, and has largeley been scheduled outside the steelhead migration and spawning season. In the unlikely event construction begins while surface flow exists below the diversion, steelhead in the project area would likely be captured and relocated to suitable habitat.

Currently, the road crossing/concrete weir located directly below the diversion is an impediment to upstream steelhead migration at low flows. If construction of the downstream weir structure does not coincide with fish passage facility construction, a small percentage of adult steelhead may be delayed or prevented from reaching the ladder structure. These fish would be forced to

spawn in downstream habitat or could potentially wait for future storm flow to assist upstream passage.

In summary, the construction activities are anticipated to result in no direct or indirect adverse effects on steelhead because it is likely that construction can occur in a dry channel. If construction must occur in a wet channel, it is unlikely that steelhead would be present given the poor conditions that would prevail at the Robles site during the summer/fall in-channel construction period. However, if steelhead are present, effects could range from minor harassment to mortality during rescue activities.

1) **Robles Diversion and Fish Passage Facility Operation**

As mentioned earlier, any future operation of the diversion and fish pass should not only provide for upstream passage opportunity through the lower river, but should also ensure that downstream releases maintain below-diversion spawning and rearing habitat. Impacts to steelhead essential behavioral patterns (i.e., migrating, spawning and rearing) resulting from project operations will be discussed within the following three parameters: a) steelhead migration below the diversion, b) steelhead habitat below the diversion, and c) steelhead migration through the fish ladder. A discussion of potential effects resulting from the Critical Drought Protection Measures appears at the end of the section.

Effects on steelhead migration below the diversion

Adult steelhead migration

Due to the lack of steelhead population and behavioral data specific to the Ventura River watershed (as well as much of the southern California ESU), NOAA Fisheries has utilized data from the Carmel River to assess the efficacy of proposed migrational flows for adult Ventura River steelhead. Dettman and Kelley (1986) monitored steelhead migration between the Carmel River lagoon and San Clemente Dam fish ladder between 1962 - 1975. The Carmel River and Ventura River share many similar characteristics, such as similar stream channel morphology and dry, temperate climate patterns, as well as native steelhead strains adapted to the southern-most extent of the species range. Also, due to the absence of historic steelhead research and monitoring within the Ventura watershed, the Carmel represents the closest river system in which quality migrational data exists. For these reasons, NOAA Fisheries utilized the Carmel River migration data to estimate steelhead migration rates and, ultimately, the length of time that most steelhead would require to traverse the 14 miles of river channel between the Ventura River estuary and the Robles Diversion.

Adult steelhead tend to migrate upstream in large pulses of fish, with each pulse typically triggered by rising storm flows during the winter and spring months (Shapovalov and Taft 1954; Dettman and Kelley 1986). As a pulse of migrating fish approaches a set point some distance upstream, fish arrival times, if plotted, would resemble a bell-shaped curve. For this scenario to be true, one would have to assume that all fish started from approximately the same point at the same time. Thus, with regard to the Carmel River analysis, NOAA Fisheries considered only data from the first storm experiencing fish movement within each water year to ensure that all fish within a pulse had experienced the same triggering storm and start location (i.e., the

estuary). This would likely eliminate any fish that might be holding within the river between storms and would thus have a shorter distance to migrate, and as a result, record an artificially short total migration time. If the migrational circumstances outlined above hold true, then it could be reasoned that fish represented by the "tails" of the bell-shaped curve would likely represent slower and faster swimming individuals. From the Carmel River data, averaging the longest migration time (i.e., the slowest fish) from the initial fish migration storm of each year identified a migration window of 18.6 days for the 18.5 mile lower reach of the Carmel River, or an approximate migration rate of 1 mile per day. Extrapolating these results to the 10 mile stretch between the Shell Hole (the upstream limit of adult holding area on the lower Ventura River) and the Robles Diversion, an appropriate migration window of 10 days was identified. NOAA Fisheries chose to extrapolate a suitable migration window from the slowest migration rate in large part because of the critical status of the Ventura River steelhead population, which has declined at least 97% from historic numbers (Busby et al. 1996). If the migration window was based upon the fastest or even the average migration rate, as many as half of the steelhead within each pulse (i.e., the slower half) would not be afforded sufficient time to make the upstream journey. By basing the window on the average of the slowest fish recorded in each of the Carmel River storms studied above, the Ventura River migration window will likely be long enough to ensure successful upstream migration for the majority of fish within each storm pulse.

The second facet critical to effective steelhead migration in the lower Ventura River is the release of sufficient passage flow to ensure sufficient depth at critical riffle areas. Sautner et al. (1984) reported that passage of chum salmon spawners through sloughs and side channels of the Susitna River, Alaska, depended primarily on water depth, length of the critical stream reach, and size of substrate particles. Critical passage areas (i.e., shallow riffle areas where low flow first present passage problems) were analyzed via the Thompson Method (Thompson 1972) by Casitas' consultants during December, 1999 (ENTRIX 1999). Based upon this analysis, the minimum flow providing sufficient depth for upstream adult steelhead migration was estimated as approximately 50 cfs[7]. Therefore, post-storm flow releases should be maintained at 50 cfs or greater (when natural inflow allows) in order to ensure that the majority of upstream migrating adults can utilize the full 10 day migration window outlined above. The 50 cfs flow, although thought to be sufficient at this time, does represent a minimum flow standard as determined by the Thompson Method. Detailed study of the relationship between flow and passage conditions in the lower reach will allow for future adjustment of this standard if necessary.

Finally, the timing and magnitude of downstream releases must be integrated into an effective flow release pattern to fully realize the potential benefits of the fish ladder. In addition to providing the physical aspects necessary for upstream migration (i.e., the flow duration and magnitude identified above), an effective release pattern should also furnish the natural cues and triggers which stimulate migrational behavior. Research suggests that factors associated with high flow events seem to stimulate adult salmonid ascent (Shapovalov and Taft 1954; Alabaster 1970). But while peak discharge events likely trigger the start of migration, the fact that an

[7] The BA cites the ENTRIX fish passage study as the basis for the assertion that 29 cfs would provide adequate fish passage flows in the Robles Reach. NOAA Fisheries has commented previously on the limitations of the Thompson method used in the ENTRIX study, and the questionable modifications made to its criteria in its application to the Ventura River. (See National Marine Fisheries Service Memorandum to Jim Lecky, "Summary of the Thompson Method for determining stream flows for fish life, dated September 4, 2002a and National Marine Fisheries Service 2002b).

increase in upstream migration activity occurs during storms or freshets suggests the relative change in flow seems to impact migratory response the greatest. Further, sustained upstream migration seems to be more closely tied to the receding flows following a storm peak than the rising flows preceding it. Huntsman (1948) discovered that while initial entry into the river typically occurred as a freshet developed, the principal upstream ascent to spawning habitat occurred as the river flow was falling. Similarly, Laughton (1991) found that upstream migration took place at all stages of the storm event, even though movement after the storm peak was most common. Thus, it is reasonable to assume that any sharp changes to the smooth, natural recession rate of river flow could abruptly change upstream migratory behavior, possibly even halting movement altogether.

Shapovalov and Taft (1954) noted just this behavior during one of the few studies documenting steelhead behavior in stream systems south of San Francisco, California. While monitoring upstream steelhead and coho salmon *(Oncorhynchus kisutch*) migration, the authors noted that "on more than one occasion a number of steelhead have entered Waddell Creek during a storm or series of storms, but have 'holed' up in pools in the lower portion of the stream....as a result of sudden cessation of the storm and lowering of the flow." Once "holed" up in deep pools, the Shapovalov and Taft observed that these fish would remain in place until an increase in flow triggered them to continue migrating upstream. In light of the observations above, NOAA Fisheries believes incorporating a downstream release pattern that mimics the natural recession rate of a typical Ventura River storm event is essential to ensuring that adult steelhead can fully utilize the migration opportunity presented by the 10 day window/50 cfs minimum flow pattern outlined above. The 10 miles of mainstem Ventura River between the Shell Hole and the Robles Diversion Facility has little, if any, adult holding habitat. Facility operations which cause an abrupt decline in downstream flow level could trigger adult migrating fish to stop and seek cover in areas where water depth is rapidly receding, in essence stranding fish in downstream reaches. Under these circumstance, steelhead trapped in the rapidly receding lower river would be put at great risk by rapidly deteriorating water quality, and ultimately predation or dessication.

Unlike the five species of pacific salmon, steelhead are iteroparous (i.e., able to spawn more than one time). A small percentage of adult steelhead may migrate out to the ocean and return to spawn in subsequent years. Shapovalov and Taft (1954) documented that an average of 17% of the adult steelhead runs on Waddell Creek were made up of repeat spawners. Within the Ventura River watershed, information concerning the overall percentage or behavioral characteristics of "runback" fish is lacking. However, flow augmentation provided for upstream migrating adult fish is anticipated to also supply adequate migratory conditions to the small number of runback fish likely to occur in the Ventura River system.

The proposed action by Reclamation incorporates the elements deemed necessary in the above discussion. Post-storm downstream flows will be released according to the average recession rate of a Ventura River storm event, ensuring that the release pattern properly mimics the natural storm hydrograph. Furthermore, flow levels following storm events will maintain flows above the minimum passage level of 50 cfs for 10 days, when natural inflow permits. Therefore, NOAA Fisheries anticipates the proposed 10 day migration window will accomodate the majority of migrating adult steelhead within the Ventura River. However, since the window was formulated from the *average* migration rate of the slowest Carmel River fish, it stands to reason

that some fish migrating at an extremely slow pace (i.e., slower than 1 mile/day) would likely fail to reach the ladder in time and would likely be trapped below the diversion structure when river flows drop below 50 cfs. NOAA Fisheries again looked to Carmel River migration data to estimate the percentage of fish that would migrate slower than 1 mile/day and thus would not succeed within an 18 day migration window (the Carmel River migration distance was approximately 18 miles).

During the ten storm events analyzed within the Carmel River (one year was outside the 95% confidence interval and deemed an outlier), only the initial storms of 1967 and 1969 produced any of these extremely slow "stragglers". Accounting for fish traveling slower than one mile/day, "stragglers" made up less than 5% of the entire run size in the 1967 storm, whereas the initial storm in 1969 saw almost 19% of the fish pulse arrive outside of the 18 day window. However, it should be noted that 1969 was one of the largest rainfall years on record with flow rates reaching 2840 cfs. Thus, the extremely large 1969 event likely produced anomalous migration rates since fish were likely precluded from beginning upstream migration for several days due to extremely high peak flows. Therefore, NOAA Fisheries has chosen to utilize a 5% "straggler" rate based upon the 1967 migration data. On the Ventura River, steelhead population estimates from the early 1990's gauge the adult steelhead population to be less than 200 returning adults. However, these estimates were made without any sampling or study, and represent a best case scenario for Ventura River steelhead. Based upon the paucity of sightings and/or reports of adult fish within the system during the recent decade-long wet cycle, NOAA Fisheries suggests the current population is likely closer to 100 or fewer returning adult steelhead. Therefore, NOAA Fisheries makes the broad assumption that approximately 5 adult fish (i.e., 5% of 100 total adults) could migrate too slowly to reach the Fish Passage Facility in any given year and would find themselves below the diversion without proper flow to continue upstream. Three possible scenarios exist for steelhead in this situation: 1) migrate downstream to areas of perennial spawning and rearing habitat; 2) potential relocation to perennial spawning and rearing habitat through the fish rescue procedure; and 3) predation or dessication if flows recede sufficiently and rescue or outmigration is not an option. NOAA Fisheries anticipates that the majority of fish trapped below the diversion will either migrate to downstream habitat or be rescued, and thus only a small portion of stranded fish will likely perish. Thus, the number of lost (i.e., dead) fish resulting from stranding is expected to be small and is offset by the adult steelhead spawning within previously inaccessible habitat upstream of the diversion. Restoring steelhead access into the high quality spawning/rearing habitat within tributaries upstream of the Robles Diversion will lead to increased reproductive success for the Ventura River steelhead population. The resulting increase in juvenile recruitment will likely enhance the species' ability to survive and recover.

Downstream juvenile migration

Effects from proposed diversion operations on downstream migrating steelhead within the Ventura River are, at best, not well understood. Steelhead smolt migration appears to be influenced most by changes in photoperiod, although streamflow magnitude, temperature and turbidity may also influence this behavior (Bjornn and Reiser 1991). Although smolt emigration can occur anytime sufficient streamflow is present, the majority of smolt outmigration on the Santa Clara River occurs during the late spring months of April and May (ENTRIX 2000).

During this seasonal time period storm flows are less prevalent and baseflow conditions are more likely utilized for downstream passage.

In the Ventura River, 50 cfs was suggested as the minimum flow allowing adult passage through the lower river based upon a discharge/depth analysis performed by Casitas' consultant (ENTRIX 1999). In short, the method (Thompson 1972) utilized in the analysis determines what discharge would cover 25% of the shallowest portion of the channel (e.g., critical riffle areas) to a predetermined depth deemed necessary for safe fish passage (0.6 feet is required for adult steelhead). However, the Thompson Method does not specify a depth criteria for steelhead smolt. Therefore, in determining a suitable smolt passage flow, NOAA Fisheries assumed that Ventura River smolt than adult trout, for which the Thompson Method requires a depth of 0.4 feet. Downstream smolt trapping on the Santa Clara River from 1994-1998 documented an average smolt length of approximately 160 mm and 210 mm for age 1 and age 2 fish, respectively, with the largest specimen measuring 310 mm (ENTRIX 2000). These smolt sizes are for the most part much smaller than the 250-500 mm average size of an adult cutthroat trout (Meehan and Bjornn 1991), which was one of the trout species investigated by Thompson. Factoring the 0.4 foot "trout" minimum depth into the Thompson analysis suggests that approximately 30 cfs would be needed for an average adult trout. Since steelhead smolts are smaller than adult trout, the 30 cfs flow will likely provide a depth sufficient for safe smolt passage downstream through the lower river. Also, the 30 cfs flow will be provided throughout the entire steelhead out-migration season of January 1 through June 30. Therefore, steelhead take associated with migration through the lower river is not anticipated. The proposed research and monitoring within the lower Ventura River will provide a better understanding of the flow magnitude and release pattern necessary for successful steelhead migration.

Effects on steelhead habitat below the diverison

The proposed downstream flow regime has the potential to affect instream spawning and rearing habitat within the lower Ventura River. Spawning and rearing habitat has been documented from below the Robles Diversion downstream to the Ventura River estuary (Evans 1947; Capelli 1997; Zimmerman 2002).[8] Research specific to the Ventura River detailing the relationship between flow and instream habitat condition is lacking. Therefore, NOAA Fisheries cannot at this time accurately describe potential impacts to spawning and rearing habitat in the lower river arising from the proposed down-stream release schedule. However, NOAA Fisheries believes the 30 cfs between-storm flow aimed at facilitating smolt emigration will likely improve current instream habitat variables (i.e., depth, cover, and available habitat area) important to rearing and spawning steelhead.

Effects on steelhead migration through the fish ladder

[8] The BA asserts that "No rearing currently occurs in the reach immediately downstream of the Robles facility and riparian forest habitat does not exist at the Robles site." This is a mischaracterization that appears repeatedly throughout the BA. The reach immediately below the Robles Diversion, and extending downstream approximately one-half mile does retain a surface flow in normal rainfall years, and for a considerably longer reach in above normal rainfall years. A survey conducted in 1995 documented the presence of rearing salmonids in this reach, and in fact recorded the highest density of fishes in the lower 14 miles of the main stem of the Ventura River (Capelli 1997). The Photograph No. 8 included in Appendix A of the BA documents riparian vegetation as present at the Robles Diversion and extending downstream.

Adverse effects to steelhead resulting from passage through the fish ladder structure are anticipated to be minimal. Steelhead passing through an artificial structure, such as a fish ladder, could experience disorientation and/or delay traveling through the facility; difficulty physically migrating through the ladder; and/or trouble finding and navigating the entrance and exit of the ladder structure. Problems fish encounter when passing through a fish ladder are most likely the result of faulty design and/or construction of the facility and would most likely result in non-lethal impacts similar to those described above. However, the Robles Fish Ladder was designed specifically for the unique conditions present within the Ventura River watershed. Substantial review and input was provided by agency biologists and engineers over the 4-year design process, resulting in the modification of several characteristics of the ladder to ensure problem-free operation and maximum passage efficiency (Borcalli and Associates 2000a; Borcalli and Associates 2000b). At this time it is impossible for NOAA Fisheries to estimate the number of fish likely to be injured at this unique facility. Nevertheless, NOAA Fisheries anticipates that any impacts occurring as a result of faulty fish ladder design and/or construction will be minimal and non-lethal. During the first several years, intensive monitoring and research of the passage conditions within the ladder will guide any modifications to the facility deemed necessary to lower documented adverse impacts. The Management Committee will utilize this analysis to recommend suggested operational changes to Casitas.

Effect resulting from implementation of the Critical Drought Protection Measures

Potential effects attributed to the possible future implementation of the Critical Drought Protection Measures are difficult to assess at this point in time for several reasons. First, the exact time and duration that the measures would be implemented is unknown at this time. Hydrologic patterns within Southern California appear to be cyclical in nature, with the Ventura watershed experiencing a drought sequence approximately every 30 years (U.S. Bureau of Reclamation 2003). The last drought cycle occurred during the late 1980's and early 1990's and lasted several years. Since this time, however, a wet period appears to have begun as indicated by the wet years of 1992, 1993, 1995, 1998 and 2000. Whether this is the start of a new climate regime (possibly a result of changing global weather patterns - i.e., global warming) or simply a small wet pattern embedded in a larger dry sequence is unknown at this time. However, with Lake Casitas approximately 80% full at the present time, it appears unlikely that drought protection measures will be necessary in the near future. It should also be noted that since Lake Casitas initially filled in 1978, drought conditions have never been severe enough (including the late 1980's drought period) to trigger the proposed measures.

The population size and distribution of steelhead when the drought measures are implemented would be integral to any effect determination. Effects on a steelhead population would have greater consequences to the survival and recovery of a critically small population (i.e., the current Ventura River steelhead population) than a larger, healthier population. Within the Ventura River, NOAA Fisheries anticipates that the proposed construction and operation of the Robles Fish Passage Facility will enhance the likelihood of steelhead survival and recovery in the future, likely leading to a larger, more stable steelhead population in the future.

Steelhead in the Ventura River have adapted to a highly variable environment characterized by increased drought incident, higher baseline water temperatures, and unpredictable stream flows

(Titus et al.1994). NOAA Fisheries theorizes that the southern steelhead population has weathered the harsh habitat conditions typical of southern California watersheds through various life history modifications, such as resident life-forms supplementing anadromous stocks and vice versa. This interchange between the anadromous and resident populations likely facilitates the continued existence of the species as a whole when one life form is naturally depressed (e.g., when drought conditions preclude successful anadromous migration between freshwater streams and the ocean). Since Ventura River steelhead have naturally adapted to the variable hydrologic regime present in the Ventura River, NOAA Fisheries does not expect that drought-related adjustments to downstream storm flow will significantly affect the Ventura River steelhead population. In addition, the anticipated increase in the abundance of the Southern California steelhead ESU resulting from fish ladder implementation will likely further attenuate any adverse effects resulting from future implementation of the drought management plan.

1) **Robles Diversion and Fish Passage Facility Maintenance**

Maintenance of facilities has the potential to affect steelhead should they be present during the maintenance activities (e.g., potential for direct injury to individuals) or if the activities affect their habitat (e.g., removal or destruction of habitat). To minimize potential adverse effects, the diversion and fish passage structures have been designed to be generally low maintenance and can typically function for an entire diversion season before requiring routine maintenance. This will allow maintenance activities to occur when there is little or no flow at the site, and therefore no steelhead present, under all but emergency conditions. In addition, should maintenance need to occur during the diversion season, the structures/facilities have been configured such that they are easily accessible for cleaning and other maintenance activities without requiring work in the channel. Other structures have been designed so that maintenance activities will not require actions where migrating steelhead may be affected (i.e., the structures will be placed outside the fish bypass system).

Sedimentation of the forebay pool can necessitate periodic removal of accumulated sediment and large storm events can create the need to shore up the earthen dam and forebay walls. These maintenance activities require moving dirt and rock within the channel using heavy equipment. To avoid potential adverse effects to steelhead, as noted above, these activities will occur when the streambed is dry. Currently this activity occurs every few years but is highly dependent on storm load conditions.

Reconstruction or repairs to the timber cutoff wall will typically occur during dry-channel conditions, often in conjunction with forebay maintenance activities. In such cases, there would be no adverse effect on steelhead. An extremely large storm event may damage the cutoff wall and necessitate emergency maintenance. The Robles facility can not operate if the timber cutoff wall is breached because no forebay can be maintained. Under such emergency conditions, construction could occur in a wet channel. Best management practices developed with NOAA Fisheries and CDFG would be employed to minimize sediment loading to the flowing water and to reduce potential, direct adverse effects to steelhead through movement of heavy equipment in the channel.

Maintenance of the stone weirs is expected to be minimal and limited to debris removal and replacement of the large stones, as necessary. Maintenance will occur only during dry conditions

when the channel is dewatered and therefore no impacts to steelhead are anticipated. Removal of debris will maintain the pools created by these structures and therefore will improve holding habitat for migrating steelhead. These activities will, therefore, result in a small, localized benefit to steelhead migratory habitat.

Large debris accumulation can affect diversion and fish screen operation, clogging portions of the fish screen and creating localized "hot spots" of increased screen velocity. The Robles Fish Passage Facility has been designed to minimize debris impacts on the functionality of the system through the existing sloped trash-rack at the headworks entrance and the debris fence located in the forebay. Proper operation of the trash-rack and debris fence will ensure that steelhead effects do not result from debris accumulation at the facility.

For maintenance and operational purposes, staff may access the facility using the low-flow crossing. Crossings will occur when flows are approximately zero to 15 cfs. Because of the additional monitoring and maintenance needs, the exact frequency of crossings is unknown. Crossings during dry conditions do not have the potential to adversely effect steelhead or their habitat as the crossing structure will be maintained by the low-head weirs and no steelhead will be present. When there is flow, the low flow conditions make it unlikely that steelhead will be present.

Major repairs to the fish screen or fish passage facilities will occur outside the migration period, if possible. If not, then the facilities will be shut down while repairs are made. This could result in steelhead passage being delayed for a brief period of time. Efforts will be made to minimize the period of time the facility is out of service. No direct effects on steelhead are anticipated during such repairs as there will be no steelhead in the facilities.

1) **Interim Robles Diversion Operations**

The interim Robles Diversion operations provide for a minimum 50 cfs down-stream release, when naturally available, below the diversion for the 10 days following a storm peak during the fish flow operations season (i.e., January 1 - June 30). Maintaining a 50 cfs flow for 10 days following a migratory storm event will ensure that adult steelhead will likely have access to the full 14 miles of habitat located below the diversion structure when flows allow. However, adult steelhead take in the form of stranding, predation or dessication may result if migrating fish reach the upper reaches of the Robles Reach and stream flow rapidly recedes due to a combination of diversion and groundwater effects.

NOAA Fisheries does not anticipate large numbers of fish to reach the diversion area for the following reason. Though largely dictated by the size and duration of each individual storm event, Casitas typically postpones diversion operations and bypasses all natural inflow until a day or two following a storm peak; this is done largely to minimize sediment input into Lake Casitas, as well as to avoid the high debris loads common to peak storm flows. Once diversion operations begin, downstream flows will likely be truncated to 50 cfs within a few days following all but the largest storm events. Rapidly receding storm flows have been shown to stop upstream fish migration (Shapovalov and Taft 1954). Absent a smooth recession of post-storm downstream flows, the vast majority of upstream migrating fish in the lower Ventura River will likely stop and spawn in perennial reaches of the mainstem such as those in and below the

Foster Park/Casitas Springs area. Furthermore, the 4 miles of stream below the diversion (Robles Reach) typically experience a predictable early summer de-watering regime, with subsurface flow usually originating at the downstream end of the reach and moving upstream as groundwater conditions worsen and incoming streamflow diminishes. The small number of fish anticipated to reach the Robles Reach during interim operations will likely move upstream as subsurface flows recede, working their way toward better habitat directly below the diversion.

NOAA Fisheries anticipates that any stranded fish will be located through the proposed search and rescue protocol and will be re-located if NOAA Fisheries and CDFG determine that the habitat conditions warrant such activity. Therefore, NOAA Fisheries anticipates that only a few fish during each of the two interim seasons will likely be in danger of stranding in the Robles Reach and the proposed search and rescue protocol will likely limit this impact to minor handling and relocation of each individual fish.

1) **Monitoring and Evaluation Activities**

This section presents the potential effects, both adverse and beneficial, of the monitoring and evaluation program. Several shorter-term evaluations or studies are proposed to provide additional information that will be used during the 5-year re-visitation of the initial fish flow operations. Longer term monitoring components are also proposed. The effects analysis has been sub-divided along the same lines as the monitoring program.

Short-Term Evaluations

The short term evaluations are studies designed to provide specific information that can be used by the Biology and Management committees in adaptive management of the proposed action and during the 5-year re-visitation. Effects of each individual evaluation are provided below.

Upstream Fish Migration Impediment Evaluation

Observations would be made periodically at low flow passage sites and/or other locations to measure flow, velocity, width, and depth and other habitat variables. Such activities can temporarily frighten or modify the behavior of fish inhabiting areas that are being surveyed. Such harassment would not substantially affect steelhead inhabiting surveyed habitats. Passive observations of the status of the sand bar at the mouth of the river will occur, but will not affect steelhead.

Evaluate Fish Movement through the Passage Facility

The majority of the monitoring to occur in the fish passage facility and immediately below the diversion dam would be passive. The fish passage facilities have been designed to provide easy access to the facilities. While the protocols of the monitoring program have not been specifically identified yet, it is anticipated that much of the monitoring would either occur through the grates that cover the facility or through passive observations made by lifting up the grates. Some observations may require getting down into the facilities, and fish in the facilities during these times could be harassed by the presence of the observer. Similarly, downstream observations of the pool below the spillway by snorkeling could frighten or disrupt the behavior of any fish

present in the pool area. However, care would be taken to avoid close contact with any fish inhabiting the area and thus potential affects are anticipated to be minor and temporary.

Evaluate Downstream Fish Migration through the Robles Reach

The migrant trapping program is anticipated to have a temporary, adverse effect on individuals captured in the trap during the length of the monitoring program. Installing two trapping locations on the Ventura River may lead to individual steelhead being trapped twice and therefore being subjected to the stresses of trapping, twice. Minor affects to steelhead would primarily result from temporary (e.g., hours) migration delay and handling of fish, both of which will be minimized by the provisions of the study protocol developed with NOAA Fisheries and CDFG. However, trapping and handling during monitoring activities can injure or kill some individuals, although trap related mortality is not expected to exceed 1 % (Sparkman 2002).

NOAA Fisheries anticipates the proposed monitoring outlined above will provide significant benefits to the species. Overall take resulting from the proposed monitoring is expected to be minimal.

Long-Term Monitoring Components

Monitor Robles Facility Operations

All of the sensors and gages used to calculate flow through the various parts of the proposed facilities will be built into the structure and therefore would not hamper, impede, or otherwise affect migrating steelhead. Over the lifetime of the facility, these sensors/gages may require maintenance that is covered under the maintenance of the facility section above.

Fish Passage Monitoring

The Vaki Riverwatcher will count up and down-stream adult steelhead migrants passing through the Fish Passage Facility. Because this is a passive, infrared device, monitoring activities will have no effect on the individuals being counted. Adult migrant counts will be used to determine if adult steelhead are successfully passing through the newly installed fishway. Because of the low numbers of steelhead expected in this portion of the Ventura River system, it is unclear how many adults will be observed using the new facilities in the short term.

Long-term tracking of fish counts at the Robles facility are anticipated to have an overall net benefit on the Ventura River steelhead population because it will provide resource mangers feedback on the status of the population and whether existing restoration and recovery actions are successful. This information will provide the necessary scientific basis for ongoing restoration efforts which will ultimately benefit the local population and the broader ESU.

1) **Cooperative Decision Making Process**

The intent of the Cooperative Decision Making Process is to provide forums for technical feedback, where necessary, and management-level recommendations relating to proposed operations. The goal of the process is to result in consensus-based recommendations after appropriate information is reviewed and considered. Future changes to the operation or design

of the facility will be ultimately decided by Reclamation after considering Management Committee recommendations, and are not expected to result in any impacts other than those already considered within this Biological Opinion. However, if future facility changes result in any new adverse effects not previously considered within this opinion, Reclamation would be required to re-consult as provided in 50 CFR §402.16.

Effects from Interrelated and Interdependent Actions

Effects to steelhead associated with the continued operation of Casitas Dam, Robles-Casitas Canal, and Matilija Dam were described as part of the environmental baseline section of this Biological Opinion. Both Casitas Dam and Robles-Casitas Canal are long-standing, permanent facilities where current operations are expected to continue into the foreseeable future; therefore, the project related effects described within the environmental baseline are expected to continue into the future.

Since 1958, Casitas Dam has critically impaired the natural flow regime of Coyote Creek and lower Ventura River. Steelhead have been, and will continue to be, prevented from migrating into and out of pristine spawning and rearing habitat that exists in upper Coyote and Santa Ana Creeks. Furthermore, absent any downstream releases from Casitas Dam, steelhead habitat within lower Coyote Creek will remain degraded and of little use to spawning and rearing fish. NOAA Fisheries does not anticipate any increase in impacts to the Southern California steelhead ESU from Casitas Dam operations as a result of the proposed action.

A group of federal, state and local agencies is currently investigating Matilija Dam removal as a means to restore the natural fluvial characteristics of the Ventura River. However, if Matilija Dam removal comes to fruition, steelhead-related benefits expected from the project (i.e., upstream fish passage and restored sediment transport) will likely not occur for decades since the proposal is in its infancy at this point in time. Thus, Matilija Dam will likely continue to block upstream and downstream steelhead migration for the near future, and past dam effects will persist for the most part. However, when Matilija Dam completely fills with sediment (likely to occur within the next several years), downstream transport of sediment and spawning gravel is anticipated to improve. Accumulation of spawning gravel in the currently sediment starved reach of Matilija Creek below the dam will greatly benefit steelhead spawning in that area.

Project-related Long Term Benefits to Steelhead

Although the proposed action is expected to disturb aquatic habitat and create short-term adverse effects, the action is also expected to produce an overall long-term benefit to steelhead. The proposed fish ladder and project operations are expected to increase the production of the Ventura River steelhead population by not only allowing for passage into previously inaccessible upstream habitat, but also improving habitat conditions in the lower river below the diversion structure. NOAA Fisheries believes that the proposed project will also increase the potential survival and recovery of the Southern California steelhead ESU.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. NOAA Fisheries maintains general familiarity with actions affecting steelhead within the Ventura River watershed, and is not aware of any activities that are reasonably certain to occur within the proposed action area and that would not require section 7 consultation.

VII. SUMMARY

The steelhead population in the Ventura River is potentially susceptible to any activity which affects hydrologic condition within the watershed, including the proposed construction and operation of the Robles Diversion and Fish Passage Facility. The Ventura River represents a highly managed and manipulated system, currently in a state far removed from historic, natural conditions. Water is removed annually via groundwater pumps and surface diversions, greatly diminishing spawning and rearing flows steelhead depend on for survival. Due to the three major dams (i.e., Casitas, Matilija, and Robles) and many smaller migration impediments which effectively block upstream passage, the prime steelhead habitat which still exists within upper tributaries remains largely inaccessible. The above factors are largely blamed for the >96% decline in the size of the Ventura River adult steelhead population. However, the proposed action is likely a critical first step in providing passage throughout the entire river, as well as improving steelhead habitat conditions and water quality within the watershed.

The proposed construction of the ladder is expected to result in minor, non-lethal adverse effects only in the short term, lasting no more than 8 months. Proposed interim operations improve upon the current downstream flow release and thus are expected to slightly improve steelhead migration, spawning and rearing conditions in the lower river during the two years of Fish Passage Facility construction. Beyond this, the completed project is expected to provide an overall net positive benefit over time by improving downstream habitat conditions and increasing steelhead passage opportunity, which could increase abundance and reproduction throughout the river. The operational scheme proposed at the Robles Diversion Fish Passage Facility will furnish a downstream flow regime that adequately mimics the natural storm recession rate, and thus the inherent migratory triggers and cues, to which Ventura River steelhead have grown accustomed during their evolutionary development. Operations will also ensure that water released downstream of the diversion is of sufficient duration and depth to ensure successful migration conditions for the majority of migrating steelhead. Finally, released flows will be structured to help maintain existing spawning and rearing habitat within the lower river between storm events. Therefore, NOAA Fisheries anticipates the construction and long-term operation of the Robles Diversion Fish Passage Facility will increase the numbers, reproduction and distribution of steelhead within the Ventura River.

As a result of interim operations, steelhead from the Ventura River population could be stranded within the Robles Reach by diminishing surface flows. However, as mentioned previously, Reclamation has proposed to rescue fish stranded below the diversion, which makes the

likelihood of steelhead mortality from stranding unlikely during the interim operations period. When considering both the small potential for mortality and the short duration of effect (2 years of interim operations), NOAA Fisheries does not expect interim operations to hinder the survival of the species. Therefore, NOAA Fisheries finds that the interim operations are not expected to reduce the likelihood of both the survival and recovery of steelhead within the Ventura River or the southern California ESU.

VIII. CONCLUSION

After reviewing the best scientific and commercial data available, the current status of steelhead, the environmental baseline for the action area, the effects resulting from the proposed action, and any anticipated cumulative effects, it is NOAA Fisheries' biological opinion that the proposed project action is not likely to jeopardize the continued existence of the Southern California steelhead ESU.

IX. INCIDENTAL TAKE STATEMENT

Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. NOAA Fisheries interprets the term "harm" as any effect which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the proposed action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary, and must be undertaken by Reclamation so that they become binding conditions of any grant or permit issued to Casitas, as appropriate, for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (1) fails to assume and implement the terms and conditions or (2) fails to require Casitas to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Reclamation must report the progress of the action and its impact on the species to NOAA Fisheries as specified in the incidental take statement. (50 CFR §402.14(i)(3))

Amount or extent of take

NOAA Fisheries anticipates that incidental take of Southern California steelhead is likely to occur as a result of implementation of the proposed project. The quantity of incidental take is outlined below with regard to individual project actions.

Robles Diversion and Fish Passage Facility Operation

The best available information has been used to estimate that the number of Southern California steelhead that may perish each year due to downstream stranding is 5% of the annual run. During the initial phase of Fish Passage Facility operation, take should be no more than 5 fish per year. However, as the Ventura River steelhead population grows in the future, the amount of steelhead strandings will likely increase in relationship to the population growth.

Interim Operations

A small number of fish may be stranded in pools below the Robles Diversion when flows recede. All of these fish will be captured and relocated, as warranted by habitat conditions. NOAA Fisheries anticipates that no more than 1% of the total number of fish relocated with die as a result of trapping and handling.

Monitoring and Evaluation Activities

Lethal take is likely inherent within any sampling method involving trapping and/or handling of live specimens. However, mortality rates for age 1+ steelhead smolts trapped with a rotary screw trap in Redwood Creek, California were 0.56% (Sparkman 2002). Therefore, smolt mortality resulting from the use of rotary screw traps during proposed Ventura River monitoring activities is not expected to exceed 1% of fish captured.

Effect of take

In the accompanying biological opinion, NOAA Fisheries concluded the anticipated level of take associated with the project action is not likely to jeopardize the continued existence of the southern California steelhead ESU.

Reasonable and Prudent Measures

NOAA Fisheries believes the following Reasonable and Prudent Measures are necessary and appropriate to minimize and monitor incidental take of steelhead.

1) Reclamation shall ensure that steelhead take is fully minimized during the two year Fish Passage Facility construction period.

2) Reclamation shall monitor estuary breaching so that fish flow augmentation procedures are performed correctly.

3) Reclamation shall modify the existing bypass radial gate during project construction to allow the potential for fine downstream flow adjustments, if deemed necessary in the future.

4) Reclamation shall monitor and report take occuring during future construction and operation of the Fish Passage

X. TERMS AND CONDITIONS

In order to be exempt from the take prohibitions of the ESA, Reclamation must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring conditions. These terms and conditions are non-discretionary:

The following Terms and Conditions implement Reasonable and Prudent Measure No. 1.

1. In the event that fish ladder construction is complete but downstream weir construction is delayed beyond the completion date of the fishway, Reclamation and Casitas shall modify the current vehicle crossing downstream as well as the intake to the fish ladder in a way that allows upstream fish passage into the ladder facility. In this event, Casitas will work closely with CDFG and NOAA Fisheries personnel when designing the weir modification and will present final plans to NOAA Fisheries for approval one month prior to the onset of construction activities.

Measure No. 2.

1. Initial implementation of fish augmentation each season is predicated on prior breaching of the Ventura River estuary. Therefore, Reclamation and Casitas shall implement a mechanism to monitor the breaching of the Ventura River estuary. NOAA Fisheries recommends that Reclamation and Casitas investigate implementing a remote video sensor to accomplish this task. Prior to implementation, Reclamation and Casitas shall submit the proposed monitoring technique to NOAA Fisheries for approval.

Measure No. 3.

1. Based upon guidance from research and monitoring activities, fish ladder operations could potentially change in the future. Flow through the auxiliary flow release is currently designed to be metered out via a stage control gate. To ensure that higher flows can be delivered downstream if required in the future, Reclamation shall change the auxiliary gate to a volume control gate to allow fine adjustment of downstream releases and to ensure auxiliary flow releases are not directly linked to water elevation within the forebay. Reclamation and Casitas shall work closely with CDFG and NOAA Fisheries engineers to accomplish this task.

Measure No. 4.

1. Reclamation shall submit an annual summary of all take associated with Robles Diversion and Fish Passage Facility operation. The take summary shall be submitted no later than July 31 of each year and shall include the following information:

a. A detailed account of the number of fish killed or injured during each facet of the proposed action.

b. An explanation of the likely cause of take.

c. A discussion of any potential operational changes which may decrease the likelihood of future take at the Robles Facility.

NOAA Fisheries believes that few steelhead will be incidentally taken as a result of the proposed action. The Reasonable and Prudent Measures, with their implementing Terms and Conditions,

are designed to minimize the impact of incidental take that might otherwise result from the proposed action. However, if the level of incidental take is greater than expected, reinitiation of consultation will be required to reassess the impacts of the proposed action. For example, if 6 or more steelhead are found injured or dead within the action area per year or screw trap mortality surpasses 1% , the level of take anticipated has been exceeded. Reclamation must immediately provide an explanation of the causes of the taking and review with NOAA Fisheries the need for possible modification of the reasonable and prudent measures.

Conservation Measures

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, to help implement recovery plans, or to develop information.

1. NOAA Fisheries recommends that Reclamation and Casitas investigate the mechanism behind fish attraction into the Ventura River and any potential impacts that diversion operations may have on the attraction process. Extensive analysis presented within this Biological Opinion addresses steelhead passage within the lower Ventura River. However, relatively little is known about how the manipulated flow patterns of the Ventura River affect fish attraction into the lagoon and adult/juvenile movement through the lower river.

XI. REINITIATION OF CONSULTATION

This concludes formal consultation on the actions outlined in the project BA (U.S. Bureau of Reclamation 2003). As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

XII. LITERATURE CITED

Alabaster, J. S. 1970. River flow and upstream movement and catch of migratory salmonid. Journal of Fish Biology 2: 1-13.

Barnhart, R. B. 1991. Steelhead (*Oncorhynchus mykiss*). Pages 324–336 *in* J. Stolz and J. Schnell (eds.) Trout. Stackpole Books, Harrisburg, PA.

Bell, M. C. 1991. Fisheries Handbook of Engineering Requirments and Biological Criteria. U.S. Army Corps of Engineers, North Pacific Divsion. Portland, Oregon.

Berg, L. and T. G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. Canadian Journal of Fisheries and Aquatic Sciences 42:1410-1417.

Beschta, R. L. and W. L. Jackson. 1979. The intrusion of fine sediments into a stable gravel bed. Journal of the Fisheries Research Board of Canada 36:207-210.

Bjornn, T. C., M. A. Brusvens, M. P. Molnau, J. H. Milligan, R. A. Klamt, E. Chacho, and C. Schaye. 1977. Transport of granitic sediment in stream and its effect on insects and fish. University of Idaho, Forest, Wildlife and Range Experiment Station, Bulletin 17, Moscow.

Bjornn, T. C., and D. W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83–138 *in* W. R. Meehan (ed.) Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. American Fisheries Society Special Publication 19.

Borcalli and Associates, Inc. 2000a. Robles diversion dam fish screen and fishway project: design criteria. Prepared for Casitas Municipal Water District. 2000.

Borcalli and Associates, Inc. 2000b. Robles diversion dam hydraulic analysis. Prepared for Casitas Municipal Water District. 2000.

Busby, P. J., T. C Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and I. V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U. S. Department of Commerce, NOAA Technical Memorandum. NMFS-NWFSC-27, 261 pp.

California Department of Fish and Game and National Marine Fisheries Service. 2001. Final Report on Anadromous Salmonid Fish Hatcheries in California. Joint Hatchery Review Committee. Review Draft June 27, 2001.

California Trout, Inc. 1998. Letter from Jim Edmondson, Conservation Director, California Trout, Inc. to Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. re: "Sixty Day Notice of Intent to Sue for Violation of the Endangered Species Act (ESA)." December 18, 1998.

Capelli, M. H. 1997. Ventura River steelhead survey, Spring 1995, Ventura County, California. Prepared for the California Department of Fish and Game, Region 5. August 1997. 16 pp. and appendices.

Casitas Municipal Water District. 1954. Agreement between the Ventura County Flood Control District and the Ventura River Municipal Water District. May 25, 1954.

Cederholm, C. J., and D. J. Martin. 1983. Habitat requirements and life history of wild salmon and trout. Pages 88–102 *in* Proceedings of the Salmon and Trout Conference, March 11-12, Seattle University, Washington.

Chapman, D. W. 1988. Critical review of variables used to define effects of fines in redds of large salmonids. Transactions of the American Fisheries Society 117:1-21.

Chilcote, M. W. 2002. The adverse reproductive consequences of supplementing natural steelhead populations in Oregon with hatchery fish. In press.

Chubb, S. 1997. Ventura watershed analysis, focused input for steelhead restoration. Los Padres National Forest, Ojai Ranger District. Draft, June 3, 1997.

Clanton, D. A. and J. W. Jarvis. 1946. Field inspection trip to the Matilija-Ventura river watershed in relation to the construction of the proposed Matilija dam. California Division of Fish and Game, Sacramento, California.

Clanton, D. A. and J. White. 1946. Investigation of steelhead spawning areas of Coyote Creek system, Ventura County Flood District No. 1 - Coyote Creek Dam. Memorandum from the Bureau of Fish Conservation, dated September 26, 1946.

Crouse, M. R., C. A. Callahan, K. W. Malueg, and S. E. Dominguez. 1981. Effects of fine sediments on growth of juvenile coho salmon in laboratory streams. Transactions of the American Fisheries Society 110:281-286.

Dettman, D. H. and D. W. Kelley. 1986. Assessment of the Carmel River steelhead resource Volume 1. Biological Investigations. Prepared for the Monterey Peninsula Water Management District, Monterey, California.

EDAW, Inc., Earth Sciences Associates, and D. W. Kelley. 1981. Ventura River conjunctive use agreement, Final Environmental Impact Report [*uncertified*, inclusive of Draft EIR dated June 1978]. Prepared for Casitas Municipal Water District. October 1981.

ENTRIX, Inc. and Woodward Clyde Consultants. 1997. Ventura River Steelhead Restoration and Recovery Plan. December 1997. Prepared for: Casitas Municipal Water District, City of San Buenaventura, Ventura County Flood Control District, Ventura County Transportation Department, Ventura County Solid Waste Management Department, Ojai Valley Sanitary District, Ventura River County Water District, Ojai Basin Groundwater Management Agency, Meiners Oaks County Water District, and Southern California Water Company.

ENTRIX, Inc. 1999. Evaluation of natural passage barriers on the Ventura River downstream of the Robles Diversion. Prepared for Borcalli and Associates. December 2, 1999.

ENTRIX, Inc. 2000. Results of fish passage monitoring at the Vern Freeman Diversion Facility, Santa Clara River, 1994-1998. Prepared for the United Water Conservation District. March 14, 2000.

ENTRIX, Inc. 2000. Mitigated negative declaration for the Robles Diversion Dam Fish Screen and Fishway. Prepared for Casitas Municipal Water District. December 4, 2000.

Evans, Willis A. 1947. Ventura County, Ventura River Steelhead Situation. Bureau of Fish Conservation, March 29, 1947.

Fugro West, Inc. 1996b. San Antonio Creek southern steelhead habitat characterization, Ventura County, California. Report prepared for Ventura County Flood Control District. February, 1996.

Hard, J. L., R. P. Jones, Jr., M. R. Delarm, R. S. Waples. 1992. Pacific Salmon and Artificial Propagation under the Endangered Species Act. NOAA Technical Memorandum NMFS-NWFSC-2.

Huntsman, A. G. 1948. Freshets and fish. Transactions of the American Fisheries Society 75: 257-266.

KMZ Rosenman. 2002. Letter from Stuart Richter (KMZ Rosenman) to Rodney McInnis (NOAA Fisheries) re: "Robles Diversion (Ventura River) Consultation." August 30, 2002.

Kraft, M. E. 1972. Effects of controlled flow reduction on a trout stream. Journal of the Fisheries Research Board of Canada 29: 1405–1411.

Laughton, R. 1991. The movement of adult Atlantic salmon (*Salmo salar* L.) in the River Spey as determined by radio telemetry during 1988 and 1989. Scottish Fisheries Research Report 50.

Meehan, W. R., M. A. Brusven and J. F. Ward. 1987. Effects of artificial shading on distribution and abundance of juvenile chinook salmon (*Oncorhynchus tshawtscha*). Great Basin Naturalist 47:22-31.

Meehan, W. R., and T. C. Bjornn. 1991. Salmonid distribution and life histories. Pages 47–82 *in* W. R. Meehan (ed.) Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. American Fisheries Society Special Publication 19.

Moore, M. R. 1980a. Factors influencing the survival of juvenile steelhead rainbow trout (*Salmo gairdneri gairdneri*) in the Ventura River, California. Master of Science Thesis, Humbolt State University. June 1980.

Moyle, P. B. 1976. Inland fishes of California. University of California Press, Berkeley.

National Marine Fisheries Service. 1997. Endangered and threatened species: listing of several evolutionary significant units (ESUs) of West Coast steelhead. Federal Register 62(159): 43937–43953.

National Marine Fisheries Service. 2002a. Letter from R. McInnis to Bill Luce (U.S. Bureau of Reclamation) commenting on the Final Robles Biological Assessment submitted in November 2001. February 26, 2002. 6 pages.

National Marine Fisheries Service. 2002b. Internal memo from Rick Rogers to Jim Lecky titled "Summary of the Thompson Method for determining stream flows for fish life". September 4, 2002. 2 pages.

National Marine Fisheries Service. 2002c. Letter from R. McInnis to J. Johnson (Casitas Municipal Water District outlining final recommended operating scenario for proposed Roble Fish Passage Facility. October 28, 2002. 4 pages.

Nehlsen, W., J. E. Williams, and J. A. Lichatowich. 1991. Pacific salmon at the crossroads: Stocks at risk from California, Oregon, Idaho, and Washington. Fisheries 16(2):4-21.

Nielsen, J. L. 1994. Molecular Genetics and the Conservation of Salmonid Biodiversity: *Oncorhynchus* at the Edge of their Range. In Molecular Genetic Approaches in Conservation. Ed. Thomas B. Smith and Robert K. Wayne.

Nielsen, J. L., T. E. Lisle, and V. Ozaki. 1994. Thermally stratified pools and their use by steelhead in northern California streams. Transactions of the American Fisheries Society 123: 613–626.

Nielsen, J. L., C. A. Gan, J. M. Wright, D. B. Morris, and W. K. Thomas. 1996. Biogeographic distributions of mitochondrial and nuclear markers for southern steelhead. Molecular Marine Biology (1994) 3(5), 281-293.

Richard C. Slade and Associates. N.D. Hydrologic Assessment of the Upper Ventura River Groundwater Basin.

Roper, B. B., D. L. Scarnecchia, and T. J. La Marr. 1994. Summer distribution of and habitat use by chinook salmon and steelhead within a major basin of the South Umpqua River, Oregon. Transactions of the American Fisheries Society 123: 298–308.

Schmetterling, D. A., Clancy, C. G., and T. M. Brandt. 2001. Effects of riprap bank reinforcement on stream salmonids in the Western United States. Fisheries 26: 6-13.

Scott, M. L., G. T. Auble and J. M. Friedman. 1997. Flood dependency of cottonwood establishment along the Missouri River, Montana, USA. Ecological Applications 7:677-690.

Shapovalov, L., and A. C. Taft. 1954. The life histories of the steelhead rainbow trout *(Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*) with special reference to Waddell Creek, California, and recommendations regarding their management. State of California, Department of Fish and Game, Fish Bulletin 98.

Sparkman, M. D. 2002. Annual Report: Upper Redwood Creek juvenile salmonid downstream migration study, 2000-2001. Report prepared for the California Department of Fish and Game. January, 2002.

Swift, C. C., T. R. Haglund, M. Ruiz, and R. N. Fisher. 1993. The status and distribution of the freshwater fishes of Southern California. Bulletin of the Southern California Academy of Sciences 92: 101–167.

Thompson, Ken. 1972. Determining stream flows for fish life. Proceedings from the Pacific Northwest River Basins Commission - Instream Flow Requirements Workshop. March 15-16, 1972.

Titus, R. G., D. C. Erman, and W. M. Snider. 1994. History and status of steelhead in California coastal drainage south of San Francisco Bay. Manuscript, September 27, 1994, accepted for publication in *Hilgardia*.

U.S. Bureau of Reclamation. Revised Biological Assessment for Diversion Operations and Fish Passage Facilities at the Robles Diversion, Ventura River, California. Biological Assessment prepared for the National Marine Fisheries Service. February 21, 2003.

Vaki-DNG Ltd. 2000. Letter from B. Traustason (Vaki-DNG Ltd.) to T. McCarthy (Water Management Technologies) regarding turbidity levels. December 13, 2000.

Washington Department of Fish and Wildlife (WDFW). 2000. Fishway Guidelines for Washington State (Draft). April 25, 2000.

Zimmerman, C. 2002. Rainbow trout and steelhead studies in the Matilija/Ventura River basin: Summary of activities. Western Fisheries Research Center. U.S. Geologic Survey.

PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF ORANGE

I am employed by the law office of Rutan & Tucker, LLP in the County of Orange, State of California. I am over the age of 18 and not a party to the within action. My business address is 18575 Jamboree Road, 9th Floor, Irvine, CA 92612. My electronic notification address is mslobodien@rutan.com.

On March 11, 2021, I served on the interested parties in said action the within:

NOTICE OF ERRATA RE STATUS CONFERENCE REPORT OF CROSS-DEFENDANT CASITAS MUNICIPAL WATER DISTRICT

as stated below:

☒ By transmission via E-Service to File & ServeXpress as listed on File & ServeXpress service list.

Executed on March 11, 2021, at Irvine, California.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Mia R. Slobodien
(Type or print name)

(Signature)