FINAL SUPPLEMENT TO THE ENVIRONMENTAL IMPACT REPORT

San Clemente Dam Seismic Safety Project

Chapters 1, 2, 3, 4, 6 and Appendices

July 2012

Prepared for

California Department of Water Resources

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Final

Supplement to the Environmental Impact Report

for the

San Clemente Dam Seismic Safety Project

Prepared for

California Department of Water Resources

Volume 1, Chapter 1.0 – 3.0

July 2012

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Final

Supplement to the Environmental Impact Report

for the

San Clemente Dam Seismic Safety Project

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Volume 3, Chapter 6.0 and Appendices

July 2012

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INFORMATION COVER SHEET

Final Supplement to the San Clemente Dam Seismic Safety Project Final Environmental Impact Report/Environmental Impact Statement

California State Clearinghouse No: 2005091148

Lead Agency: California Department of Water Resources

CEQA Responsible and Trustee Agencies: California Department of Fish and Game (CDFG), California Public Utilities Commission, Monterey Peninsula Water Management District, Central Coast Regional Water Quality Control Board

Project Sponsor/Proponent: California American Water Company (CAW)

Project Title: San Clemente Dam Seismic Safety Project

Project Location: The project is located in an unincorporated area of Monterey County, California, at the confluence of the Carmel River (River Mile 18.5) and San Clemente Creek, approximately 15 miles southeast of the City of Carmel-by-the-Sea and 3.7 miles southeast of Carmel Valley Village.

Project Purpose, Need & Objectives: The need for the San Clemente Dam Seismic Safety Project, including components described in the Draft SEIR, is to increase dam safety to meet current design standards. The purposes and objectives for the project are to meet current standards for withstanding a Maximum Credible Earthquake and Probable Maximum Flood at San Clemente Dam, provide fish passage at the dam, maintain a point of diversion to support existing water supply facilities, water rights and services, and minimize financial impacts to California-American Water rate payers.

Abstract: The proposed project described in the December 31, 2007 Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) has been revised by California American Water Company to meet regulatory requirements, to provide better road access to the project, and to maintain the project construction schedule.

This Final Supplement to the final EIR (Final SEIR) has been prepared to describe the revised project features, to analyze potential impacts associated with the changes to the project, and to propose mitigation for the impacts. California American Water Company proposes to remove San Clemente Dam and reroute the Carmel River, as described in Alternative 3 of the FEIR/EIS. As with the Proposed Project described in the FEIR/EIS, the revised Project described in the Final SEIR will meet the purpose, need and objectives. The project consists of bypassing about 2500 feet of the Carmel River upstream of the dam by cutting a channel between Carmel River and San Clemente Creek; constructing a diversion dike; stabilizing sediment slopes; and demolishing the dam and fish ladder. The bypassed portion of Carmel River will be used as a disposal area for the accumulated sediment.

Date of Implementation: The San Clemente Dam Seismic Safety Project will be implemented within three to five years after project approval, including environmental review, permitting, design, infrastructure improvements, and all aspects of construction or demolition

List of possible permits, approvals, and licenses: See EIR/EIS Chapter 1.5 “Overview of Permit Approval and Consultation Requirements, San Clemente Dam Seismic Safety Project” for information.

Location of Background Information: You may access the Final SEIR and find more information about the project and the responsible agencies on the DWR website at - https://sanclementedam.water.ca.gov

Copies of this Draft SEIR are also available for public review at the following locations:

California-American Water Co. Monterey Division 50 Ragsdale Drive, Suite 100 Monterey, CA 93942-0951	City of Monterey Library 625 Pacific Street Monterey, CA 93940
Monterey Peninsula Water Management District 5 Harris Court, Building G Monterey, CA 93940	City of Carmel-by-the-Sea, Harrison Library Ocean Avenue/Lincoln Avenue City of Carmel-by-the-Sea, CA 93921

To request additional copies of this Final SEIR or for additional information, please contact:

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ABBREVIATIONS AND ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AASHTO	American Association of State Highway and Transportation Officials
ADPA	Archaeological Data Preservation Act
ADT	Average Daily Traffic
AEP	Association of Environmental Professionals
AF	acre feet
AFY	acre-feet/year
AMBAG	Association of Monterey Bay Area Governments
amp	ampere
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
ARB	Air Resources Board
ASR	aquifer storage and recovery
BA	Biological Assessment
BACT	Best Available Control Technology
BMPs	Best Management Practices
BO	Biological Opinion
BRM	bedrock mortar
CAA	Clean Air Act (Federal)
CAAA	Clean Air Act Amendments
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CAT	Caterpillar (bulldozer)
CAW	California American Water
CCAA	California Clean Air Act
CCRWQCB	Central Coast Regional Water Quality Control Board
CDFG	California Department of Fish and Game
CDHS	California Department of Health Services
CDMG	California Division of Mines and Geology
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CEQA	California Environment Quality Act

CESA	California Endangered Species Act of 1984
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geologic Survey
CHL	California Historical Landmark
CMP	Construction Management Plan
CNDDB	California National Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CPUC	California Public Utilities Commission
CRDRP	Carmel River Dam and Reservoir Project
CRLF	California red-legged frog
CRHR	California Register of Historical Resources
CRP	Conservation Reserve Program
CRWC	Carmel River Watershed Conservancy
CSLC	California State Lands Commission
CVFP	Carmel Valley Filter Plant
CVMP	Carmel Valley Master Plan
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
CWP	Coastal Water Project
cy	cubic yards
CY	construction year
DA	Department of the Army
dB	decibel
dBA	decibels on the A-weighted scale
DEIR	Draft Environmental Impact Report
DHS	(California) Department of Health Services
DO	dissolved oxygen
DPM	Deputy Project Manager
DPR	(California) Department of Parks and Recreation
DPS	Distinct Population Segment
DSOD	Division of Safety of Dams
DWR	(California) Department of Water Resources
EC	Environmental Coordinator
ECMP	EPNG Environmental Compliance Management Plan

ECS	Environmental Compliance Supervisor
EFZ	earthquake fault zone
EI	Environmental Inspector
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJSA	Environmental Justice Study Area
EM	Environmental Manager
EMFAC	Emissions Factors
EO	Executive Order
FMP	Federal Maintenance Plan
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESALs	equivalent single axle loads
ESJA	environmental justice study area
ESU	Endangered Species Unit
ESUs	Evolutionarily Significant Units
FEMA	Federal Emergency Management Agency
FMP	Federal Maintenance Plan
fsp	feet per second
g/sec	gallons per second
gpm	gallons per minute
GCC	Global Climate Change
GCD	General Conformity Determination
GCR	General Conformity Rule
GHG	greenhouse gas
GIS	Geographical Information System
GPS	Global Positioning Software
H^2S	Hydrogen Sulfide
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HAP	hazardous air pollutant
HCA	High Consequence Area
HCM	Highway Capacity Manual
HP	horsepower
HRI	Historic Resources Inventory
HUD	Housing and Urban Development
I/M	Inspection and maintenance (program)

IRWMP	Integrated Regional Water Management Plan
JPA	Joint Powers Authority
kV	kilovolt
kVa	kilovolt-ampere
kW	kilowatt
LEDPA	least environmentally damaging practicable alternative
L	limited
lb	pound
Ldn	day-night sound level
Leq(24)	24-hour equivalent sound level
LOS	level of service
LPD	Los Padres Dam
M	moderate
m/s	meters per second
m^2	Meter (squared)
m^3	cubic meters
MAOP	maximum allowable operating pressure
MBFZ	Monterey Bay Fault Zone
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MCE	Maximum Credible Earthquake
MCWD	Marina Coast Water District
MCRMAPD~~BID~~	Monterey County *RMA-*Planning ~~*and Building Inspection*~~ Department
MEI	Mussetter Engineering, Inc.
mg/l	milligrams per liter
mgd	million gallons per day
MMCRP	Mitigation Monitoring Compliance Reporting Plan
MMP	Mitigation Monitoring Plan
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MP	milepost
mph	miles per hour
MPWMD	Monterey Peninsula Water Management District
MRWPCA	Monterey Regional Water Pollution Control Agency
MSL	Meters above sea level
MUC	Multiple Use Class
MWH	Montgomery, Watson and Harza
MVM	million vehicle miles

MY	migration year
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCCAB	North Central Coast Air Basin
NDDB	Natural Diversity Data Base
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NLPD	New Los Padres Dam
NMCH	see ROG, ROC
NMFS	National Oceanic and Atmospheric Administration Fisheries
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
NTUs	Nephelometric Turbidity Units
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O_3	ozone
O&M	operation and maintenance
OCRB	Old Carmel River Dam Bridge
OCRD	Old Carmel River Dam
OD	outside diameter
OHP	(California) Office of Historic Preservation
OHV	off-highway vehicle
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
p	pressure (sound)
Pb	lead
p_o	referenced pressure
PCE	passenger car equivalent
PE	Project Engineer

PEA	Proponent's Environmental Assessment
PERP	Portable Equipment Registration Program
PFMC	Pacific Fisheries Management Council
PG&E	Pacific Gas and Electric
PHI	Points of Historical Interest
PM_{10}	particulate matter less than 10 microns
PMF	Probable Maximum Flood
ppm	parts per million
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
P/SM	Pajaro/Sunny Mesa Community Services District
RDEIR	Recirculated Draft Environmental Impact Report
PVC	Polyvinyl Chloride
RFFA	Reasonably Foreseeable Future Actions
RHI	Rearing Habitat Index
RM	River Mile
RMP	Resource Management Plan
RO	reverse osmosis
ROC	reactive organic compounds
ROD	Record of Decision
ROG	Reactive organic gases
RSPA	Research and Special Programs Administration
RTU	remote terminal unit
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SBC	Southern Bell Communications
SCAQMD	Southern California Air Quality Management District
SCCC	South-Central California Coast
SCD	San Clemente Dam
SCEDC	Southern California Earthquake Data Center
scf	standard cubic foot
SCS	Soil Conservation Service
SEV	Severity of Effect
SHEMP	Seismic Hazards Evaluation and Mitigation Plan
SHHA	Sleepy Hollow Homeowners Association

SHPO	(California) State Historic Preservation Office
SHSRF	Sleepy Hollow Steelhead Rearing Facility
SHW	Sleepy Hollow Weir
SIP	State Implementation Plan
SO	sulfur oxide
SO^2	sulfur dioxide
SOMP	Sediment Operation and Management Plan for Fish Passage
SPL	sound pressure level
SPCC Plan	Spill Prevention Containment and Countermeasure Plan
SR	State Route
SSC	Suspended Sediment Concentrations
Sta	Station
SWRCB	State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
TCP	traditional cultural properties
TES	threatened, endangered, and special-status
TI	Traffic Index
TCPs	traditional cultural properties
UECRM Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
URBEMIS	Urban Emissions (software)
USACE	United States Army Corps of Engineers
USC	United States Code
ug/L	Barium concentration
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
vpd	vehicles per day
vph	vehicles per hour
WCC	Woodward-Clyde Consultants
WY	water year
YOY	young-of-the-year

1.0 INTRODUCTION

1.1 AUTHORIZATION AND AGENCY ROLES

The California Department of Water Resources (DWR) and the U.S. Army Corps of Engineers (USACE) ~~have~~ prepared ~~this~~ **the** Final Environmental Impact Report (EIR) and Environmental Impact Statement (EIS) under the California Environment Quality Act (CEQA) of 1970, and the National Environmental Policy Act (NEPA) of 1969.

The EIR/EIS ~~addresses~~ **addressed** the San Clemente Dam Seismic Safety Project. The EIR/EIS is an informational document for both lead agency decision-makers and the public regarding the environmental effects of the proposed San Clemente Dam Seismic Safety Project. The DWR is the state lead agency ~~responsible for certifying this~~ **and certified the final** EIR/EIS **on December 31, 2007. DWR** ~~and filing~~ **filed** a Notice of Determination (NOD) under CEQA **on March 14, 2011.**~~, and t~~ **T**he USACE is the federal lead agency responsible for issuing a Record of Decision (ROD) under NEPA. The National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) are federal cooperating agencies.

1.2 AGENCY DECISIONS TO BE MADE

The DWR Division of Safety of Dams (DSOD) commissioned engineering studies in the early 1990's to evaluate seismic safety of SCD. These studies concluded that the Dam could suffer structural damage leading to the potential loss of the reservoir during a Maximum Credible Earthquake (MCE). In addition, under the Probable Maximum Flood (PMF), water could overtop the Dam, possibly eroding the downstream abutment area and posing the risk of dam failure. Based on these findings, DSOD has required that SCD be brought into compliance to withstand loading from a MCE on nearby faults and safely pass the PMF. The MCE at the Dam site was determined by DSOD to be a magnitude 7.0 event originating from the Tularcitos Fault, 1.25 miles away. The PMF at the Dam site was determined by DSOD to be about 81,000 cfs. CAW has filed a design application with DSOD to strengthen San Clemente Dam to bring it into compliance with DSOD requirements. DSOD has determined that the San Clemente Dam Seismic Safety Project may have a significant environmental impact and therefore requires the preparation of an EIR.

As part of the SCD Seismic Safety Project, CAW has applied to the USACE for authorization to deposit approximately 3,200 cubic yards of fill material into Waters of the U.S. to strengthen SCD. This application is being processed under Section 404 of the Clean Water Act (CWA). The USACE ~~has~~ determined that the SCD Seismic Safety Project may have a significant impact on the quality of the human environment and therefore ~~requires~~ **required** preparation of an EIS. **Since DWR filed the NOD, California American Water Company, the Project Proponent, identified several necessary changes to Alternative 3. DWR, as the lead agency, evaluated the**

proposed changes, and determined that a supplement to the Final EIR (SEIR) needed to be prepared.

1.3 PROJECT PURPOSE, NEED & OBJECTIVES

The need for the SCD Seismic Safety Project is to increase dam safety to meet current standards for withstanding a MCE and passing the PMF at the Dam.

The purposes and objectives for the project under NEPA and CEQA are to:

- Protect public safety.
- Provide fish passage at the Dam.
- Maintain a CAW point of diversion on the Carmel River to support existing water supply facilities, water rights, and services.
- Minimize financial impacts to CAW rate payers.

CAW's Proponent's Proposed Project and the alternatives to it ~~that are~~ **were** evaluated in ~~this~~ **the** EIR/EIS **and met** ~~meet~~ the need of eliminating safety risks associated with the MCE and PMF at the Dam and address**ed** the objectives stated above.

The revisions to Alternative 3 as described and evaluated in this ~~*Draft*~~ *Final* SEIR will fulfill the purpose of eliminating safety risks associated with the MCE and PMF at SCD and will address the objectives stated above.

1.4 PROJECT HISTORY

In 1980, DSOD requested that CAW evaluate the ability of the Dam to safely pass the PMF and withstand the MCE. Woodward-Clyde Consultants (WCC) was retained by CAW and completed an initial report in 1982. Although this preliminary report concluded that the Dam had adequate strength to resist the loadings imposed by either of these events, DSOD requested additional analysis, which was conducted by WCC and submitted by CAW. In a letter dated May 9, 1986, DSOD concluded that the proposed MCE and the response spectra were satisfactory; however, DSOD requested a more detailed analysis.

During the 1980s, MPWMD pursued the construction of a new dam on the Carmel River and investigated the San Clemente Dam site (referred to as the "New San Clemente Project") as an alternative location for a 29,000 acre-foot reservoir. Because the new reservoir, if constructed, would have inundated the existing dam and reservoir, DSOD agreed to defer their request for a more detailed analysis of the existing SCD. However, in February 1989, MPWMD shifted its focus from the New San Clemente Project to a dam site downstream of Los Padres Dam (LPD), which was believed to be a less environmentally damaging, more practicable alternative. When that project failed to proceed, DSOD renewed its request to CAW for completing an updated engineering analysis of the existing dam's stability.

In 1990, CAW retained an engineer to perform the required seismic and flood stability evaluations to comply with DSOD's request. The *Seismic and Flood Stability Evaluation, San Clemente Dam* report (WCC 1992) confirmed that with full storage, the Dam may not be stable under the MCE and the downstream abutment area would be susceptible to excessive erosion under PMF conditions. The existing spillway has a discharge capacity of about 20,800 cubic feet per second (cfs) at the Dam crest elevation. The PMF is estimated to be approximately 81,000 cfs, which would overtop the Dam by approximately 14 feet. Based on these findings (circa 1992), the DSOD required that SCD be brought into compliance with current seismic safety standards, to withstand loading from a MCE on the Tularcitos Fault and safely pass the PMF (these two events are not expected to occur simultaneously). DSOD also restricted use of flashboards.

At that time, an initial set of alternatives for repair of SCD was developed. This set of alternatives included:

- Strengthen the Dam;
- Lower the Dam crest (notching);
- Breach the Dam/crest at 490 feet (dam removal);
- Strengthen the Dam and raise the crest 10 feet;
- Strengthen the Dam and raise the crest 20 feet; and
- Strengthen the Dam, raise the crest 20 feet, and dredge the reservoir.

A 1993 report concluded that the alternatives would result in significant environmental impacts. Subsequently, CAW further defined the project objectives and identified additional alternatives for further evaluation.

Additional dam stress analyses were performed (WCC 1993), evaluating various reservoir levels, failure modes, and dam overtopping scenarios. These preliminary conceptual design alternatives were based on a determination that the Dam would have to be notched to elevation 509 (16 feet below the existing spillway elevation) for seismic stability and to elevation 506 to safely pass the PMF. The report noted that the stresses were greatly reduced when the superstructure was removed. DSOD accepted the 1993 report and agreed upon the design alternatives and CAW proceeded with preliminary engineering feasibility studies.

The engineering analysis, entitled *Structural Improvement of San Clemente Dam, Preliminary Feasibility Study* (1995), presented eight alternatives for dam reinforcement. Six of these were evaluated from an engineering and environmental impact perspective:

- Notching
- Post-Tensioning Tendons
- Arch Beams
- Arch Beams with Buttress Supports
- Downstream Thickening
- Roller-Compacted Concrete (RCC) Dam

The "No Action" alternative and a dam armoring alternative were also evaluated, but were found to be ineffective and dismissed prior to the environmental evaluation. The report compared all of the alternatives and identified dam thickening as the project alternative that best met project objectives at an acceptable level of environmental impact. In August 1995, DSOD accepted the *Preliminary Feasibility Study* and confirmed that further study of the concept of dam thickening under CEQA was warranted. A final report was submitted to DSOD in September 1996.

In early 1996, CAW contracted with Moffat & Nichol Engineers to determine the feasibility of dredging San Clemente reservoir and potential sites for disposal or end-use of the dredged material. In September 1996 Moffat & Nichol Engineers submitted its report entitled *San Clemente Reservoir Dredging Feasibility Study*.

WCC was retained to perform preliminary project design for evaluation in a CEQA EIR, addressing access, retrofit design and rendering, dam break analysis, construction materials report and concrete production plan. In January 1997, WCC submitted to DSOD a draft engineering report entitled *Design Memorandum: Structural Improvements San Clemente Dam*. That report summarized the criteria used in the preliminary design of the proposed downstream thickening project; design alternatives for construction access from Carmel Valley Road to the Carmel Valley Filter Plant; the result of engineering analysis performed to verify the appropriateness of the design; mechanical and design considerations; and construction issues and site conditions.

In March 1997, DSOD accepted the MCE design criteria and other information prepared under the preliminary design scope of work (with some additional questions regarding the need for dowels). A Draft EIR (DEIR) for the SCD Seismic Retrofit Project was prepared in December 1998 and circulated for public review through February 1999. The DEIR analyzed dam removal, notching, and mitigated retrofit with sediment management alternatives. Comments on the DEIR requested new and expanded information including additional analysis of existing and new dam notching and removal alternatives, access alternatives, additional traffic analysis, as well as analysis of sediment releases from SCD, flushing flows, and other potential changes associated with dam removal.

The substantial amount of new information led to the preparation of a Recirculated Draft EIR (RDEIR) prepared by Denise Duffy & Associates, which was issued in 2000. The RDEIR responded to NMFS' desire to both meet dam safety objectives and restore natural fish passage, bedload transport and channel and canyon slopes and associated habitat occupied by the reservoir. The alternatives section of the RDEIR contained more detailed sediment management options to prevent the adverse effects of uncontrolled sediment releases.

Comments received on the RDEIR requested that dam removal be evaluated in more depth as an alternative. NMFS and others commenting on the RDEIR requested further analysis on hydrology and sediment transport in the Carmel River. Other comments requested further consideration of the Dam removal alternative, sediment management alternatives, and alternative access routes.

As a result of these comments, significant additional studies, funded by CAW, were conducted in cooperation with NMFS, USFWS, CDFG, MPWMD, DWR, and others to evaluate a wide range of sediment disposal options, including sediment releases to the Carmel River under various flow scenarios and associated with a range of notching and dam removal alternatives. An interagency working group spent considerable time and effort to explore potentially feasible means of notching the Dam or removing it with less adverse effects.

Since the release of the December 1998 DEIR, the reservoir has nearly filled with sediment, leading to concerns about fisheries/aquatic and flood plain impacts associated with uncontrolled releases. In 2003 the DSOD required modifications to SCD to meet interim dam safety requirements, including an interim drawdown (see Section 3.6). An Interagency Group identified a technical approach that could provide for safe controlled flow releases with acceptable environmental effects. Consultation under the Federal ESA for the interim drawdown was conducted with USFWS and NMFS leading to issuance of BOs under Section 7 of the ESA by USFWS and NMFS.

On December 31, 2007, DWR certified the Final EIR/EIS for the Project. In March 2010, CAW, the California Coastal Conservancy, and the National Marine Fisheries Service formally decided to collaborate on pursuing implementation of Alternative 3 (Carmel River Reroute and Dam Removal). CAW filed an updated design application with the DWR's Division of Safety of Dams for construction of Alternative 3, and on March 14, 2011 DWR filed a Notice of Determination for Alternative 3 with the California State Clearinghouse.

In July 2011, CAW identified several necessary Project changes. DWR, as the CEQA lead agency, evaluated the proposed changes and determined that, in accordance with CEQA Guidelines Section 15163, a supplement to the Final EIR was needed.

1.5 SEIR/EIS PROCESS

Since DWR filed the NOD, California American Water Company, the Project Proponent, identified several necessary changes to Alternative 3. DWR, as the lead agency, evaluated the proposed changes, and determined that a supplement to the Final EIR (SEIR) needed to be prepared.

An SEIR is intended to provide information about the environmental impacts of a revised proposed project after the final EIR has already been certified. The information in the SEIR will be used by decision makers such as the lead agency, and responsible and trustee agencies that have permit or review authority over the project, and will also be used by the public. Prior to approving a project, DWR must certify that the SEIR has been completed in compliance with CEQA, that it reviewed and considered the information in the SEIR, and that the SEIR reflects DWR's independent judgment and analysis. Once DWR certifies the SEIR and approves a project, it will file a NOD with the State Clearinghouse.

It is not the purpose of the SEIR to recommend approval or denial of a project. Although the SEIR does not dictate the lead agency's ultimate decision on a project, DWR must consider information in the Final SEIR during the approval process. DWR must respond to each significant impact identified in the Final SEIR. Under CEQA, if significant, adverse environmental impacts are identified in the Final SEIR, approval of the project must be accompanied by written findings. If mitigation measures are made a condition of project approval, a revised mitigation monitoring or reporting plan must be adopted before the project can be approved.

CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against any unavoidable environmental risks when determining whether to approve a project. When an agency approves a project that will result in significant and unavoidable impacts, it must make a Statement of Overriding Considerations as part of the approval process. The NOD filed for the project must discuss whether the lead agency certified the Final SEIR, prepared findings, adopted a mitigation monitoring or reporting plan, and prepared a Statement of Overriding Considerations.

The Draft EIR/EIS was circulated for a 45-day review period. This Draft SEIR was also circulated for a 45-day review period.

In accordance with CEQA Guidelines section 15163, "A supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised," and "A supplement to an EIR may be circulated by itself without recirculating the previous draft or final EIR."

The following pages comprise the *Draft Supplement to the San Clemente Dam Seismic Safety Project Final EIR* (SEIR). Only pages that contain revisions to the Final EIR/EIS, or that are necessary to understand the discussion, have been circulated for public review. Text that has been added to the final EIR for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikethrough~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

Consistent with CEQA, DWR circulated ~~*ing*~~ **the supplement to the EIR by itself without recirculating the previous draft or final EIR/EIS. Comments** ~~*will*~~ *were* **only** ~~*be*~~ **accepted on those issues that are new to the SEIR. Comments relating to portions of the document that are unchanged from the Final EIR/EIS will not be considered.**

During the review period, public and agency comments may be sent to:

Mr. Richard Olebe
California Department of Water Resources
Division of Safety of Dams
2200 X Street
Sacramento, CA 95818

~~An EIR/EIS is intended for use by the lead agencies and the cooperating, responsible, and trustee agencies that may have permit or review authority over the project. A Notice of Availability (NOA) of the Draft EIR/EIS was published in the *Federal Register* on May 19, 2006 and a Notice of Completion for the Draft EIR was issued through the California State Clearinghouse on April 21, 2006. The Draft EIR/EIS was circulated for public comment from April 21, 2006 through July 3, 2006. Comments received by the lead agencies on the Draft EIR/EIS were reviewed and responses to comments have been addressed in this Final EIR/EIS. A Notice of Availability of the Final EIR/EIS will be published in the *Federal Register*, and no federal decision will be made until 30 days after the date of publication.~~

~~Prior to approving a project, DWR must certify that the final EIR/EIS has been completed in compliance with CEQA, that it has reviewed and considered the information in the Final EIR/EIS, and that the Final EIR/EIS reflects its independent judgment and analysis.. Once DWR approves a project, it will file a Notice of Determination (NOD) with the State Clearinghouse. Under NEPA, the USACE will issue a ROD explaining its decision and why it has taken the chosen course of action. The ROD will be prepared by the USACE and cannot be signed until at least 30 days after publication of the Final EIR/EIS. The ROD for this EIS/EIR will be signed at the completion of federal permitting associated with the USACE decision (including ESA~~

~~Section 7 consultation, NHPA Section 106, and CAA Section 404). The ROD is part of the public record and will be made available upon request from the USACE.~~

~~It is not the purpose of an EIR/EIS to recommend either approval or denial of a project. NEPA requires each federal agency to adopt procedures to ensure that its decisions consider environmental effects, and the ROD is to be used in the federal decision. Although the EIR/EIS does not control the lead agencies' ultimate decisions on the project, the Lead Agencies must consider information in the EIR/EIS during the approval process. Under NEPA, no alternative may be selected unless it has been adequately discussed and evaluated in an EIS (or an environmental assessment [EA]). Under CEQA, DWR must respond to each significant impact identified in the EIR. If significant, adverse environmental impacts are identified in the EIR, approval of the project under CEQA must be accompanied by written findings, determining the following, as appropriate:~~

- ~~Changes or alterations have been required in, or incorporated into, such project that mitigate or avoid the significant environmental effects thereof as identified in the completed EIR.~~

- ~~Such changes or alterations are within the responsibility and jurisdiction of another public agency and such changes have been adopted by such other agency, or can and should be adopted by such other agency.~~

- ~~Specific economic, social or other considerations make infeasible the mitigation measures or project alternatives identified in the EIR.~~

~~If mitigation measures are to be made a condition of the approval of the project, a mitigation monitoring plan/program must be adopted before the project is approved. CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve a project. When an agency approves a project that will result in significant and unavoidable impacts, it must make a Statement of Overriding Considerations. The NOD filed for the project must include information on whether the agency certified the EIR and made the findings, if required, under CEQA and whether it adopted a mitigation monitoring plan/program and/or a Statement of Overriding Considerations.~~

2.0 SUMMARY

2.1 PROPONENT'S PROPOSED PROJECT AND MAJOR ALTERNATIVES

No "preferred alternative" has been designated by the lead agencies. The Proponent's Proposed Project is dam strengthening (under the National Environmental Protection Act [NEPA], this is termed the "proposed action"). The following alternatives are considered in this EIR/EIS:

- Alternative 1: Dam Notching with Partial Sediment Removal
- Alternative 2: Dam Removal with Total Sediment Removal
- Alternative 3: Carmel River Reroute and Dam Removal with in-place Sediment Stabilization
- Alternative 4: No Project

The Proponent's Proposed Project and its action alternatives (Alternatives 1, 2, and 3) include site access and sediment removal, fish passage, and water diversion. The Proponent's Proposed Project and Alternatives 1, 2, and 3 meet the requirement of increasing the safety of San Clemente Dam (SCD) to meet design criteria for withstanding a Maxi**mum Credible Earthquake (MCE) and passing a Probable Maximum Flood (PMF). Alternative** 4 does not meet dam safety requirements.

2.1.1 ALTERNATIVE 3: CARMEL RIVER REROUTE AND DAM REMOVAL

~~This alternative would permanently eliminate safety concerns through the removal of the Dam. The Dam and fish ladder would be demolished and rubble used on site to stabilize the sediment pile. A new facility to divert water would be constructed upstream of the Dam to replace the existing surface water diversion at San Clemente. The electrical system at the Dam would be improved.~~

~~Approximately 380,000 cy (235 AF) of accumulated sediment behind the Dam on the San Clemente Creek arm of the reservoir would be relocated to the Carmel River arm by excavation with heavy earthmoving equipment. A portion of the Carmel River would be permanently bypassed by excavating a 450-foot-long channel through the ridge that separates the Carmel River and San Clemente Creek, approximately 3000 feet upstream of the Dam. The bypassed portion of the Carmel River would be used as a sediment disposal site for the sediment accumulated in the Carmel River and excavated from the San Clemente Creek arm. The spoils from the bypass channel construction (235,000 cy or 145 AF) would be used for construction of a diversion dike at the upstream end of the bypassed reservoir arm. The sediments at the downstream end of the bypassed reservoir arm would be stabilized and protected from erosion.~~

~~During construction, the Carmel River and San Clemente Creek would be diverted around the construction area, the plunge pool at the base of the Dam would be dewatered, and a fish rescue and relocation operation would be operated during construction years. The plunge pool downstream of the Dam would be completely drained prior to dam removal to allow access for demolition.~~

~~The Carmel River would be reconstructed through the historic inundation zone in the San Clemente Creek arm from the exit of the bypass channel to the dam site. The San Clemente Creek channel would be reconstructed through its historic inundation zone from the exit of the diversion channel to the dam site. Impacts to the river channel through the historic inundation zone would be mitigated. The existing fish ladder would be demolished and removed from the site. A notch would be cut into OCRD, which is about 1,800 feet downstream of SCD, in order to provide adequate fish passage.~~

~~A design for sediment transport and disposal would be implemented that avoids sediment transport by truck through any populated area. Existing access roads (including San Clemente Drive) with minor improvements would be used to reach the base of the Dam for construction activities at and below the Dam. The OCRB and the access road from the CVFP to the Dam would be improved and the existing access road along the east side of the Carmel River, between OCRD and the base of SCD, would be rebuilt. An existing 4WD road (the Jeep Trail) would be improved to connect Cachagua Road with the reservoir.~~

~~This project is expected to take five years to complete, including environmental review, permitting, design, infrastructure improvements, sediment removal, bypass channel excavation, diversion dike construction, dam demolition, and creek channel reconstruction.~~

This alternative would remove SCD to prevent failure from a MCE and a PMF, as described in Section 3.2. Approximately 830,000 (URS, 2011) cubic yards about 513 AF) of accumulated sediment behind the Dam on the San Clemente Creek arm of the reservoir and a portion of the Carmel River would be relocated to the Carmel River arm sediment disposal area, where the bulk of accumulated sediment already has been deposited. A portion of the Carmel River would be permanently bypassed by cutting an approximately 450-foot-long channel between the Carmel River and San Clemente Creek, approximately 2500 feet upstream of the Dam. The bypassed portion of the Carmel River would be used as a sediment disposal site for the accumulated sediment. The rock spoils from channel construction approximately 342,000 cubic yards of material, or about 212 AF) would be used for construction of a diversion dike at the upstream end of the bypassed reservoir arm. Any remaining rock spoils will be used to help stabilize the sediment slopes.

The Dam and fish ladder would be demolished and clean concrete from them would be used to stabilize sediment slopes. Any material not used to stabilize sediment slopes will be removed from the site.

During the active construction seasons, the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered. CAW's new diversion intake would be installed upstream to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply during construction. The intake would divert water through a separate temporary bypass line around the construction site into CAW's existing system. Accumulated sediment would be removed from behind the Dam over one or two seasons by excavation with heavy earthmoving equipment. The equipment would transport the sediment to a disposal area in the bypassed portion of the reservoir. The sediments at the downstream end of the bypassed reservoir arm would be stabilized and protected from erosion. The San Clemente Creek channel would be reconstructed through its historic inundation zone from the exit of the diversion channel to the dam site. The permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process.

A notch would be cut into OCRD, which is about 1800 feet downstream of SCD, in order to provide adequate fish passage.

This project is expected to take five years to complete, including environmental review, permitting, design, infrastructure improvements, sediment removal, bypass channel excavation, diversion dike construction, dam demolition, creek channel reconstruction, vegetation planting, and other habitat restoration as required for mitigation. The effects of annual precipitation on river flow conditions could affect the schedule in the spring. Construction activities necessary to complete the project are summarized below. Improvements to and/or new roads proposed as part of the project are also conceptually described.

Table 2-1 has been revised for this Draft SEIR to identify the revisions to Alternative 3.

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
GEOLOGY & SOILS					
GS-1: Ground Shaking *Risk of dam failure due to seismic activity*	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	DOES NOT APPLY (dam removal eliminates risk of failure)	DOES NOT APPLY (dam removal eliminates risk of failure)	**Impact**: long-term, significant and unavoidable risk of dam failure under maximum credible earthquake
GS-2: Access Route Landslides/Slope Stability *Risk of slides due to oversteepening hillsides*	**Impact**: short-term, less than significant with mitigation **Mitigation**: geotechnical design of road improvements, BMPs; in addition to SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: geotechnical design of road improvements, BMPs; in addition to SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: geotechnical design of road improvements, BMPs; in addition to SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: geotechnical design of road improvements, BMPs; in addition to SWPPP (Appendix K)	DOES NOT APPLY
GS-3: Reservoir Landslides *Risk of slides due to oversteepening hillsides*	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY
GS-4: Soil Erosion *Risk of erosion along access road improvements and in sediment disposal areas; sediment and rock discharge to streams*	**Impact**: long-term, less than significant with mitigation **Mitigation**: erosion control and water quality BMPs in the SWPPP (Appendix K) NOTE: use of sediment disposal areas would not apply to the Proponent's Proposed Project.	**Impact**: long-term, less than significant with mitigation **Mitigation**: erosion control and water quality BMPs in the SWPPP (Appendix K)	**Impact**: long-term, less than significant with mitigation **Mitigation**: erosion control and water quality BMPs in the SWPPP (Appendix K)	**Impact**: long-term, less than significant with mitigation **Mitigation**: <u>**stabilize sediment slopes with rock and clean concrete, use in-situ treatments, construct channel to route storm flows, employ**</u> erosion control and water quality BMPs in the SWPPP (Appendix K)	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
GS-5: Bypass Rock Removal by Blasting *Topography alteration and safety hazards associated with blasting*	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	**Impact**: short-term, less than significant with mitigation **Mitigation**: Blasting Safety Plan Preliminary blasting BMPs have been incorporated into the SWPPP (Appendix K).	DOES NOT APPLY
GS-6: Erosion at Left Dam Abutment *Risk of erosion due to dam overtopping, leading to dam failure*	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	**Impact**: long-term, significant, unavoidable
HYDROLOGY & WATER RESOURCES					
WR-1: Changes in Streamflow During Construction *Changes in streamflow downstream of the Dam during construction drawdown, dewatering the plunge pool, or when inflow exceeds the bypass capacity*	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WR-2a: Changes in Sediment Flow Passing SCD Immediately After Construction *Changes in the amount of sediment transported from the upper watershed (above SCD) to the lower Carmel River (below SCD) immediately after construction*	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, significant, unavoidable **Mitigation**: Stream restoration and revegetation would stabilize sediment in reservoir area and avoid long-term significant impacts. These actions would occur in 7250 feet of the Carmel River and 3000 feet of San Clemente Creek.	**Impact**: short-term, significant, unavoidable **Mitigation**: Stream restoration and revegetation would stabilize sediment in reservoir area and avoid long-term significant impacts. These actions would occur in 200 feet of the Carmel River, 3000 feet of San Clemente Creek, and a 450-foot bypass channel.	DOES NOT APPLY
WR-2b: Changes in Sediment Storage and Composition in the Lower River During Construction *Changes in the sediment composition in the Carmel River below SCD*	**Impact**: short-term, less than significant with mitigation **Mitigation**: Water Quality Protection Plan including diversion of turbid water to settling basin (Appendix K SWPPP)	**Impact**: short-term, less than significant with mitigation **Mitigation**: Water Quality Protection Plan including diversion of turbid water to settling basin (Appendix K SWPPP)	**Impact**: short-term, significant, unavoidable **Mitigation**: Stream restoration and revegetation would avoid long-term significant impacts. These actions would occur in 7250 feet of the Carmel River and 3000 feet of San Clemente Creek.	**Impact**: short-term, significant, unavoidable Mitigation: Stream restoration and revegetation would avoid long-term significant impacts. These actions would occur in 200 feet of the Carmel River, 3000 feet of San Clemente Creek, and a 450-foot bypass channel.	DOES NOT APPLY
WR-3a: Change in Sediment Deposition in the Reservoir *Changes in the amount of sediment deposited in the reservoir upstream of SCD*	**Impact**: long-term, less than significant with mitigation, potentially beneficial **Mitigation**: Implementation of the SOMP (Appendix J)	**Impact**: long-term, less than significant with mitigation, potentially beneficial **Mitigation**: Implementation of the SOMP (Appendix J)	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant, potentially beneficial

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WR-3b: Increased Sediment Deposition that Obstructs Fish Passage *During low-flow years, when all the flow is through the fish ladder, sediment would move close to the fish ladder, and possibly impair fish passage from the ladder to the remnant pool*	**Impact**: long-term, less than significant with mitigation **Mitigation**: decrease capacity of the ladder forcing more water over spillway; implement SOMP	**Impact**: long-term, less than significant with mitigation **Mitigation**: decrease capacity of the ladder forcing more water over spillway; implement SOMP	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant with mitigation **Mitigation**: design of reconstructed channel and bypass channel to allow for fish passage	**Impact**: long-term, significant, unavoidable
WR-4a: Increased Sediment Deposition in the Lower River *Increased sediment load passing SCD depositing in the Carmel River bed below SCD*	**Impact**: long-term, less than significant, potentially beneficial **Mitigation**: no mitigation required	**Impact**: long-term, less than significant, potentially beneficial **Mitigation**: no mitigation required	**Impact**: long-term, significant, unavoidable **Mitigation**: none available	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant, potentially beneficial
WR-4b: Increase in Frequency of High Suspended Sediment Concentrations *High flow will increase the sediment concentration in the river and sediment management activities, such as sluicing, would further increase the suspended sediment concentration downstream of the Dam*	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, significant, unavoidable **Mitigation**: none available	**Impact**: long-term, significant, unavoidable **Mitigation**: none available	**Impact**: long-term, less than significant

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WR-5: Changes in Channel Bed Geometry *Additional sediment passing the Dam to the lower river would aggrade or degrade the river channel or change the channel cross section*	**Impact**: long-term, less than significant potentially beneficial **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, significant, unavoidable **Mitigation**: none available	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant
WR-6: Changes to the 100-year Flood Elevation *The increased sediment loading would alter the bed of the Carmel River and influence the 100-year flood elevation*	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, significant, unavoidable **Mitigation**: monitor downstream sediment accumulation; increases >0.5 feet would trigger channel restoration	**Impact**: long term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant
WR-7: Impact to Location or Timing of Water Supply Diversions *Changes to the location or timing of water supply diversions*	DOES NOT APPLY	**Impact**: long-term, less than significant with mitigation **Mitigation**: diversion would be operated to maintain fish passage flows in January-May. Diversion affects 7200 feet of stream	**Impact**: long-term, less than significant with mitigation **Mitigation**: diversion would be operated to maintain fish passage flows in January-May. Diversion affects 7200 feet of stream	**Impact**: long-term, less than significant with mitigation **Mitigation**: diversion would be operated to maintain fish passage flows in January-May. Diversion affects 3200 feet of stream	DOES NOT APPLY
WR-8: Increase Risk of Dam Failure *Risk of dam failure due to seismic activity or flooding, leading to or increasing downstream flooding*	**Impact**: long-term, less than significant **Mitigation**: no mitigation required; dam thickening design eliminates risk of failure	**Impact**: long-term, less than significant **Mitigation**: no mitigation required; dam notching design eliminates risk of failure	DOES NOT APPLY dam removal eliminates risk of failure	DOES NOT APPLY dam removal eliminates risk of failure	**Impact**: long-term, significant and unavoidable risk of dam failure under MCE or PMF

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WATER QUALITY					
WQ-1: Road Construction and Improvement Activities *Sediment discharge to watercourses, increased turbidity*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K).	DOES NOT APPLY
WQ-2: Instream, Streambank and/or Stream Margin Construction Activities *Disturbance of streambeds, increased turbidity*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) Note: Less than 1 acre of streambed impacted	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K). Note: Approximately 7.7 acres of streambed impacted	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) Note: Approximately 8.9 acres of streambed impacted	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)**<u>; revegetate stream margins with native species as specified in Botanical Resources Management Plan (Appendix U).</u>** Note: Approximately 8.6 acres of streambed impacted	DOES NOT APPLY
WQ-3: Accidental Leaks and Spills of Toxic Substances *Discharge of toxic substances*	Impact: short-term, less **than** significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) and SPCC (Appendix R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) and SPCC (Appendix R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) and SPCC (Appendix R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP Appendix K) and SPCC (Appendix R)	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WQ-4: Stream Diversions, Sheetpile Cutoff Walls, and Cofferdams *Increased suspended sediment and turbidity*	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	DOES NOT APPLY
WQ-5: Stream Diversions Ponded Areas *Increased turbidity and temperature, decreased dissolved oxygen*	**Impact**: short-term, less than significant with mitigation **Mitigation**: pipeline design to minimize effects, monitoring, mixing to reduce high water temperatures	**Impact**: short-term, less than significant with mitigation **Mitigation**: pipeline design to minimize effects, monitoring, mixing to reduce high water temperatures	**Impact**: short-term, less than significant with mitigation **Mitigation**: pipeline design to minimize effects, monitoring, mixing to reduce high water temperatures	**Impact**: short-term, less than significant with mitigation **Mitigation**: pipeline design to minimize effects, monitoring, mixing to reduce high water temperatures	DOES NOT APPLY
WQ-6: Stream Diversions Return of Bypassed Flows *Localized scour, sedimentation and turbidity*	**Impact**: short-term, less than significant with mitigation **Mitigation**: energy dissipation structures	**Impact**: long-term, less than significant with mitigation **Mitigation**: energy dissipation structures	**Impact**: long-term, less than significant with mitigation **Mitigation**: energy dissipation structures	**Impact**: long-term, less than significant with mitigation **Mitigation**: energy dissipation structures	DOES NOT APPLY
WQ-7: Rewatering After Stream Diversions *Fine sediment and toxins in return flow*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	DOES NOT APPLY
WQ-8: Discharge from Settling Basins *Increased temperature and turbidity, decreased dissolved oxygen*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WQ-9: Reservoir Drawdown *Increased turbidity, decreased dissolved oxygen*	**Impact**: short-term, significant, unavoidable **Mitigation**: slow drawdown to minimize effects NOTE: reservoir partially drawn down	**Impact**: short-term, significant, unavoidable **Mitigation**: slow drawdown to minimize effects NOTE: reservoir completely dewatered impact greater than the Proponent's Proposed Project	**Impact**: short-term, significant, unavoidable **Mitigation**: slow drawdown to minimize effects NOTE: reservoir completely dewatered impact greater than the Proponent's Proposed Project	**Impact**: short-term, significant, unavoidable **Mitigation**: ~~slow drawdown to minimize effects~~ **treat ground and surface water pumped from reservoir by using settling basins and filtration systems before water is discharged to the Carmel River.** NOTE: reservoir completely dewatered impact greater than the Proponent's Proposed Project	**Impact**: long-term significant, unavoidable
WQ-10: Reservoir Sediment Excavation *Increased turbidity*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)) NOTE: minimal excavation specific quantities unknown	**Impact**: short-term, significant, unavoidable **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) NOTE: About 1.5 million cubic yards (cy) of sediment would be excavated	**Impact**: short-term, significant, unavoidable **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K) NOTE: About 2.5 million cubic yards (cy) of sediment would be excavated	**Impact**: short-term, significant, unavoidable **Mitigation** erosion control and water quality monitoring methods in the SWPPP (Appendix K) NOTE: 380,000 cubic yards (cy) of sediment would be excavated	DOES NOT APPLY
WQ-11: SCD Fish Ladder *Increased turbidity, release of toxic substances*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP and SPCC Plan (Appendix K and R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP and SPCC Plan (Appendix K and R)	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WQ-12: OCRD Notching *Increased turbidity, release of toxic substances*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	DOES NOT APPLY
WQ-13: Sluice Gates *Increased turbidity*	**Impact**: long-term, significant, unavoidable **Mitigation**: Implementation of the SOMP (Appendix J)	**Impact**: long-term, significant, unavoidable **Mitigation**: Implementation of the SOMP (Appendix J) NOTE: The elevated turbidity level would be greater for Alternative 1 than for the Proponent's Proposed Project, but could have a shorter period of duration	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY
WQ-14: Dam-related Construction or Demolition *Increased turbidity, release of toxic substances and fine grained sediment*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP and SPCC Plan (Appendix K and R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP and SPCC (Appendix K and R)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	DOES NOT APPLY
WQ-15: Operations/Post-project Conditions *Improved post-project water quality in reservoir and restored streams*	**Impact**: beneficial **Mitigation**: no mitigation required	**Impact**: beneficial **Mitigation**: no mitigation required	**Impact**: beneficial **Mitigation**: no mitigation required	**Impact**: beneficial **Mitigation**: no mitigation required	**Impact**: long-term, significant, unavoidable

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WQ-16: Sediment Disposal *Stormwater sediment discharge at sediment disposal site.*	DOES NOT APPLY	**Impact**: long-term, less than significant with mitigation **Mitigation**: monitoring sediment disposal site and erosion control as needed following storm events (SWPPP Appendix K)	**Impact**: long-term, less than significant with mitigation **Mitigation**: monitoring sediment disposal site and erosion control as needed following storm events (SWPPP Appendix K)	**Impact**: long-term, less than significant with mitigation **Mitigation**: monitoring sediment disposal site and erosion control as needed (SWPPP Appendix K)	DOES NOT APPLY
WQ-17: Construction of Diversion Channel and Diversion Dike *Increased turbidity*	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality monitoring methods in the SWPPP (Appendix K)	DOES NOT APPLY
FISHERIES					
FI-1: Access Route Improvements *Short-term alteration of aquatic habitat*	**Impact**: short-term, less than significant with mitigation; long-term, less than significant with mitigation **Mitigation**: limits on tree removal; measures to prevent roadfill from entering streams; streamside revegetation; SWPPP (Appendix K) Botanical Resources Management Plan (Appendix U) NOTE: Tularcitos Access Route.	**Impact**: short-term, less than significant with mitigation **Mitigation**: limits on tree removal; measures to prevent roadfill from entering streams; streamside revegetation; SWPPP (Appendix K), Botanical Resources Management Plan (Appendix U) NOTE: Cachagua Access Route	**Impact**: short-term, less than significant with mitigation **Mitigation**: limits on tree removal; measures to prevent roadfill from entering streams; streamside revegetation; SWPPP (Appendix K) Botanical Resources Management Plan (Appendix U) NOTE: Cachagua Access Route	**Impact**: short-term, less than significant with mitigation **Mitigation**: limits on tree removal; measures to prevent roadfill from entering streams; streamside revegetation; SWPPP (Appendix K) Botanical Resources Management Plan (Appendix U) NOTE: Cachagua Access Route **and Bridge 529, Tassajara Road, and the Jeep Trail.**	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
FI-2: Dewatering River Channels for Construction Purposes *Short-term loss of aquatic habitat*	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue, erosion control and water quality protection plan SWPPP (Appendix K), stream channel restoration NOTE: dewatering would occur during 1 construction season	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue, erosion control and water quality protection plan SWPPP (Appendix K), stream channel restoration NOTE: dewatering would occur during 1 construction season	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue, erosion control and water quality protection plan SWPPP (Appendix K), stream channel restoration NOTE: dewatering would occur during 3 construction seasons	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable~~ **Mitigation**: fish rescue, erosion control and water quality protection plan SWPPP (Appendix K), stream channel restoration**, adoption of measures provided by NMFS and CDFG.** NOTE: dewatering would occur during 1 construction season	DOES NOT APPLY
FI-3: Operation of a Trap and Truck Facility at OCRD *Short term loss of access for adult steelhead to upstream reaches*	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
FI-4: Diversion of Carmel River and San Clemente Creek Around San Clemente Reservoir for Construction Purposes *Short-term loss of aquatic habitat*	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation, NOTE: impacts to rearing habitat upstream of the reservoir, in about 1,200 feet of the inflowing Carmel River, and in less than 100 feet of San Clemente Creek during one construction year	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation NOTE: impacts to rearing habitat upstream of the reservoir for about 5,200 feet in the Carmel River and for about 1,350 feet in San Clemente Creek during two construction years.	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation NOTE: impacts to rearing habitat upstream of the reservoir for about 5,200 feet in the Carmel River and for about 1,350 feet in San Clemente Creek during three construction years.	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable~~ **Mitigation**: fish rescue and relocation**, adoption of measures provided by NMFS and CDFG.** NOTE: impacts to rearing habitat upstream of the reservoir for about 3,300 feet in the Carmel River and about 1,350 feet for San Clemente Creek during two construction years.	DOES NOT APPLY
FI-5: Reservoir Dewatering *Short-term loss of aquatic habitat*	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation, erosion control and water quality protection plan (SWPPP Appendix K) NOTE: drawdown would occur during 1 construction season	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation, erosion control and water quality protection plan (SWPPP Appendix K) NOTE: drawdown would occur during 2 construction seasons	**Impact**: short-term, significant, unavoidable **Mitigation**: fish rescue and relocation, erosion control and water quality protection plan (SWPPP Appendix K) NOTE: drawdown would occur during 3 construction seasons	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable~~ **Mitigation**: fish rescue and relocation, erosion control and water quality protection plan (SWPPP Appendix K)**, adoption of measures provided by NMFS and CDFG.** NOTE: drawdown would occur during 2 construction seasons	**Impact**: long-term, significant, unavoidable

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
FI-6: Water Quality Effects on Fish *Short-term loss of aquatic habitat*	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality protection plan (SWPPP Appendix K), divert flows around reservoir, drawdown timing, insulate or shade diversion pipes, aeration	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality protection plan (SWPPP Appendix K), divert flows around reservoir, drawdown timing, insulate or shade diversion pipes, aeration	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality protection plan (SWPPP Appendix K)), divert flows around reservoir, drawdown timing, insulate or shade diversion pipes, aeration	**Impact**: short-term, less than significant with mitigation **Mitigation**: erosion control and water quality protection plan (SWPPP Appendix K)), divert flows around reservoir, drawdown timing, insulate or shade diversion pipes, aeration	DOES NOT APPLY
FI-7: Fish Ladder Closure *Short-term limiting fish movement past the Dam site*	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Benefit**: no mitigation required	DOES NOT APPLY
FI-8: Upstream Fish Passage *Long-term impact to fish migrating to upstream spawning and rearing habitat*	**Impact**: long-term, beneficial with mitigation **Mitigation**: ongoing, inspection of the river channel upstream of the fish ladder exit would be performed to determine that adequate channel depths are being maintained and implementation of the SOMP to maintain the upstream river channel for fish passage	**Impact**: long-term, beneficial with mitigation **Mitigation**: ongoing, inspection of the river channel upstream of the fish ladder exit would be performed to determine that adequate channel depths are being maintained. and implementation of the SOMP to maintain the upstream river channel for fish passage	**Impact**: long-term, beneficial **Benefit**: dam removed, upstream passage occurs in free-flowing stream	**Impact**: long-term, beneficial **Benefit**: dam removed, upstream passage occurs in free-flowing stream	**Impact**: long-term, significant, unavoidable

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
FI-9a: Sediment Impacts to Downstream Channels from Sluicing, Dredging, or Sediment Transport Downstream *Long-term alteration of aquatic habitat*	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term significant, unavoidable; long-term beneficial **Mitigation**: channel restoration and revegetation (Appendix U), erosion control and water quality protection (SWPPP) Appendix K	**Impact**: short-term, less than significant; long-term beneficial **Mitigation**: no mitigation required	DOES NOT APPLY
FI-9b: Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage *Potential juvenile fish entrainment and mortality*	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	**Impact**: long-term, less than significant **Mitigation**: no mitigation required	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY
FI-10: Relocate CAW Water Diversion Upstream *Long-term reduction of flow in reaches of Carmel River between the new diversion point and dam*	DOES NOT APPLY	**Impact**: long-term, less than significant with mitigation **Mitigation**: an Operations Plan would be developed in conjunction with NMFS, CDFG, SWRCB, and the MPWMD to establish flows for steelhead habitat in this reach of the river	**Impact**: long-term, less than significant with mitigation **Mitigation**: an Operations Plan would be developed in conjunction with NMFS, CDFG, SWRCB, and the MPWMD to establish flows for steelhead habitat in this reach of the river	**Impact**: long-term, less than significant with mitigation **Mitigation**: an Operations Plan would be developed in conjunction with NMFS, CDFG, SWRCB, and the MPWMD to establish flows for steelhead habitat in this reach of the river	DOES NOT APPLY
FI-11: Fish Screen Installation *Long-term elimination of entrainment or impingement at the diversion*	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
FI-12: Downstream Fish Passage Over SCD *Long-term improvement to fish passage over the Dam*	**Impact**: long-term, beneficial **Mitigation**: improved fish ladder and spillway modifications improve fish passage conditions	**Impact**: long-term, beneficial **Mitigation**: lower dam and low flow channel in spillway improve fish passage conditions	DOES NOT APPLY	DOES NOT APPLY	**Impact**: long-term, significant unavoidable
FI-13: Stream Sediment Removal, Storage, and Associated Restoration *Long-term reduction of aquatic habitat, short-term alteration of aquatic habitat*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable; long-term, less than significant with mitigation **Mitigation**: stream channel restoration in historic alignment, riparian revegetation	**Impact**: short-term, significant, unavoidable; long-term, beneficial **Mitigation**: stream channel restoration in historic alignment, riparian revegetation	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable;~~ long-term, beneficial **Mitigation**: new channel constructed through bypass and SCC, riparian revegetation)**, adoption of measures provided by NMFS and CDFG.**	DOES NOT APPLY
FI-14: Notching OCRD *Short-term loss of rearing habitat, Improvement of fish passage*	**Impact**: short-term, less than significant with mitigation; long-term, beneficial **Mitigation**: fish rescue, stream recontoured to match new alignment, access roads regraded, riparian revegetation	**Impact**: short-term, less than significant with mitigation; long-term, beneficial **Mitigation**: fish rescue, stream recontoured to match new alignment, access roads regraded, riparian revegetation	**Impact**: short-term, less than significant with mitigation; long-term, beneficial **Mitigation**: fish rescue, stream recontoured to match new alignment, access roads regraded, riparian revegetation	**Impact**: short-term, less than significant with mitigation; long-term, beneficial **Mitigation**: fish rescue, stream recontoured to match new alignment, access roads regraded, riparian revegetation	DOES NOT APPLY
FI-15: Sleepy Hollow Steelhead Rearing Facility *Loss or degradation of water supply*	**Impact**: long-term, less than significant with mitigation **Mitigation**: an alternative water supply would be made available to the SHSRF in the Carmel River	**Impact**: long-term, less than significant with mitigation **Mitigation**: an alternative water supply would be made available to the SHSRF in the Carmel River	**Impact**: long-term, less than significant with mitigation **Mitigation**: an alternative water supply would be made available to the SHSRF in the Carmel River	**Impact**: long-term, less than significant with mitigation **Mitigation**: an alternative water supply would be made available to the SHSRF in the Carmel River	**Impact**: long-term, significant, unavoidable

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TERRESTRIAL BIOLOGY					
VE-1: Special-Status Plant Species *Effects on Virgate eriastrum or Lewis's clarkia populations*	**Impact**: short-term, less than significant with mitigation **Mitigation**: avoid populations of CNPS List 4 species	**Impact**: short-term, less than significant with mitigation **Mitigation**: avoid populations of CNPS List 4 species	**Impact**: short-term, less than significant with mitigation **Mitigation**: avoid populations of CNPS List 4 species	**Impact**: short-term, less than significant with mitigation **Mitigation**: avoid populations of CNPS List 4 species	DOES NOT APPLY
VE-2: Loss of Protected Oak Woodland *Loss of oak woodlands*	**Impact**: long-term, less than significant with mitigation **Mitigation**: avoid stand of blue oak along "high road" access by fencing. Botanical Resources Management Plan (Appendix U) provides for 3:1 replacement, plantings, monitoring, conservation easements, irrigation, protection from browsing NOTE: Smallest acreage of oak woodland potentially impacted	**Impact**: long-term, less than significant with mitigation **Mitigation**: avoid stand of blue oak along "high road" access by fencing. Botanical Resources Management Plan (Appendix U) provides for 3:1 replacement, plantings, monitoring, conservation easements, irrigation, protection from browsing NOTE: 2nd largest area of oakwood lands that may be impacted	**Impact**: long-term, less than significant with mitigation **Mitigation**: avoid stand of blue oak along "high road" access by fencing. Botanical Resources Management Plan (Appendix U) provides for 3:1 replacement, plantings, monitoring, conservation easements, irrigation, protection from browsing NOTE: Largest area of oak woodland that may be impacted	**Impact**: long-term, less than significant with mitigation **Mitigation**: avoid stand of blue oak along "high road" access by fencing. Botanical Resources Management Plan (Appendix U) provides for 3:1 replacement, plantings, monitoring, conservation easements, irrigation, protection from browsing NOTE: 3rd largest area of oak woodland that may be impacted	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
VE-3: Loss of other Native Vegetation *Loss of native vegetation*	**Impact**: long-term, less than significant with mitigation **Mitigation**: facility and access footprints minimize loss of native vegetation; fencing; diffuse outflows to minimize erosion; supplemental irrigation; Botanical Resources Management Plan (Appendix U)	**Impact**: long-term, less than significant with mitigation **Mitigation**: facility and access footprints minimize loss of native vegetation; fencing; diffuse outflows to minimize erosion; supplemental irrigation; Botanical Resources Management Plan (Appendix U)	**Impact**: long-term, less than significant with mitigation **Mitigation**: facility and access footprints minimize loss of native vegetation; fencing; diffuse outflows to minimize erosion; supplemental irrigation; Botanical Resources Management Plan Appendix U)	**Impact**: long-term, less than significant with mitigation **Mitigation**: facility and access footprints minimize loss of native vegetation; fencing; diffuse outflows to minimize erosion; supplemental irrigation; Botanical Resources Management Plan (Appendix U)	DOES NOT APPLY
VE-4: Indirect Effects on Native Vegetation *Effects caused by increased erosion and sedimentation*	**Impact**: short-term, less than significant with mitigation **Mitigation**: BMPs for erosion control; minimize changes to existing drainage patterns; avoid work within tree dripline; dust control; revegetation; monitoring see Botanical Resources Management Plan (Appendix U) and SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: BMPs for erosion control; minimize changes to existing drainage patterns; avoid work within tree dripline; dust control; revegetation; monitoring see Botanical Resources Management Plan (Appendix U) and SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: BMPs for erosion control; minimize changes to existing drainage patterns; avoid work within tree dripline; dust control; revegetation; monitoring see Botanical Resources Management Plan (Appendix U) and SWPPP (Appendix K)	**Impact**: short-term, less than significant with mitigation **Mitigation**: BMPs for erosion control; minimize changes to existing drainage patterns; avoid work within tree dripline; dust control; revegetation; monitoring see Botanical Resources Management Plan (Appendix U) and SWPPP Appendix K)	DOES NOT APPLY
WI-1: Dam Strengthening *Disruption of bat nesting areas*	**Impact**: short-term, less than significant with mitigation **Mitigation**: preconstruction survey followed by consultation	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

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WI-2: Removal of Ancillary Facilities *Displacement of special-status bats*	DOES NOT APPLY	**Impact**: short-term, less than significant with mitigation **Mitigation**: preconstruction survey followed by consultation	**Impact**: short-term, less than significant with mitigation **Mitigation**: preconstruction survey followed by consultation	**Impact**: short-term, less than significant with mitigation **Mitigation**: preconstruction survey followed by consultation	DOES NOT APPLY
WI-3: Cofferdam Construction and Plunge Pool Dewatering *Adverse effects to special-status species*	**Impact**: short-term, significant, unavoidable; long-term, beneficial with mitigation **Mitigation**: preconstruction survey; rescue and relocate CRLF and Western pond turtles; monitoring; predator removal. (see Appendix V Protection Measures for Special-status Species)	**Impact**: short-term, significant, unavoidable; long-term, beneficial with mitigation **Mitigation**: preconstruction survey; rescue and relocate CRLF and Western pond turtles; monitoring; predator removal. (see Appendix V Protection Measures for Special status-Species)	**Impact**: short-term, significant, unavoidable; long-term, beneficial with mitigation **Mitigation**: preconstruction survey; rescue and relocate CRLF and Western pond turtles; monitoring; predator removal. (see Appendix V Protection Measures for Special-status-Species)	**Impact**: **less than significant with** short-term, ~~significant, unavoidable;~~ long term beneficial with mitigation **Mitigation**: preconstruction survey; rescue and relocate CRLF and Western pond turtles; monitoring, predator removal. (see Appendix V Protection Measures for Special-status Species)**, adopt measures provided by CDFG and USFWS**	DOES NOT APPLY
WI-4: Notching OCRD *Effects on spawning habitat and herpetofauna*	**Impact**: short-term, less than significant with mitigation **Mitigation**: site habitat assessment and protocol surveys followed by agency consultation	**Impact**: short-term, less than significant with mitigation **Mitigation**: site habitat assessment and protocol surveys followed by agency consultation	**Impact**: short-term, less than significant with mitigation **Mitigation**: site habitat assessment and protocol surveys followed by agency consultation	**Impact**: short-term, less than significant with mitigation **Mitigation**: site habitat assessment and protocol surveys followed by agency consultation	DOES NOT APPLY

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ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WI-5: Concrete Batch Plant Construction and Operation *Habitat for special-status species*	**Impact**: short-term, less than significant with mitigation **Mitigation**: preconstruction surveys and relocation of horned lizards and CRLF with barriers to prevent recolonization; Cooper's hawk nest surveys and avoidance, noise abatement; monitoring. clearing (see Appendix V Protection Measures for Special-status Species)	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY
WI-6: Tularcitos Access Road Construction *Effects to special-status species*	**Impact**: short-term, less than significant with mitigation **Mitigation**: minimize tree removal; pre-construction surveys and avoid dusky-footed woodrat nests; erosion controls; barriers; bat surveys along Tularcitos route and avoid roosts. (see Appendix V Protection Measures for Special-status species)	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

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WI-7: Reservoir Drawdown without Sediment Removal *Effects on California red-legged frog (CRLF) habitat*	**Impact**: short-term significant unavoidable; long term beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; abundance surveys	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

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Issue WI-8: Vegetation Removal and Construction-Related Disturbance *Effects on Special-Status Bird Species and Others Protected by the Migratory Bird Treaty Act or Raptor Protections*	**Impact**: short-term, less than significant with mitigation **Mitigation**: vegetation removal would be conducted between Mar. 1-Aug.1 to the extent possible. If vegetation removed outside Mar. 1-Aug 1 timeframe, implementation of preconstruction surveys and avoidance measures for special-status species and migratory birds would be implemented	**Impact**: short-term, less than significant with mitigation **Mitigation**: vegetation removal would be conducted between Mar. 1-Aug.1 to the extent possible. If vegetation removed outside Mar. 1-Aug 1 timeframe, implementation of preconstruction surveys and avoidance measures for special-status species and migratory birds would be implemented	**Impact**: short-term, less than significant with mitigation **Mitigation**: vegetation removal must be conducted between Mar. 1- Aug. 1, implementation of preconstruction surveys and avoidance measures for special-status species and migratory birds	**Impact**: short-term, less than significant with mitigation **Mitigation**: vegetation removal must be conducted between ~~Mar. 1-Aug. 1~~ **Sept. 15-Feb.1**, implement~~ation of~~ **protocol-level** preconstruction surveys, *project applicant and the qualified wildlife biologist will coordinate specific survey details with CDFG and the USFWS before any vegetation removal or construction occurs.* **If nests found, contact CDFG and USFWS, implement no-disturbance buffers of ½ mile for fully-protected species, agencies will determine buffers for other species, qualified wildlife biologist will monitor nests until young have fledged and are not dependent on parental care for survival** ~~and avoidance measures for special- status species and migratory birds~~	DOES NOT APPLY

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WI-9 Pre-Existing Access Road Improvements *Effects to special-status species*	**Impact**: short-term, less than significant with mitigation. **Mitigation**: minimize tree removal; map and flag active wood rat nests along route; routes planned to avoid dusky-footed woodrat nests; erosion controls; barriers; map, flag, and avoid roosts. (see Appendix V Protection Measures for Special-status Species) NOTE: Applies only to improvements to San Clemente Drive.	**Impact**: short-term, less than significant with mitigation **Mitigation**: minimize tree removal; map and flag active wood rat nests along route; routes planned to avoid dusky-footed woodrat nests; erosion controls; barriers; map, flag, and avoid roosts. (see Appendix V Protection Measures for Special-status Species) NOTE: Applies to improvements to San Clemente Drive and Cachagua and the Jeep Trail	**Impact**: short-term, less than significant with mitigation **Mitigation**: minimize tree removal; map and flag active wood rat nests along route; routes planned to avoid dusky-footed woodrat nests; erosion controls; barriers; map, flag, and avoid roosts. (see Appendix V Protection Measures for Special-status Species) NOTE: Applies to improvements to San Clemente Drive and Cachagua and the Jeep Trail	**Impact**: short-term, less than significant with mitigation **Mitigation**: minimize tree removal; map and flag active wood rat nests along route; routes planned to avoid dusky-footed woodrat nests; erosion controls; barriers; map, flag, and avoid roost. *Do pre-construction bat surveys, implement SWPPP measures, do daily surveys in wet conditions at Bridge 529 and all drainage crossings, move sensitive species to suitable locations, conduct rescue and relocation according to agency protocols.* **Do surveys for CTS, maintain 50-ft buffer around potential burrows, escort night traffic during wet conditions, if needed, obtain Incidental Take Permit, and implement other CDFG and USFWS conditions.** (see Appendix V Protection Measures for Special-status Species). Note: Applies to improvements to San Clemente Drive, Cachagua *Road,* ~~and~~ the Jeep Trail**, and Tassajara Road.**	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WI-10: Reservoir Drawdown or Elimination with Sediment Removal *Effects on California red-legged frog (CRLF) habitat*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable; long-term; beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; hand vegetation clearing (see Appendix V Protection Measures for Special-status Species)	**Impact**: short-term, significant, unavoidable; long-term beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; hand vegetation clearing (see Appendix V Protection Measures for Special-status Species)	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable;~~ long-term beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; hand vegetation clearing**, adopt measures by CDFG and USFWS** (see Appendix V Protection Measures for Special-status Species)	DOES NOT APPLY
WI-11: Sediment Removal *Destruction of spawning habitat*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable; long-term, beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; restrictions on vegetation clearing; abundance surveys	**Impact**: short-term, significant, unavoidable; long-term, beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; restrictions on vegetation clearing; abundance surveys	**Impact**: **less than significant with mitigation** short-term, ~~significant, unavoidable~~ long-term, beneficial with mitigation **Mitigation**: amphibian rescue and relocation; predator control; restrictions on vegetation clearing; abundance surveys**, adopt measures by CDFG and USFWS**	DOES NOT APPLY
WI-12: Sediment Transport And Disposal *Adverse effects to special-status species*	DOES NOT APPLY	**Impact**: long-term, less than significant with mitigation **Mitigation**: pre-construction surveys followed by implementation of BMPs	**Impact**: long-term, less than significant with mitigation **Mitigation**: pre-construction surveys followed by implementation of BMPs	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WI-13: Bypass Channel Excavation *Loss of habitat for special-status species*	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	**Impact**: **less than significant with mitigation** ~~long-term, significant, unavoidable~~ **Mitigation**: rescue and relocate CRLF and Western pond turtles and presence/absence surveys for special-status species and flagging for avoidance**, adopt measures designated by USFWS and CDFG**	DOES NOT APPLY
WI-14: Increased Traffic on Cachagua/Jeep Trail ***Effects to special-status species***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: less than significant with mitigation** **Mitigation: avoid night work from October-April along portion of Cachagua Road located closest to potential CTS habitat. If construction-related travel must occur at night during rainy or wet conditions, qualified biological monitor will conduct surveys and escort vehicles, implement any additional measures required by CDFG and USFWS.**	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WI-15: Nighttime Work and Associated Lighting ***Effects to special-status species***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: short-term less than significant with mitigation** **Mitigation: Direct lighting downward and prevent spillover into habitats. Conduct night work between Sept. 15 and Feb. 1. If night work must be conducted during nesting season, qualified wildlife biologist will conduct protocol-level pre-construction surveys. Contact CDFG and USFWS if active nests are found, protect nests of fully protected species with one-half mile buffers; coordinate buffers for nests of other species with CDFG and USFWS, monitor nests until young have fledged and are not dependent on parental care, implement additional measures designated by agencies.**	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WETLANDS					
WET-1: Permanent Loss of Wetlands and Other Waters of U.S. *Permanent loss of jurisdictional waters of the U.S.*	**Impact**: long-term, less than significant with mitigation **Mitigation**: Restoration, Mitigation & Monitoring Plan (in Botanical Resources Management Plan Appendix U).. Wetlands similar in function restored at a 3:1 ratio. Conservation easement or mitigation bank on similar, unaffected and fully functional wetlands at 3:1 ratio. Other waters restored or conserved at a 3:1 ratio. Final specifics of mitigation will be determined by the constraints of the 404(b) permit for the project	**Impact**: long-term, less than significant with mitigation **Mitigation**: Restoration, Mitigation & Monitoring Plan (in Botanical Resources Management Plan Appendix U). Wetlands similar in function restored at a 3:1 ratio. Conservation easement or mitigation bank on similar, unaffected and fully functional wetlands at 3:1 ratio. Other waters restored or conserved at a 3:1 ratio. Final specifics of mitigation would be determined by the constraints of the 404(b) permit for the project	**Impact**: long-term, less than significant with mitigation **Mitigation**: Restoration, Mitigation & Monitoring Plan (in Botanical Resources Management Plan Appendix U). Wetlands similar in function restored at a 3:1 ratio. Conservation easement or mitigation bank on similar, unaffected and fully functional wetlands at 3:1 ratio. Other waters restored or conserved at a 3:1 ratio. Final specifics of mitigation would be determined by the constraints of the 404(b) permit for the project	**Impact**: long-term, less than significant with mitigation **Mitigation**: Restoration, Mitigation & Monitoring Plan (in Botanical Resources Management Plan Appendix U). **2.95 acres of wetlands in San Clemente Creek and Carmel River arms will be restored to achieve at least a 1:1 ratio. Permanent loss of about 26 acres of OWUS will be mitigated by restoring 3,000 feet of Carmel River and San Clemente Creek channel and stream channels upstream of the Project Area or along other streams in the watershed.** ~~Wetlands similar in function restored at a 3:1 ratio.~~ Conservation easement or mitigation bank on similar, unaffected and fully functional wetlands at 3:1 ratio. Other waters restored or conserved at a 3:1 ratio. Final specifics of mitigation would be determined by the constraints of the 404(b) permit for the project	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
WET-2: Short-term Disturbance of Wetlands and Other Waters of U.S. *Short-term filling of fringe wetlands*	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to Mitigation Measure WET-1, cofferdam timing and construction criteria, and protection of the plunge pool staging area. Replacement plantings at 3:1 ratio (see Mitigation VE-3)	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to Mitigation Measure WET-1, cofferdam timing and construction criteria, and protection of the plunge pool staging area. Replacement plantings at 3:1 ratio (see Mitigation VE-3)	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to Mitigation Measure WET-1, cofferdam timing and construction criteria, and protection of the plunge pool staging area. Replacement plantings at 3:1 ratio (see Mitigation VE-3)	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to Mitigation Measure WET-1, cofferdam timing and construction criteria, and protection of the plunge pool staging area. Replacement plantings at 3:1 ratio (see Mitigation VE-3)	DOES NOT APPLY
WET-3: Indirect Impacts to Wetlands and other Waters of U.S. *Indirect adverse impacts to vegetation, including increased erosion and sedimentation*	**Impact**: short-term, less than significant with mitigation **Mitigation**: mitigated by implementation of Mitigation Measure VE-4	**Impact**: short-term, less than significant with mitigation **Mitigation**: mitigated by implementation of Mitigation Measure VE-4	**Impact**: short-term, less than significant with mitigation **Mitigation**: mitigated by implementation of Mitigation Measure VE-4	**Impact**: short-term, less than significant with mitigation **Mitigation**: mitigated by implementation of Mitigation Measure VE-4	DOES NOT APPLY
AIR QUALITY					
AQ-1: Dam Site Activities *Short-term emissions from construction equipment and road dust*	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs, including watering, chemical stabilization, and other measures	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs, including watering, chemical stabilization, and other measures	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs, including watering, chemical stabilization, and other measures	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs, including watering, chemical stabilization, and other measures	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
AQ-1a: Screening Plant Operation ***Short-term emissions from construction equipment***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: less than significant, short-term (screening plant only); significant, unavoidable, short term when combined with all construction emissions** **Mitigation:** *Implement measures for AQ-1, including* **emissions of NO_X from heavy duty equipment would be reduced by using practical and cost-effective NO_X controls for diesel vehicles and equipment in order to minimize emissions.**	**DOES NOT APPLY**
AQ-2: Access Road Upgrades *Short-term dust and other emissions during access road improvements*	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs for dust suppression	**Impact**: short-term, significant, unavoidable **Mitigation**: BMPs for dust suppression	**Impact**: short-term significant, unavoidable **Mitigation**: BMPs for dust suppression	**Impact**: short-term**, less than significant with mitigation** ~~significant, unavoidable~~ **Mitigation**: BMPs for dust suppression	DOES NOT APPLY
AQ-3: Project-Generated Traffic *Short-term dust and other emissions during project-related travel*	**Impact**: short-term, significant, unavoidable **Mitigation**: point of contact for residents to obtain corrective action when dust impacts occur which would include BMPs for dust suppression	**Impact**: short-term, significant, unavoidable **Mitigation**: point of contact for residents to obtain corrective action when dust impacts occur which would include BMPs for dust suppression	**Impact**: short-term, significant, unavoidable **Mitigation**: point of contact for residents to obtain corrective action when dust impacts occur which would include BMPs for dust suppression	**Impact**: short-term significant, unavoidable **Mitigation**: point of contact for residents to obtain corrective action when dust impacts occur which would include BMPs for dust suppression	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
AQ-3a: Project-Generated Traffic-Additional Truck Trips ***Short-term emissions from construction equipment and road dust***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: less than significant, short-term** **Mitigation: BMPs, including watering, chemical stabilization, and other measures**	**DOES NOT APPLY**
AQ-4: Concrete Batch Plant Operation *Operation of a new, short-term stationary source*	**Impact**: short-term, less than significant with mitigation **Mitigation**: compliance with MBUAPCD requirements under New Source Review rules	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
GREENHOUSE GAS EMISSIONS					
Alternative 3 Project-Generated Emissions ***Short-term GHG emissions from off-road and on-road equipment and vehicle use during Alternative 3 project activities***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: less than significant, short-term** **Mitigation: Implement BMPs which include: maximize on-road fuel efficiency; develop a VMT reduction plan; use carpools, vanpools, or shuttle services to reduce worker-related VMT; reduce unnecessary idling through use of auxiliary power units, electric equipment and enforcement of idling and speed limits; properly maintain engines and equipment efficiently; implement a construction and demolition plan that will result in at least 50 percent diversion through reuse or recycling of non-hazardous construction waste; materials that are not recyclable or re-usable for another project will be hauled to the nearest waste disposal facility.**	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
NOISE					
NO-1: Dam Site Activities *noise from construction equipment and activity*	**Impact**: short-term, significant, unavoidable **Mitigation**: limiting operations to daytime working hours	**Impact**: short-term, significant, unavoidable **Mitigation**: limiting operations to daytime working hours	**Impact**: short-term, significant, unavoidable **Mitigation**: limiting operations to daytime working hours	**Impact**: short-term, significant, unavoidable **Mitigation**: ~~limiting operations to daytime working hours~~ **<u>use of quiet-design equipment, mufflers, enclosures; eliminate unnecessary idling; equipment maintenance and lubrication; timing restrictions for equipment use</u>**	DOES NOT APPLY
NO-2: Access Road Upgrades *noise generated during access road improvements*	**Impact**: short-term, significant, unavoidable **Mitigation**: use of quiet-design construction equipment, mufflers, enclosures; eliminate unnecessary idling; equipment maintenance and lubrication; timing restrictions for equipment use	**Impact**: short-term, significant, unavoidable **Mitigation**: use of quiet-design construction equipment, mufflers, enclosures; eliminate unnecessary idling; equipment maintenance and lubrication; timing restrictions for equipment use	**Impact**: short-term, significant, unavoidable **Mitigation**: use of quiet-design construction equipment, mufflers, enclosures; eliminate unnecessary idling; equipment maintenance and lubrication; timing restrictions for equipment use	**Impact**: short-term, significant, unavoidable **Mitigation**: use of quiet-design construction equipment, mufflers, enclosures; eliminate unnecessary idling; equipment maintenance and lubrication; timing restrictions for equipment use	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
NO-3: Project-Generated Traffic *noise from construction-related travel, including mobilization, materials, and workers*	**Impact**: short-term, significant, unavoidable **Mitigation**: implementation of mitigation for NO-2, and in addition low speed limits and restrictions on timing of worker travel and truck deliveries	**Impact**: short-term, significant, unavoidable **Mitigation**: implementation of mitigation for NO-2, and in addition low speed limits and restrictions on timing of worker travel and truck deliveries	**Impact**: short-term, significant, unavoidable **Mitigation**: implementation of mitigation for NO-2, and in addition low speed limits and restrictions on timing of worker travel and truck deliveries	**Impact**: short-term, significant, unavoidable **Mitigation**: *Night work would only be for sediment excavation at the SCD and reservoir sites, access road construction will be limited to hours between 7:00 am and 6:00 pm,* implementation of mitigation for NO-2, and in addition low speed limits and restrictions on timing of worker travel and truck deliveries	DOES NOT APPLY
NO-4: Concrete Batch Plant Operation *noise from operation of a new short-term stationary source*	**Impact**: short-term, significant, unavoidable **Mitigation**: sound-damped conveyors, equipment enclosures, mufflers; use material piles at the plant as noise berms	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY
Issue NO-5: Sediment Disposal Site 4R Activities *noise from construction related travel and activity*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable **Mitigation**: standard measures: limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near the Stone Cabin	**Impact**: short-term, significant, unavoidable **Mitigation**: standard measures: limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near the Stone Cabin	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TRAFFIC & CIRCULATION					
TC-1: Road Segment Traffic Operations *Additional traffic on area road network*	**Impact**: short-term, less than significant with mitigation **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes a traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes a traffic coordination, trip reduction, and traffic safety, flagging, escort of transport trucks	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes a traffic coordination, trip reduction, and traffic safety, flagging, escort of transport trucks	**Impact**: short-term significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes a traffic coordination, trip reduction, and traffic safety, flagging, escort of transport trucks**, equipment trips will avoid peak traffic hours** *between 6:00 am to 8:30 am and from 3:30 pm to 6:00 pm***, will be coordinated with local fire districts, coordinate mobilization trips with school bus schedules**	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TC-2: Intersection Traffic Operations *Changes to intersection level of service*	**Impact**: short-term, less than significant with mitigation **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes a traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	DOES NOT APPLY
TC-3a: Traffic Safety Carmel Valley Road *Increased accident rates*	**Impact**: short-term, less than significant with mitigation Mitigation: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety **Mitigation** could also include funding additional traffic enforcement	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to mitigation TC-1, fund additional enforcement, widen Cachagua Road	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to mitigation TC-1, fund additional enforcement, widen Cachagua Road	**Impact**: short-term, less than significant with mitigation **Mitigation**: in addition to mitigation TC-1, fund additional enforcement, widen Cachagua Road	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TC-3b: Traffic Safety San Clemente Drive *Increased accident rates*	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	DOES NOT APPLY
TC-4: Inadequate Corner Sight Distances *Inadequate visual sight distance at intersections for stopping safety*	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant with mitigation **Mitigation**: improve affected intersections	**Impact**: short-term, less than significant with mitigation **Mitigation**: improve affected intersections	**Impact**: short-term, less than significant with mitigation **Mitigation**: improve affected intersections	DOES NOT APPLY
TC-5: New Intersections *Effect on safety and traffic*	**Impact**: short-term, less than significant with mitigation **Mitigation**: advance warning/signing; right turn taper on eastbound Carmel Valley Road approach to Tularcitos Access Road	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TC-6: Neighborhood Quality of Life *Effect of increased traffic on residential neighborhoods*	**Impact**: short-term, significant, unavoidable Mitigation: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant, unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	**Impact**: short-term, significant unavoidable **Mitigation**: construction Management Plan to reduce the number of vehicles and their interaction with other vehicles and promote safety; Traffic/Transportation Plan that includes traffic coordination, trip reduction, and traffic safety	DOES NOT APPLY
TC-7: Pavement Loadings *Effect of project traffic on pavement*	**Impact**: short-term, less than significant with mitigation **Mitigation**: repair damage to affected roads immediately after construction is completed	**Impact**: short-term, less than significant with mitigation **Mitigation**: repair damage to affected roads immediately after construction is completed	**Impact**: short-term, less than significant with mitigation **Mitigation**: repair damage to affected roads immediately after construction is completed	**Impact**: short-term, less than significant with mitigation **Mitigation**: repair damage to affected roads immediately after construction is completed	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
TC-8: Delays to Emergency Vehicles ***Effect of project on access***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: short-term, less than significant with mitigation** **Mitigation: Coordinate with Monterey County, Cachagua Fire District and Monterey Regional Fire District throughout Project construction, emergency vehicles get priority to pass, Tassajara, Cachagua, and Jeep Trail improvements will have turn-outs for use by construction equipment so emergency vehicles can pass, avoid work during peak traffic hours** *from 6:00 am to 8:30 am and from 3:30 pm to 6:00 pm***, hauling may be restricted to between 9 am and 3 pm, coordinate with school bus schedules, restrict traffic to non-holiday weekdays, submit schedules to fire districts, give fire districts 24-hr contact names, phone numbers, and gate keys, radio contact with fire districts will be maintained throughout the project.**	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
CULTURAL RESOURCES					
CR-1: Ground Disturbance *Disturbance to archaeological sites*	**Impact**: long-term, less than significant with mitigation **Mitigation**: construction monitoring, avoid 3 archaeological sites, or archeological evaluation and/or historical documentation of them	**Impact**: long-term, less than significant with mitigation **Mitigation**: construction monitoring, avoid archaeological sites, or archeological evaluation and/or historical documentation	**Impact**: less than significant with mitigation, long-term **Mitigation**: construction monitoring, avoid archaeological sites, or archeological evaluation and/or historical documentation	**Impact**: long-term, less than significant with mitigation **Mitigation**: construction monitoring, avoid archaeological sites, or archeological evaluation and/or historical documentation	DOES NOT APPLY
CR-2: Damage to Historic Structures from Construction-related Vibration *Construction-related vibration*	**Impact**: short-term, less than significant with mitigation **Mitigation**: rigid support of excavation structures to minimize ground movement	**Impact**: short-term, less than significant with mitigation **Mitigation**: rigid support of excavation structures to minimize ground movement	**Impact**: short-term, less than significant with mitigation **Mitigation**: rigid support of excavation structures to minimize ground movement	**Impact**: short-term, less than significant with mitigation **Mitigation**: rigid support of excavation structures to minimize ground movement	DOES NOT APPLY
CR-3: Introduction of Short-term Dirt/Unintended Damage *Construction/demolition-related accumulation of dirt*	**Impact**: short-term, less than significant with mitigation **Mitigation**: spray water on the ground surface prior to ground disturbance.	**Impact**: short-term, less than significant with mitigation **Mitigation**: spray water on the ground surface prior to ground disturbance.	**Impact**: short-term, less than significant with mitigation **Mitigation**: spray water on the ground surface prior to ground disturbance.	**Impact**: short-term, less than significant with mitigation **Mitigation**: spray water on the ground surface prior to ground disturbance.	DOES NOT APPLY

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ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
CR-4: Demolition or Alteration to Historic Properties *Alterations to OCRD and associated fish ladder and to SCD*	**Impact**: long-term, significant, unavoidable **Mitigation**: recordation of resources (HABS/HAER), interpretive displays, educational program	**Impact**: long-term, significant, unavoidable **Mitigation**: recordation of resources (HABS/HAER), interpretive displays, educational program	**Impact**: long-term, significant, unavoidable *Impact also includes the removal of the Chemical Building/Instrument Hut*. **Mitigation**: recordation of resources (HABS/HAER), interpretive displays, educational program.	**Impact**: long-term, significant, unavoidable. *Impact also includes the removal of the Chemical Building/Instrument Hut.* **Mitigation**: recordation of resources (HABS/HAER), interpretive displays, educational program. *Incorporate other measures specified by the Section 106 MOA.*	DOES NOT APPLY
CR-5: Alteration of Surrounding Environment *Alter character of setting for San Clemente Dam Historic Resource District*	**Impact**: long-term, significant, unavoidable **Mitigation**: prepare NRHP Nomination Form for Historic District, complete Historic Preservation Management Plan, MOA	**Impact**: long-term, significant, unavoidable **Mitigation**: prepare NRHP Nomination Form for Historic District, complete Historic Preservation Management Plan, MOA	**Impact**: long-term, significant, unavoidable **Mitigation**: prepare NRHP Nomination Form for Historic District, complete Historic Preservation Management Plan, MOA	**Impact**: long-term, significant, unavoidable **Mitigation**: prepare NRHP Nomination Form for Historic District, complete Historic Preservation Management Plan, MOA	DOES NOT APPLY
CR-6: Introduction of Visual Obstructions *Loss of visual integrity for San Clemente Dam Historic Resource District*	**Impact**: long-term, significant, unavoidable **Mitigation**: photographic documentation, use of compatible design, materials and construction methods	**Impact**: long-term, significant, unavoidable **Mitigation**: photographic documentation, use of compatible design, materials and construction methods	**Impact**: long-term, significant, unavoidable **Mitigation**: photographic documentation, use of compatible design, materials and construction methods	**Impact**: long-term, significant, unavoidable **Mitigation**: photographic documentation, use of compatible design, materials and construction methods	DOES NOT APPLY
VISUAL RESOURCES (AESTHETICS)					
VQ-1: Residential Views on Hills East of Carmel Valley Road *Operation of construction equipment within the viewshed*	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
VQ-2: Changes to Viewsheds from Residences Adjacent to CVFP and SCD *Construction activities within the viewshed*	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, less than significant **Mitigation**: no mitigation required	**Impact**: short-term, **significant and unavoidable** ~~less than significant~~ **Mitigation**: **Due to location of the residence near the dam, short-term construction-related impacts would be significant and unavoidable because construction activities would occur both during normal working hours and at night,** no mitigation **is available** ~~required~~	DOES NOT APPLY
VQ-3: Residential Views from Sleepy Hollow *Operation of construction equipment and ancillary facilities within the viewshed*	**Impact**: short-term, significant, unavoidable **Mitigation**: none available NOTE: This includes the proposed concrete batch plant	**Impact**: short-term, less than significant **Mitigation**: no mitigation required NOTE: This does not include the proposed concrete batch plant	**Impact**: short-term, less than significant **Mitigation**: no mitigation required NOTE: This does not include the proposed concrete batch plant	**Impact**: short-term, less than significant **Mitigation**: no mitigation required NOTE: This does not include the proposed concrete batch plant	DOES NOT APPLY
VQ-4: Changes to Viewsheds from the Stone Cabin *Construction activities within the viewshed of the Carmel River*	DOES NOT APPLY	**Impact**: short-term, less than significant, beneficial, long-term **Mitigation**: no mitigation required	**Impact**: short-term, less than significant, beneficial, long-term **Mitigation**: no mitigation required	**Impact**: short-term, less than significant, beneficial, long-term **Mitigation**: no mitigation required	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
VQ-5: Changes to Viewsheds from the Jeep Trail *Construction activities within the viewshed*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable; long-term, less than significant with mitigation **Mitigation**: short-term- screening the sediment disposal site adjacent to the Jeep Trail with vegetation during construction; long term, revegetation of the sediment disposal site and the removal of the sediment conveyor overcrossing	**Impact**: short-term, significant, unavoidable; long-term, less than significant with mitigation **Mitigation**: short-term- screening the sediment disposal site adjacent to the Jeep Trail with vegetation during construction; long term, revegetation of the sediment disposal site and the removal of the sediment conveyor overcrossing	DOES NOT APPLY	DOES NOT APPLY
VQ-5a: Changes to Viewsheds near or on the Jeep Trail ***Construction activities and construction-related use within the viewshed near and on the Jeep Trail***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: short-term, significant, unavoidable** **Mitigation: To minimize, after construction, all disturbed areas near the Jeep Trail will be revegetated as specified in the Botanical Resources Management Plan (Appendix U).**	**DOES NOT APPLY**
VQ-6:Light and Glare from Nighttime Construction Activities ***Nighttime construction activities within the viewshed and surrounding areas***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: short-term, significant, unavoidable** **Mitigation: To minimize, lighting would be directed down towards work areas, and shielded to reduce sky glow and spillover.**	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
RECREATION					
REC-1: Access to Stone Cabin via Jeep Trail *Sediment pile blocked access via the Jeep Trail under the design for Site 4R proposed in the Draft EIR/EIS*	DOES NOT APPLY	**Impact**: short-term, less than significant **Mitigation**: no mitigation required. The alternative has been redesigned to move the disposal site uphill and provide a conveyor overcrossing. These changes would allow access to the cabin via the Jeep Trail during construction.	**Impact**: short-term, less than significant **Mitigation**: no mitigation required. The alternative has been redesigned to move the disposal site uphill and provide a conveyor overcrossing. These changes would allow access to the cabin via the Jeep Trail during construction.	DOES NOT APPLY	DOES NOT APPLY
REC-2: Disruption of Use of Jeep Trail to Stone Cabin *Heavy equipment traversing Jeep Trail*	DOES NOT APPLY	**Impact**: short-term, significant, unavoidable **Mitigation**: operation of heavy earth moving and other construction equipment would occur during normal working hours	**Impact**: short-term, significant and unavoidable **Mitigation**: operation of heavy earth moving and other construction equipment would occur during normal working hours	**Impact**: short-term, significant and unavoidable **Mitigation**: operation of heavy earth moving and other construction equipment **on the Jeep Trail** would occur during normal working hours**, but construction-related small trucks and passenger vehicles would travel on the Jeep Trail during day and nighttime hours when night shifts are needed.**	DOES NOT APPLY
REC-3: Rerouting or Restoring the Carmel River Channel *Restore the river to its original free-flowing state*	DOES NOT APPLY	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	**Impact**: long, term, beneficial **Mitigation**: no mitigation required	**Impact**: long-term, beneficial **Mitigation**: no mitigation required	DOES NOT APPLY

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
REC-4: Deposition of Sediment on Site 4R *Sediment disposal on parkland*	DOES NOT APPLY	**Impact**: short-term significant, unavoidable; long-term, less than significant with mitigation **Mitigation**: following construction, the open space park site would be restored to close to its pre-project state. The site would return to use as open space parkland	**Impact**: short-term significant, unavoidable; long-term less than significant with mitigation **Mitigation**: following construction, the open space park site would be restored to close to its pre-project state. The site would return to use as open space parkland	DOES NOT APPLY	DOES NOT APPLY
REC-5: Delays for Motorists Travelling to Los Padres National Forest ***Heavy equipment traversing Tassajara Road/Cachagua Road Access Route***	**DOES NOT APPLY**	**DOES NOT APPLY**	**DOES NOT APPLY**	**Impact: short-term, significant and unavoidable** **Mitigation: To minimize the impact, mobilization of trailer-trucks and heavy equipment would be coordinated to avoid peak traffic** *hours between 6:00 am to 8:30 am and from 3:30 pm to 6:00 pm. Project Applicant will prepare a Trip Reduction Plan, Traffic Coordination and Communication Plan, and a Traffic Safety Plan (see mitigation for Issue TC-1).*	**DOES NOT APPLY**

Table 2-1: Impacts and Mitigation Matrix for Proponent's Proposed Project and Alternatives

ENVIRONMENTAL RESOURCES & ISSUES	PROPONENT'S PROPOSED PROJECT (DAM THICKENING)	ALTERNATIVE 1 (DAM NOTCHING)	ALTERNATIVE 2 (DAM REMOVAL)	ALTERNATIVE 3 (CARMEL RIVER REROUTE & DAM REMOVAL)	ALTERNATIVE 4 (NO PROJECT)
LAND USE					
LU-1: Conflict with Existing Plans and Policies in the Project Area *Construction and operations changing the existing land use*	**Impact**: long-term, less than significant with mitigation **Mitigation**: land use permits issued by Monterey County *RMA-* Planning ~~and Building Inspection~~ Department would render this issue impact less than significant	**Impact**: short-term, significant, unavoidable; long-term, less than significant **Mitigation**: consultation with the Monterey Park District would be required to ensure desired restoration of Site 4R and the Jeep Trail following construction activities.	**Impact**: short-term, significant; unavoidable; long-term, less than significant **Mitigation**: consultation with the Monterey Park District would be required to ensure desired restoration of Site 4R and the Jeep Trail following construction activities.	DOES NOT APPLY	DOES NOT APPLY
ENVIRONMENTAL JUSTICE					
EJ-1: Minority and Low Income Populations *Disproportionate Impacts on Minority and Low Income Populations*	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	**Impact**: less than significant **Mitigation**: no mitigation required	DOES NOT APPLY

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3.0 DESCRIPTION OF THE ALTERNATIVES

3.1 OVERVIEW

3.1.1 SUMMARY OF PROJECT/ACTION ALTERNATIVES

No "preferred alternative" has been designated by the Lead Agencies. The Proponent's Proposed Project is dam strengthening with in-place sediment stabilization (under the National Environmental Policy Act (NEPA), this is termed the "proposed action"). The following alternatives to the Proponent's Proposed Project were considered in the Environmental Impact Report/Environmental Impact Statement (EIR/EIS):

- Alternative 1 Dam notching with partial sediment removal
- Alternative 2 Dam removal with total sediment removal
- Alternative 3 Carmel River reroute and dam removal with in-place sediment stabilization
- Alternative 4 No Project

These alternatives are summarized in Chapter 2 and described in detail below. The Proponent's Proposed Project and alternatives include site access, sediment removal and disposal, fish passage, and water diversion. The project and its alternatives meet the requirement of increasing the safety of San Clemente Dam (SCD) to meet design criteria for withstanding a Maximum Credible Earthquake (MCE) and passing a Probable Maximum Flood (PMF).

Table 3.1-1 presents a summary of the comparative costs of the Proponent's Proposed Project and action alternatives. The table includes construction as well as operation and maintenance costs. These totals include escalation, engineering, management, administrative, mitigation and permitting costs; they do not include financing costs. Costs are escalated to the year 2009 at 12 percent per year, except in the case of Alternative 2, which will require an additional year for construction and is escalated to 2010. These costs are preliminary and are expected to change.

The California American Water Company (CAW) is currently exploring funding strategies for the action alternatives. In general, CAW would seek approval from the California Public Utilities Commission (CPUC) for recovery through water sales revenues of the cost of any project it must carry out to meet regulatory requirements. However, the CPUC will not rule on which costs may be included in the rate base until such a rate hearing occurs.

Table 3.1-1: San Clemente Dam Seismic Safety Project Alternative Cost Comparison Table

Cost Breakdown	Proponent's Proposed Project Dam thickening	Alternative 1 Dam Notching	Alternative 2 Dam Removal	Alternative 3 Carmel River Bypass and Dam Removal
Construction Field Costs	$19,477,000	$37,259,000	$43,775,000	$31,192,000
Operation & Maintenance Costs	$1,000,000	$1,200,000	$ 200,000	$200,000
Subtotal Cost	$20,477,000	$38,459,000	$43,975,000	$31,392,000
Cost + 25% Contingency	$25,596,000	$48,738,500	$56,076,000	$39,240,000
Construction Cost + 25% Contingency and Escalation	$35,960,537	$68,474,083	$88,236,672	$55,129,375
Implementation Cost	$13,000,000	$27,000,000	$30,000,000	$20,000,000
Total Cost	$49,000,000	$95,000,000	$118,000,000	$75,000,000

Notes:
1 Financing costs are not included.
2 Total costs are rounded to the nearest $1,000,000.
3 Construction costs are escalated at 12 percent to 2009 $ for all alternatives except Alternative 2, where the total cost is escalated to 2010 $. Source: California Department of Transportation (Caltrans) Highway Construction Cost Index, 2nd Quarter, 2006
4 Implementation costs include engineering, management, administrative, mitigation, and permitting costs.

No other feasible funding source or strategy for the dam notching (Alternative 1) or dam removal (Alternative 2) has been identified to date. For the Carmel River reroute (Alternative 3), the State of California has indicated a preliminary interest in funding the project under a scenario in which CAW would turn over the project and property surrounding the Dam to the California Coastal Conservancy, plus contribute a share of the funding.

Access Alternatives

An evaluation of the possible access routes for project construction was conducted and the results are summarized below in Table 3.1-2 which presents the use of various access routes by alternative, and the level of improvements planned.

For the Proponent's Proposed Project (Dam Strengthening), the Tularcitos Access Route was selected. For Alternative 1 (Dam Notching), Alternative 2 (Dam Removal), and Alternative 3 (Carmel River Reroute and Dam Removal), the Cachagua Access Route would be the primary route providing access above the Dam, to mobilize equipment, excavate sediment, and move sediment to disposal areas. **For heavy equipment mobilization Alternative 3 would also use Tassajara Road and Cachagua Road, including the portion of Cachagua Road between Tassajara Road and the Jeep Trail (see Figure 3.2-2a).**

The Proponent's Proposed Project would use the section of San Clemente Drive from Carmel Valley Road through Sleepy Hollow (to the point where it intersects with the new Tularcitos Access Route) only until the Tularcitos Access Route is complete (approximately eight months during CY 3). It would also use the section of San Clemente Drive from the Tularcitos Access point for access to the Dam.

Table 3.1-2: Access Routes Used by Alternative

Roadway	Proponent's Proposed Project	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Carmel Valley Road	minor improvement, major arterial serving all access routes	minor improvement, major arterial serving all access routes	minor improvement, major arterial serving all access routes	minor improvement, major arterial serving all access routes	no improvements, existing levels of use
San Clemente Drive	minor improvements for initial access until Tularcitos completed (approximately two months of CY 3)	minor improvements for secondary access below dam, mobilization, demobilization	minor improvements for secondary access below dam, mobilization, demobilization	minor improvements for secondary access below dam, mobilization, demobilization	no improvements, existing levels of use
Tularcitos Road	new permanent road, primary access				
Tassajara Road (Figure 3.2-2a)				**permanent improvement, primary access**	
Cachagua Road ~~(part of Cachagua access route)~~**(Figure 3.2-2a)**		permanent improvement, primary access	permanent improvement, primary access	permanent improvement, primary access	no improvements, existing levels of use
Jeep Trail (part of Cachagua access route)		substantial permanent improvements, primary access	substantial permanent improvements, primary access	substantial permanent improvements, primary access	
Road from Jeep Trail to Reservoir & Dam (part of Cachagua access route)		new temporary road, primary access	new temporary road, primary access	new temporary road, primary access	

Alternatives 1, 2, and 3 would use San Clemente Drive from Carmel Valley Road through Sleepy Hollow to reach areas below the Dam which would not be accessible from the Cachagua route. These alternatives will use San Clemente Drive for initial mobilization of equipment needed below the Dam at the beginning of the project and demobilization of this equipment at the end of the project. San Clemente Drive would also be used to provide access below the Dam for construction workers, and occasionally during the project for trucks carrying supplies or equipment. This access route was selected over the Tularcitos Access Route for these alternatives to avoid potential impacts on terrestrial biology. More than 75 percent of the traffic associated with these alternatives is associated with work above the Dam (e.g., construction of the reroute, sediment removal, and dam removal). Periods of mobilization and demobilization using the San Clemente Drive route are expected to occur over a period of several weeks and involve 15-30 trips with heavy equipment during that period.

The access routes are described briefly below:

San Clemente Drive Access Route

This access route following San Clemente Drive through Sleepy Hollow was originally proposed and analyzed in the 2000 RDEIR (Denise Duffy & Associates 2000). This existing access route includes San Clemente Drive from Carmel Valley Road through the Sleepy Hollow Community, plus the unimproved High Road and Low Road to the top of the Dam, the unimproved plunge pool road to the base of the Dam, and other unimproved roads serving existing CAW facilities such as the Carmel Valley Filter Plant (CVFP). Minor improvements will be made to San Clemente Drive to accommodate the planned use of this route as described above.

Tularcitos Access Route

This route was also briefly analyzed as a CEQA Alternative in the 2000 RDEIR (Denise Duffy & Associates 2000). This route includes most of the route of the Proposed Project access, but diverges south of the houses on San Clemente Drive and would intersect Carmel Valley Road approximately 750 feet west of San Clemente Drive. This route also includes construction of a new crossing of Tularcitos Creek via a steel truss bridge with a span of approximately 200 feet, with a wood deck and concrete abutments.

Cachagua Access Route

This access route follows Cachagua Road from Carmel Valley **Road** to an existing 4WD road (the “Jeep Trail”) **(see Figure 3.2-2)** leading to sediment disposal Site 4R. The sediment site is accessed via a conveyor belt system from San Clemente Reservoir. A new temporary road would be built to connect the Jeep Trail to the reservoir and dam **(see Figure 3.2-2). Under Alternative 3, heavy equipment mobilization would also use the Cachagua Access Route, but would follow Carmel Valley Road to Tassajara Road, then Cachagua Road to the existing Jeep Trail. A new permanent road called the “Reservoir Access Road” would be built to connect the Jeep Trail to the reservoir and dam (see Figure 3.2-2a).**

3.1.2 ALTERNATIVES CONSIDERED AND ELIMINATED

Dam Alternatives

Dam Strengthening

A 1997 *Design Memorandum on Structural Improvements for San Clemente Dam* (SCD) by Woodward Clyde Consultants (WCC) described a number of alternatives for dam strengthening. WCC eliminated some of these and others were evaluated and eliminated in the previous California Environmental Quality Act (CEQA) process. These alternatives and the reasons for eliminating them are:

POST-TENSIONED TENDONS
Installation of 8 post-tensioned tendons spanning horizontally between the abutments and bearing against the upstream face of the Dam. This alternative would require draining the reservoir every 5 years to test the long-term pre-stressed load in each tendon. The test would entail essentially the same procedures and equipment used to initially tension the tendons and would be expensive. This complex concept was eliminated due to serious construction, cost, and maintenance issues.

ARCH BEAMS
Construction of reinforced concrete beams on the downstream face of the Dam to provide partial support. The effect on reduction of stress during a MCE was minimal. This concept was eliminated as infeasible.

ARCH BEAMS WITH BUTTRESS SUPPORT
Construction of two horizontal arch beams supported by buttresses on the downstream face of the Dam. This concept was eliminated because it could impair fish ladder performance.

ARMORING
Armoring with shotcrete to increase dam stiffness and strength. This concept was eliminated because it would be ineffective in providing protection against the MCE and therefore would not meet project purpose and need.

ROLLER COMPACTED CONCRETE
Construction of a roller compacted concrete gravity section against the downstream face of the Dam. This alternative was eliminated due to significant environmental impacts due to encroachment into existing wetlands on the downstream side of the Dam (as compared to other dam strengthening alternatives that would not cause comparable impacts).

REMOVAL OF DAM SUPERSTRUCTURE
Removal of dam superstructure (including gates, piers, and walkways) to reduce dam stresses. This concept was eliminated because, although it would significantly reduce stress on the Dam, The Dam would still exceed acceptable stress levels and would require further notching to fully meet project purpose and need.

New San Clemente Reservoir

Construction of a new 23,000 to 29,000 acre feet (AF) reservoir that would inundate the existing dam and reservoir was proposed by Monterey Peninsula Water Management District (MPWMD). This concept was eliminated in February 1989 when State and

Federal regulatory agencies rejected the MPWMD EIR/EIS as inadequate and indicated that the new reservoir may be infeasible due to extensive environmental impacts.

Dam Removal

An extensive review of dam removal literature was provided as part of the previous Recirculated Draft EIR (Denise Duffy & Associates 2000). The material in that Draft, as well as more recent work, was considered in preparing Alternatives 2 and 3, which would remove SCD.

Dam Removal through Notching and Localized Sediment Management

This concept was developed by the Institute for Fisheries Resources through an independent community process. Under this concept, the Dam would be notched, the area downstream of the Dam would be filled, and sediments behind the Dam would be dredged to construct a series of terraces stabilized with walls upstream and downstream of the Dam. A graded ramp would be constructed upstream of the Dam at a slope of approximately one percent until the old streambed is intersected. A graded ramp would be constructed downstream of the Dam at a slope of approximately 4 percent beginning at the Old Carmel River Dam (OCRD) until the profile reaches the level of the notched dam. Although the concept was intended to provide a stable, fish-friendly solution, it was eliminated due to engineering concerns about its stability and regulatory agency concerns that it would create multiple barriers to fish passage and would fill waters of the U.S. in the channel below the Dam.

Access Alternatives

As part of the SCD Seismic Safety Project EIR/EIS, a preliminary screening analysis was conducted for the potential major access routes to and from SCD. The purpose of the screening analysis was to choose one preferred access route to be used with each dam alternative described in the EIR/EIS. The preliminary access route screening analysis is provided as Appendix F to the EIR/EIS. Four potential major access routes were considered in the screening analysis: the Sleepy Hollow (now identified as the San Clemente Drive access) Route, the Sleepy Hollow Homeowners Association (SHHA) Proposed Route, the Tularcitos Route, and the Cachagua Route.

Based on the preliminary access route screening, all access routes that would entail the use of trucks to haul sediment from the reservoir were eliminated. A sediment site was selected that could be accessed by a conveyor belt system from the Dam. For the two alternatives that require sediment transport and disposal (Alternatives 1 and 2), the Cachagua route would be used to access the sediment site during site preparation and construction of the conveyor belt system.

For the Proponent's Proposed Project (Dam Strengthening), the Sleepy Hollow route was eliminated due to the potential impacts of truck traffic to a rural residential community, including safety concerns and impacts to pavement structure. The SHHA route was eliminated due to potential impacts to undisturbed riparian vegetation and habitat for sensitive species.

For access below the Dam under Alternative 1 (Dam Notching), Alternative 2 (Dam Removal), and Alternative 3 (Carmel River Reroute and Dam Removal), the Tularcitos Access Route was eliminated due to its greater biological impacts and because these alternatives used the Cachagua Access Route for a substantial part of the alternative's access needs.

A fifth access route called the Stone Pine Route was eliminated as a feasible option early in the environmental review process due to known environmental and physical constraints, including significant impacts to biological resources, a major river crossing, construction in a sensitive riparian habitat near listed species, higher costs, and regulatory uncertainty.

The eliminated access routes are described briefly below:

Sleepy Hollow Homeowner's Association (SHHA) Route

This access route alternative was proposed by the Sleepy Hollow Homeowner's Association and briefly analyzed as a CEQA Alternative in the 2000 RDEIR (Denise Duffy & Associates 2000). The route follows the Sleepy Hollow Route, diverging south of the residential area on San Clemente Drive and intersecting Carmel Valley Road approximately 3300 feet west of San Clemente Drive. This route also includes construction of a new crossing of the Carmel River.

Stonepine Access Route

This alternative was proposed to use the existing Stonepine neighborhood intersection with Carmel Valley Road at a point approximately two miles west of San Clemente Drive. This route would have required improvement of the existing Stonepine Bridge or the construction of a new bridge across the Carmel River and a roadway within an active floodplain.

Sediment Management Alternatives

A variety of alternatives have been considered to remove and dispose of sediment. Some were considered and eliminated earlier in the CEQA process and others were eliminated in an engineering screening and environmental constraints analysis done for the EIR/EIS. San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards of sediment (Mussetter Engineering, Inc. [MEI] 2003). Montgomery, Watson and Harza (MWH) performed an engineering screening analysis of potential sediment disposal sites (Appendix G, Screening of Sediment Disposal Sites) and ENTRIX performed an environmental constraints analysis of the sites identified by MWH. The purpose of the screening analyses was to recommend selection of potential sediment disposal site(s) for use with Alternatives 1 and 2 (Dam Notching and Dam Removal). The required sediment disposal capacity for the Dam removal Alternative is approximately 2.5 million cubic yards. For the Dam notching Alternative, the estimated volume of sediment to be removed is approximately 1.5 million cubic yards (MEI 2005). The sediment transport and disposal Alternatives are described and the results of engineering screening are presented in Appendix G. The results of the environmental constraints analysis for the sediment transport and disposal Alternatives are presented in Appendix H. Those alternatives that were considered and eliminated are briefly summarized below.

Removal and Conveyance of Sediment

EXCAVATION AND CONVEYANCE BY SLURRY PIPELINE TO SEDIMENT DISPOSAL SITE

This conveyance alternative was eliminated due to the consumption of water that would have been required (as compared to the conveyor belt alternative, which would not consume water).

EXCAVATION AND CONVEYANCE BY TRUCK TO SEDIMENT DISPOSAL SITE

This conveyance alternative was eliminated due to large potential impacts to roads and bridges, traffic, safety, and residential communities along the truck haul route.

CONVEYANCE OF SEDIMENT IN NATURAL STREAM CHANNEL TO OCEAN

The previous CEQA process considered alternatives that allow uncontrolled release of the accumulated sediment in the reservoir for conveyance in the natural stream channel to the ocean. This alternative was eliminated due to significant and unavoidable downstream potential stream impacts to fish, aquatic habitat, floodplains and flooding; potential effects of sedimentation in the Carmel River estuary; and potential marine impacts to Monterey Bay National Marine Sanctuary.

Disposal of Sediment

DISPOSAL IN LANDFILL

Three landfill sites were considered and eliminated during the engineering and environmental screening. Sites 1 and 2A were paired to provide the full capacity required to process all of the sediment contained in the reservoir. These sites were eliminated because their capacities would have only marginally accommodated the required sediment volume, they impact known cultural resources, and they have incompatible neighboring land uses and visual impacts. Site 6R required a relatively long sediment haul route traversing residential areas and Carmel Valley Road. This alternative was eliminated due to traffic and safety impacts caused by truck haul, or the greater energy or water consumption required for the slurry pipeline or conveyor belt sediment conveyance.

OTHER SITES PREVIOUSLY IDENTIFIED

Other potential sediment disposal sites identified in a previous mapping study (California Department of Water Resources [DWR] 2002) include those referred to as Sites 2B through 2E, 3 and 5. These sites were only briefly considered and dismissed from further evaluation for purposes of the screening study. Sites 2B through 2E are small and of limited (and insufficient) capacity. Site 3 is located on a box canyon upstream of the Dam and is thus somewhat comparable to Site 4R. However, Site 3 is much farther from the reservoir and at a much higher elevation than Site 4R. Therefore, other factors being equal, disposal of sediment at Site 3 would be significantly more costly than at Site 4R. Lastly, Site 5 consists of a steep slope overlooking Carmel River and appears to be unsuitable for sediment storage.

STAGING AND EXPORT FOR SALE

MWH conducted an investigation of the commercial value of sediment in San Clemente reservoir (Appendix I). The study concluded that cost-effective development of mineral resources in the sediment now stored in San Clemente Reservoir does not appear to be feasible at this time. While the sediment could be processed into products that have commercial value, this value is completely offset by the incremental processing and transportation costs involved. There is not a positive benefit-cost ratio for selling the sediment based on current market conditions.

Dam / Sediment Management Alternatives Considered During Previous CEQA Review

The RDEIR (Denise Duffy & Associates 2000), issued in 2000 considered nine combined dam/sediment management alternatives. However, the RDEIR did not compare the environmental impacts of these alternatives or provide reasons for eliminating them. Several of these alternatives have been carried forward in this EIR/EIS, which captures the range of alternatives without unnecessarily multiplying alternatives.

MITIGATED RETROFIT WITH SEDIMENT MANAGEMENT

This alternative combines the proposed dam thickening project with sediment management through the operation of two high-level sediment ports with sluice gates, management of sediment transport past the Dam and downstream, and spot dredging. This alternative is similar to the Proponent's Proposed Project considered in this EIR/EIS.

NOTCHING WITH DREDGING

Under this alternative the Dam superstructure would be removed and the Dam would be notched to an elevation of 506 feet and a lower fish ladder would be constructed. Sediments accumulated behind the Dam would be dredged to prevent uncontrolled downstream release. This alternative is essentially the same as Alternative 1 considered in this EIR/EIS.

NOTCHING WITHOUT DREDGING

This alternative is identical to the preceding alternative except that dredging would not be performed. This alternative has been eliminated due to the potential impacts from sedimentation, loss of channel stability, and flooding and impacts to fish habitat and the

California red-legged frog (CRLF) associated with an uncontrolled release of sediment downstream.

NOTCHING WITH SEDIMENT MANAGEMENT AND SMALL RUBBLE DAMS

This alternative combines dam thickening (the Proponent's Proposed Project considered in this EIR/EIS) with sluice gates installed in two phases. Sediment accumulated behind the reservoir would be dredged, barged, and sluiced at double the throughput rate. The Dam would be notched to 506 feet and a lower fisher ladder would be constructed. A series of rubble dams would be installed between SCD and OCRD to provide grade control and fish passage. This alternative was considered and eliminated due to long-term significant adverse impacts to fish (over a 40-year period) before the design would provide stable fish passage and stream habitat.

DAM REMOVAL WITH DREDGING

This alternative involves dredging of accumulated sediments followed by removal of the Dam by breaching the spillway to an elevation of 457 feet. This alternative is essentially the same as Alternative 2 considered in this EIR/EIS.

PHASED DAM REMOVAL WITHOUT DREDGING

This alternative is identical to the preceding alternative except that dredging would not be performed. This alternative was eliminated due to the potential impacts from sedimentation, loss of channel stability, flooding and impacts to fish habitat and the CRLF associated with an uncontrolled release of sediment downstream.

COMPREHENSIVE DAM REMOVAL WITH SEDIMENT MANAGEMENT

This alternative provides a phased approach to dam notching, culminating in dam removal. Sluice gates would be installed and operated prior to each increment of dam notching. Controlled sediment releases to the Carmel River below the Dam would occur over a 60 to 100 year period. When complete, this alternative would theoretically provide unimpeded fish passage, release bedload (including spawning gravel) from the upper watershed, and restore the river and canyon to its pre-dam conditions. However, this alternative would have substantial long-term impacts to water quality and fish for 60 to 100 or more years. Additionally, the ability to "control" releases was not demonstrated, and potential flooding impacts were also considered in eliminating this alternative.

DEMOLITION AND MINING

This alternative would remove the Dam immediately through demolition to its base at elevation 457 feet. An attempt would be made to mine the released sediment. It was considered doubtful that mining could keep pace with downstream transport of sediment. The sediment releases associated with this alternative could jeopardize the listed steelhead trout population in the river as well as CRLF; result in substantial channel aggradation and bank migration and significantly increase flood risk; and risk loss of property, public infrastructure, and human life. Therefore, this alternative was eliminated.

MITIGATED RETROFIT AND DREDGE TO RESTORE CAPACITY

This alternative considered dredging the reservoir to restore its water storage capacity while retrofitting the Dam for seismic and flood-safety. This alternative was considered and eliminated due to significant, unavoidable water quality, steelhead trout, and CRLF impacts associated with dredging, as well as traffic, noise and air quality impacts associated with sediment disposal.

Water Diversion Alternatives

Installation of Water Wells in the Russell Field Area

This alternative considered three 2,400-gpm wells installed to a depth of approximately 80 feet in the alluvial deposits in the Russell Field area. The wells would be equipped with vertical turbine pumps delivering water to CAW's filter plant with an elevation head equivalent to that provided by the reservoir (total lift of approximately 200 feet to El 525). The wells would discharge to a common 24-inch-diameter, 2,000-foot-long, steel pipeline that would connect to the existing treatment facilities in the vicinity of the CVFP. Well installation would include the stainless-steel screen and casing, a properly installed filter pack, concrete slab at the well head, manifold piping, and valving. The pumps would have 100-hp electrical motors energized from a nearby 12-kV power line. Motor starters, switchgear, instrumentation and controls would be included in the outdoor-type installation. This alternative was eliminated due to cost and operational considerations.

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3.2 PROPOSED PROJECT: DAM THICKENING

3.2.1 OVERVIEW

The Proponent's Proposed Project (or in NEPA terms, the proposed action) is to retrofit the existing SCD, which is owned and operated by the Coastal Division of the CAW. The proposed improvements are intended to comply with DWR, Division of Safety of Dams (DSOD) requirements to address safety deficiencies and guard against failure from an MCE, and a PMF event, which could erode dam abutments.

Engineering investigations have identified structural improvements described as "downstream dam thickening" as the most appropriate design option for strengthening the Dam. This approach was the preferred project alternative in a 1995 report prepared for CAW by WCC, entitled *Structural Improvement of San Clemente Dam, Preliminary Feasibility Study*. MWH reviewed and approved this approach in 2004 for this EIR/EIS. DSOD confirmed that the Dam thickening alternative is an acceptable design (July 1, 1998, letter) and approved the contract drawings and specifications for the retrofit in 2001.

3.2.2 PROJECT LOCATION

For the purposes of the Final EIR/EIS, the Proponent's Proposed Project study area and area of potential effect comprises the reservoir, dam, CVFP, access roads, and affected reaches of the Carmel River and San Clemente Creek. Figures 3.2-1 and 3.2-2 depict the project region and vicinity, respectively.

The Project Area is within the upper reaches of the Carmel River in an unincorporated area of Monterey County. SCD sits at the confluence of Carmel River and San Clemente Creek (River Mile [RM] 18.5), approximately 15 miles southeast of the City of Carmel-by-the-Sea and 3.7 miles southeast of the Carmel Valley Village. Approximately five miles upstream of the SCD, is Los Padres Dam (LPD) at RM 23.5 on the Carmel River. SCD impounds a reservoir and serves as a surface water diversion point from the Carmel River.

The Project Site and most of the land surrounding the reservoir are owned by CAW. Land adjacent to the reservoir is largely undeveloped, consisting of steep slopes covered with dense chaparral and oak woodland. The CVFP is 1.5 miles north of the Dam. Surface water from the reservoir is gravity-fed to the CVFP. The Sleepy Hollow subdivision is located on San Clemente Drive adjacent to Carmel Valley Road and consists of 23 estate-sized lots with 16 completed residences. The Sleepy Hollow Steelhead Rearing Facility (SHSRF), constructed and operated by the MPWMD on land owned by CAW, is located less than one mile downstream of the existing dam.

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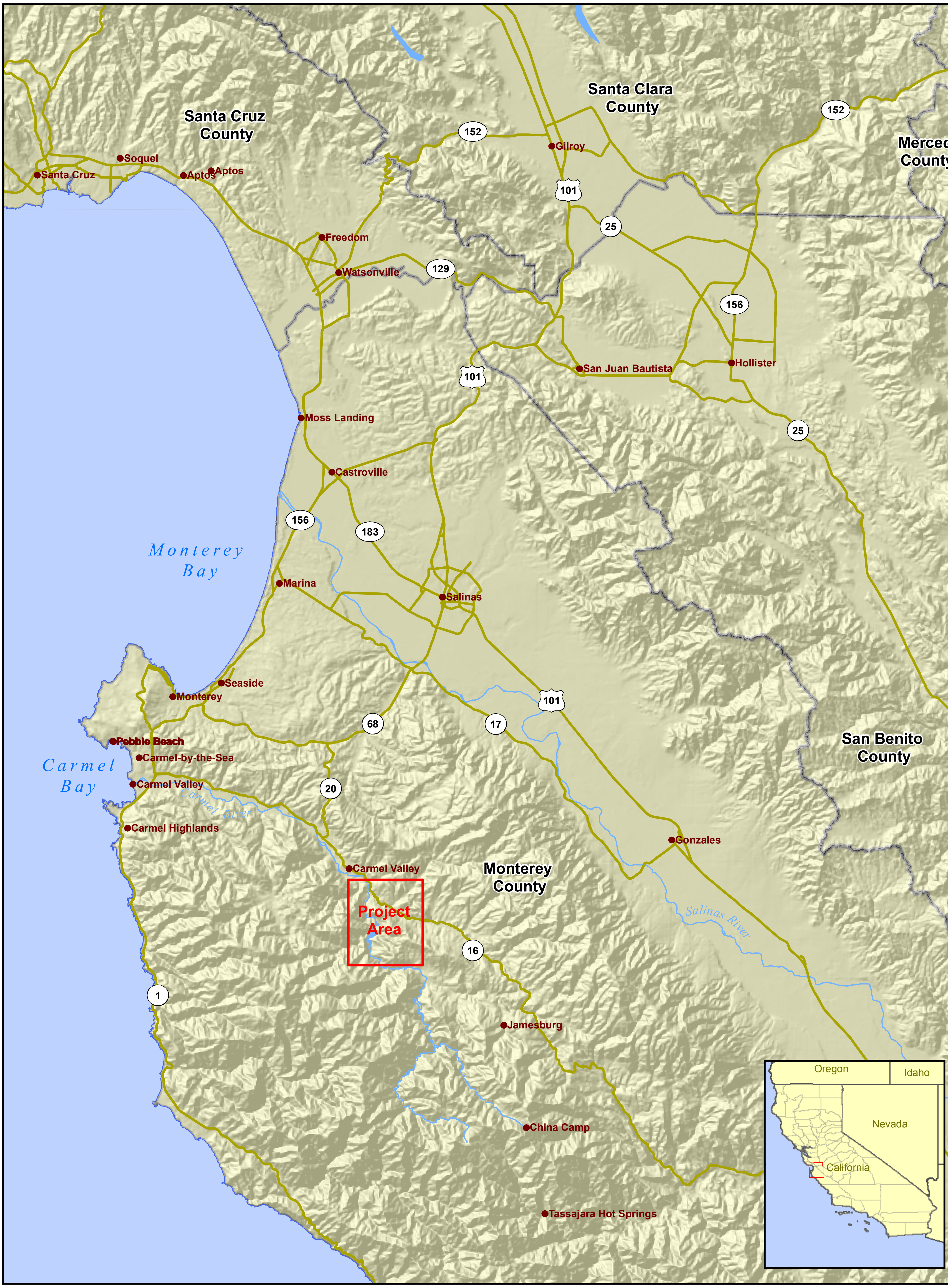

Legend

City	Lake/Reservoir
Major Road	Major River
County Boundary	

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 3.2-1

Project Site Location Map

0 2.5 5 10
Miles
N

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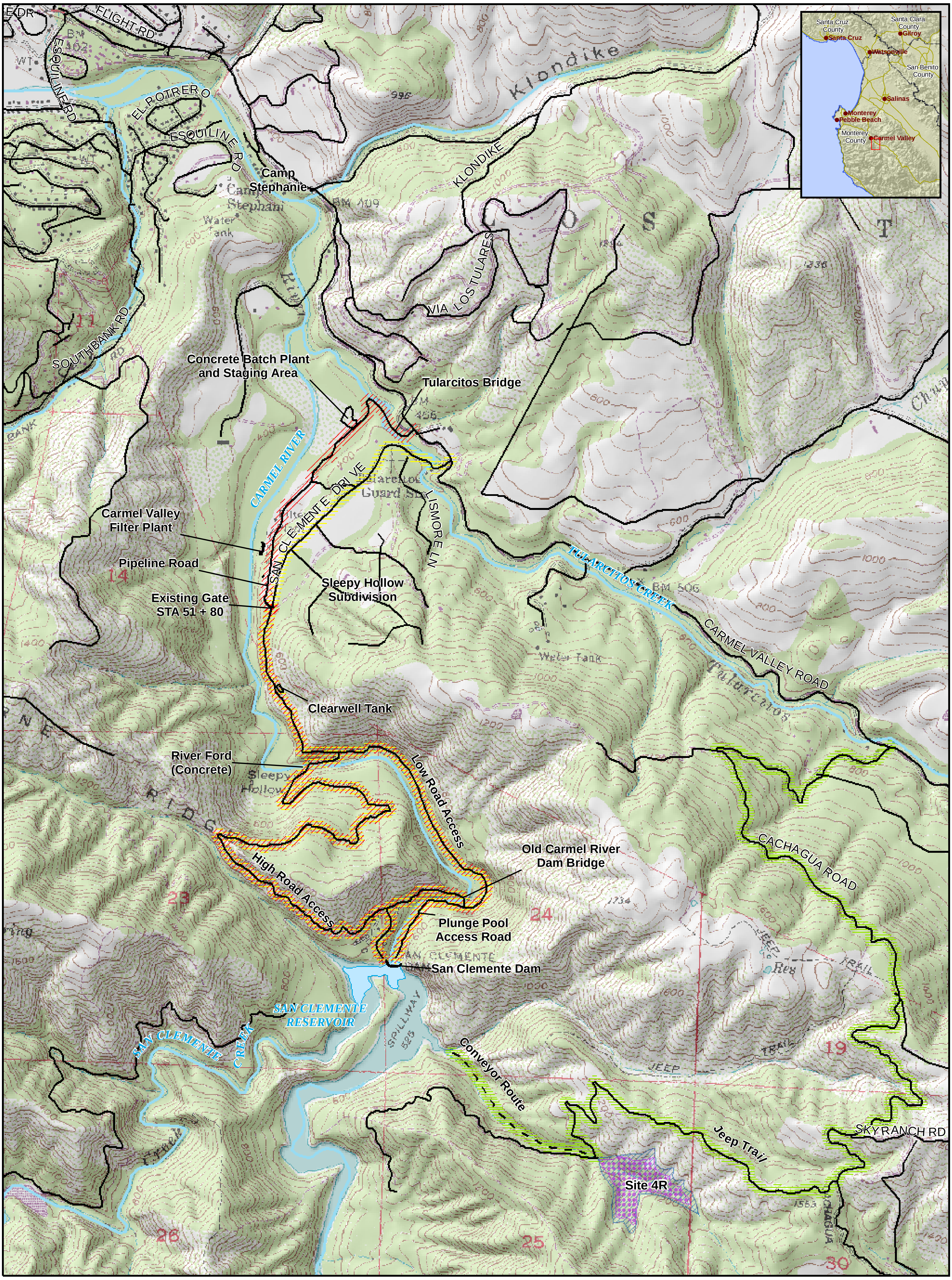

Legend

Access Routes
- Cachugua / 4R
- Sleepy Hollow
- Tularcitos
- Sleepy Hollow / Tularcitos*

*Note: Sleepy Hollow and Tularcitos access routes share the same roads between the filter plant and the dam

- Stream
- Reservoir
- Existing Road
- Proposed Road

Sediment Disposal Site
- Alternative 1 (16 Acres)
- Alternative 2 (22 Acres)

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 3.2-2

Local Vicinity Map

0 0.15 0.3 0.6
Miles
N

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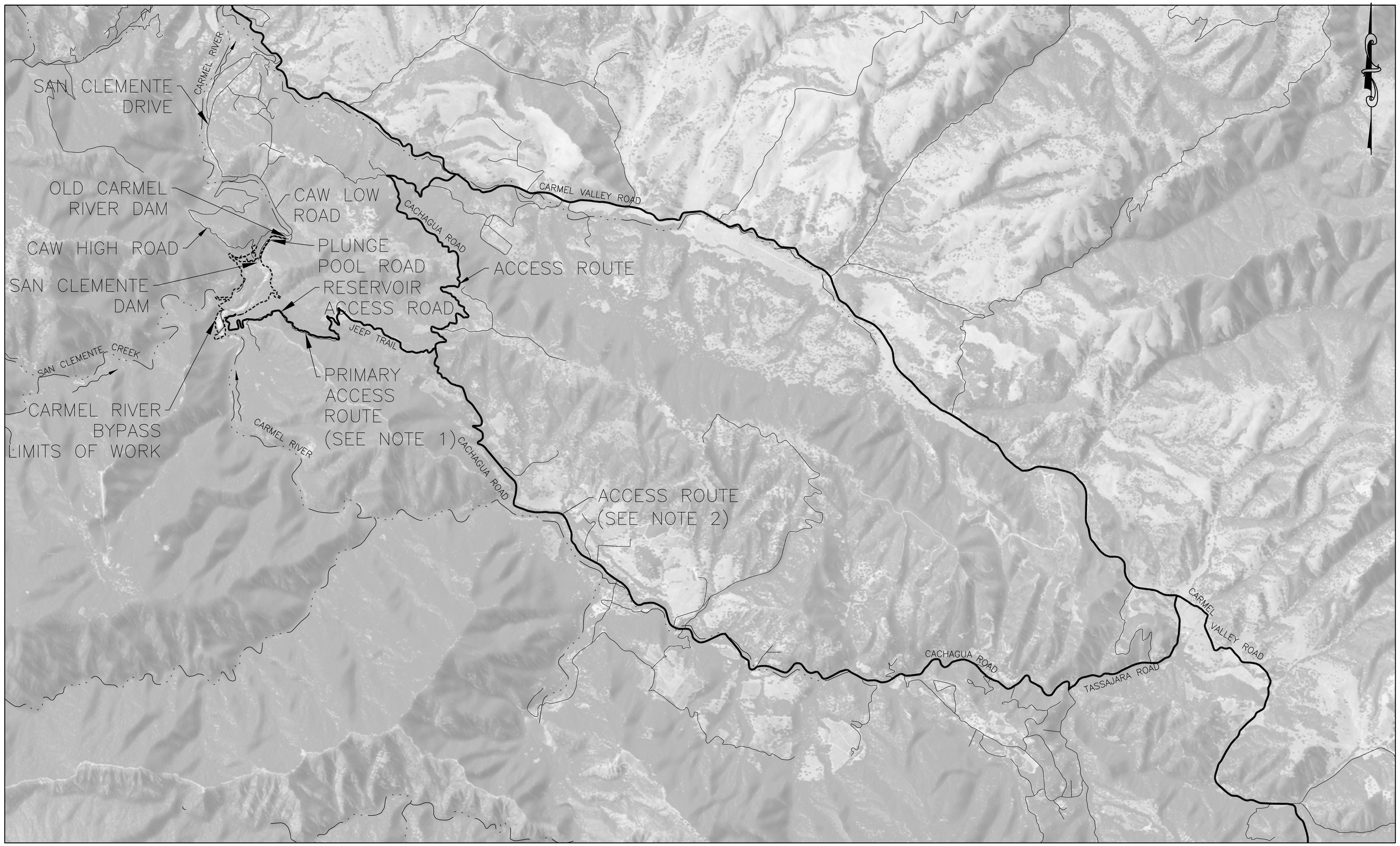

INSET A – PROJECT LOCATION MAP
SCALE: 1"=2500'

2500' 0 2500' 5000'
SCALE: 1"= 2500'

NOTES:

1. PRIMARY CONTRACTOR EQUIPMENT, MATERIAL, AND PERSONNEL ACCESS TO THE SITE SHALL BE VIA THE JEEP TRAIL AND RESERVOIR ACCESS ROAD.

2. FOR ACCESS TO THE JEEP TRAIL, THE CONTRACTOR SHALL UTILIZE CARMEL VALLEY ROAD TO CACHAGUA ROAD FOR MATERIAL HAULING WITH TRUCKS WITHOUT TRAILERS AND PERSONNEL TRAFFIC, AND CARMEL VALLEY ROAD TO TASSAJARA ROAD TO CACHAGUA ROAD FOR MOBILIZATION OF EQUIPMENT AND HAULING MATERIALS REQUIRING TRUCKS WITH TRAILERS. THE CONTRACTOR SHALL DEVELOP A TRAFFIC CONTROL PLAN TO BE SUBMITTED AND APPROVED BY THE MONTEREY COUNTY DEPARTMENT OF PUBLIC WORKS PRIOR TO CONSTRUCTION.

REVISIONS

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR

REVISED LOCAL VICINITY MAP

CALIFORNIA AMERICAN WATER
MONTEREY, CALIFORNIA

URS CORPORATION
1333 BROADWAY, SUITE 800
OAKLAND, CALIFORNIA 94612

DRAWN BY C.H. HSIEH
PROJECT ENG'R J. ROADIFER
APPROVED
DATE 03/19/12
PROJECT 26818031
USE DIMENSIONS ONLY
SCALE AS NOTED

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES

3.2–2a

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3.2.3 EXISTING STRUCTURE & OPERATIONS

San Clemente Dam

SCD is a concrete arch dam constructed in 1921, with a maximum structural height of 106 feet and a crest length of 300 feet. The reservoir impounded by SCD is currently used in conjunction with the Los Padres Reservoir and Upper Carmel Valley Aquifer wells as a source of water diversions to the CVFP. The reservoir and the CVFP are also an important water source for unincorporated Carmel Valley Village during the winter, although diversions are limited during low flow seasons. Currently, the reservoir serves as a point of diversion to serve the Peninsula and is operated to facilitate fish passage. A major portion of the Monterey distribution system relies upon the pressure head supplied by diversion from the reservoir, and many of the appurtenant system components (e.g., pumps, feed systems, etc.) were designed and installed accordingly.

Currently, CAW is limited to direct diversion of 1,137 AF at SCD based on the amount of water actually put to use by its predecessors prior to 1914. This is equivalent to a continuous direct diversion rate of 3.185 cubic feet per second (cfs) over a typical 180-day, six-month long dry season.

Pursuant to the 2001 Conservation Agreement between CAW and the National Marine Fisheries Service (NMFS), during low flow periods (defined as times when stream flow in the Carmel River at the Don Juan Bridge [RM 10.8] gage is less than 20 cfs for five consecutive days), CAW is required to cease surface diversions from SCD and to limit its production from wells in the Upper Carmel Valley Aquifer to maintenance levels, with no more than a combined instantaneous diversion of 0.5 cfs from the Russell wells. At these times, CAW maximizes production from its wells in the Lower Carmel Valley Aquifer and Seaside facilities. These requirements were added to State Water Resources Control Board (SWRCB) Order 95-10 in 2002 and are also referenced in the Annual Memorandum of Agreement (MOA) on Carmel River flows described under "Dam Construction Reservoir Drawdown and Stream Diversion" in this chapter. Refer to Section 1.5 of the Final EIR/EIS for a discussion of federal, state, and local regulatory requirements, including those of NMFS and the SWRCB.

The SCD crest is at Elevation 537 feet. (Figure 3.2-3 and 3.2-4) show the plan and profile of the existing dam. The spillway is an overpour structure with a crest elevation of 525 feet located at the center of the Dam. The original design storage capacity of the reservoir was 1,425 acre-feet at the spillway crest and 2,260 acre-feet at the top of the gates with the spillway gates in place. However, siltation has reduced the storage capacity of the reservoir to less than 150 acre-feet at the spillway crest, based on results of a survey conducted in March 2002 by CAW.

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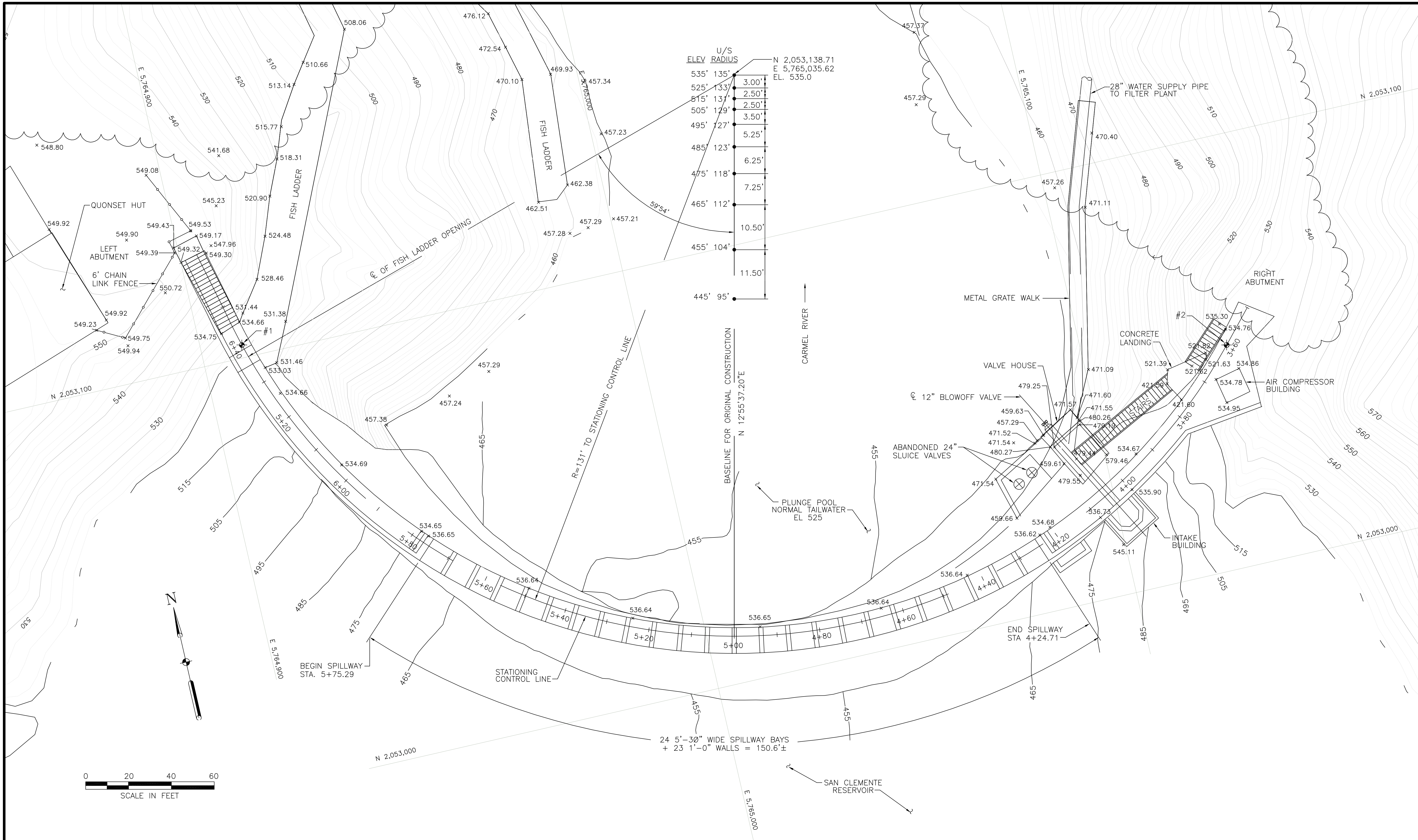


SOURCE : Woodward-Clyde International (11/98)

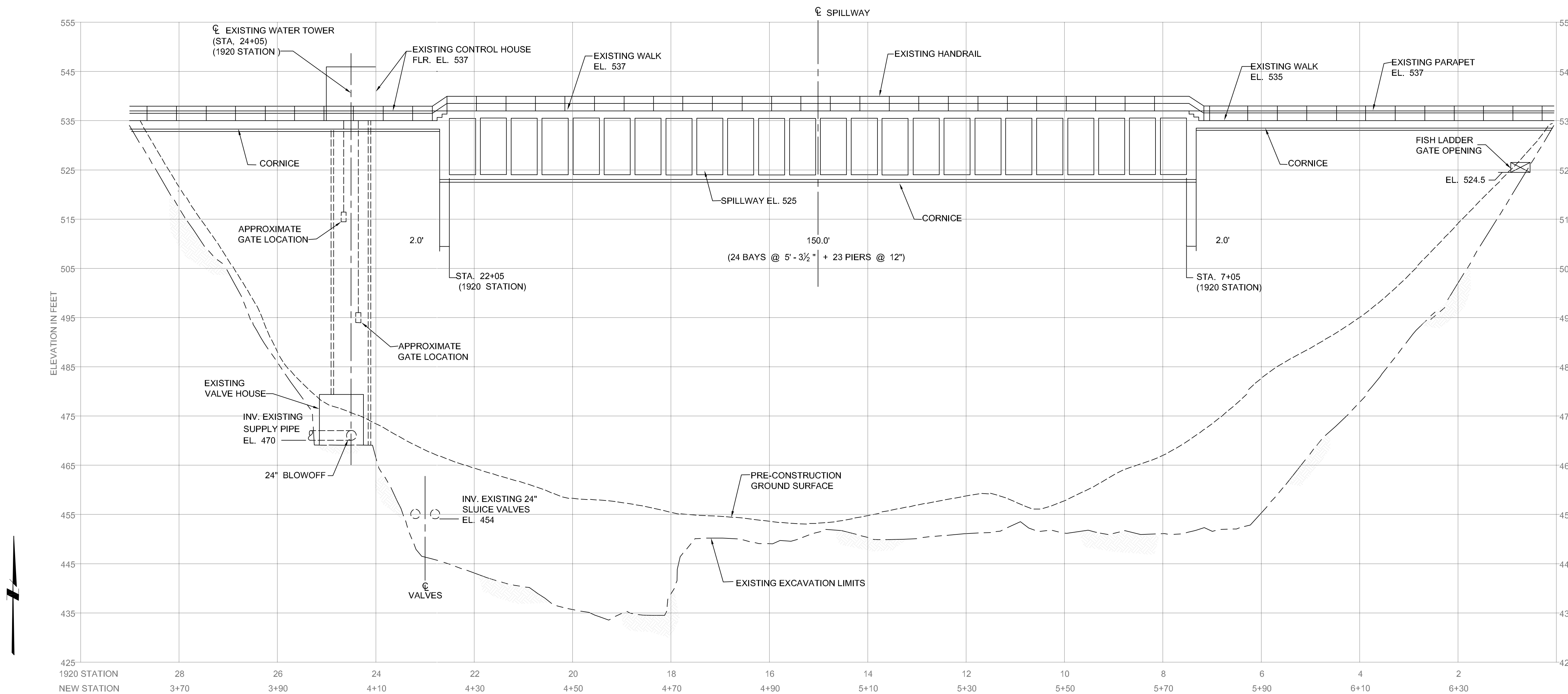
REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED / DRAWN / CHECKED

MWH Walnut Creek California

CALIFORNIA AMERICAN WATER

SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
PLAN OF EXISTING DAM

Figure 3.2-3



PROFILE ALONG VERTICAL PROJECTION
OF DOWNSTREAM ARC OF EL. 535
(LOOKING UPSTREAM)

NOTES:

1. ALL INFORMATION WAS GENERATED FROM ORIGINAL DRAWINGS DATED AUGUST 31, 1920.

0 10 20 30
SCALE IN FEET

SOURCE : Woodward-Clyde International (11/98)

REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED DRAWN CHECKED	MWH Walnut Creek California	CALIFORNIA AMERICAN WATER SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT PROFILE OF EXISTING DAM	Figure 3.2-4

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All spills since 1996 have occurred when the reservoir water level exceeds Elevation 525 feet. Operational restrictions are established annually via an MOA signed by California Department of Fish & Game (CDFG), MPWMD, and CAW (see Section 1.4).

Prior to 1996, the reservoir was operated without the spillway flashboards during the winter peak flood season (generally November 1 to April 30) and with flashboards in place during the spring, summer and into fall. The MPWMD was concerned that the shallow water levels occurring in the reservoir with the flashboards installed were responsible for elevating water temperatures in the Carmel River downstream of SCD and at the SHSRF. MPWMD requested that CAW control the reservoir without the spillway flashboards (MPWMD letter to CAW, April 22, 1997); flashboards have not been used at the Dam since 1996.

The outlet structure consists of a concrete outlet tower attached to the back end of the Dam with three intake gates at elevations of 515, 495, and 470 feet. The lower two gates cannot be operated due to buildup of sediment; water can be taken out from the highest gate. The upper gate has been fitted with a standpipe with an intake elevation of 522 feet to extend the intake above the current sediment level of about 515 feet surrounding the outlet tower. A valve house is located at the downstream toe of the Dam on the right abutment (looking downstream). The valve house contains a diversion structure that directs water to a conveyance pipe for treatment at the CVFP and to a low-level discharge pipe to the river. The eastern-most spillway bay (on the right side of the spillway looking downstream) is permanently closed to prevent damage to the valve house and appurtenant structures at the toe of the Dam during spilling. Two additional pipes extend through the Dam at approximately Elevation 454 feet, but the intakes to these pipes have been buried by sediment and are not operational.

In 2002, DSOD ordered modifications to SCD to meet interim dam safety requirements (see Section 3.6). These included installing six 12-inch valved ports in the Dam to draw down the reservoir to 515 feet during low flow periods.

Fish Ladder and Fishery Habitat

A fish ladder approximately 68 feet high is located on the west side of the Dam (left abutment), and provides passage for migrating steelhead between the plunge pool at the downstream base of the Dam and additional spawning habitat on Carmel River and San Clemente Creek upstream of the reservoir.

Carmel Valley Filter Plant

The CVFP is a surface water direct filtration and treatment facility operated by CAW, located approximately two miles downstream from the SCD on the east bank of the Carmel River. A 24-inch diameter diversion pipe parallel to the Carmel River delivers water from the reservoir to the CVFP. Access to the CVFP from Carmel Valley Road is via San Clemente Drive. No changes to the CVFP are proposed as part of this project.

3.2.4 PROJECT CHARACTERISTICS

This section describes the SCD Strengthening Project, including abutment protection, spillway and crest modifications, electrical system upgrades or improvements, and replacement of the fish ladder. Sediment accumulated behind the Dam would be left in place. It also summarizes construction activities necessary to complete the project and describes improvements to and/or new roads proposed as part of the project.

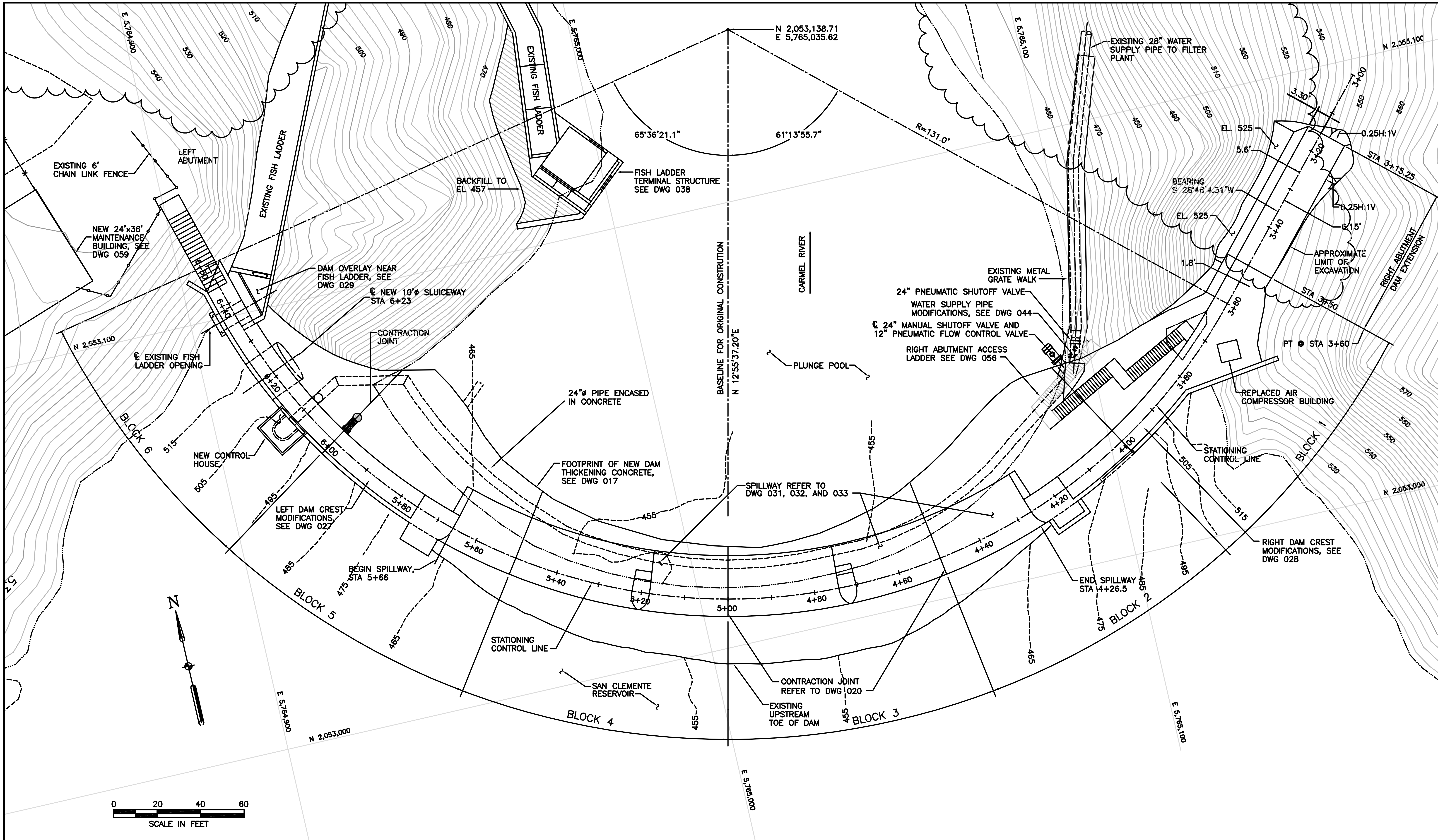
Dam Thickening

The proposed seismic retrofit project consists of thickening the Dam on the downstream side and providing abutment protection, particularly on the right abutment (as seen facing downstream). Figures 3.2-5 and 3.2-6 provide an overview of the Dam thickening plan and profile for the Proponent's Proposed Project. The Dam would be thickened by the placement of 50 to 60 cast-in-place concrete blocks, each approximately 50 feet in length and 10 feet in height, on the downstream face of the Dam. Each block would be tied to the existing dam structure with reinforced steel dowels. The thickness of the new concrete would be approximately proportional to the original thickness at each location along the Dam profile. For example, above Elevation 465 feet, the Dam would be thickened by 80 percent, ranging from 4.2 to 8.8 feet of concrete added; below Elevation 465 feet, 9 feet of concrete would be added. Figure 3.2-7 illustrates typical sections of the thickened dam.

Staging, Concrete Mix, and Production Plant

The project requires a concrete batch plant for concrete. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch pant equipment and aggregate materials. The presence of mountainous terrain up the canyon area closer to the Dam, and narrow, winding access roads limits possible site locations for the batch plant to near Carmel Valley Road. A smaller site closer to the Dam, was considered, but it was determined to not be large enough to allow large trucks to turn around. Therefore, it is not feasible to locate the batch plant closer to the Dam. Additionally, the proximity of electric power lines avoids the need to use of diesel generators for batch plant operation. This avoids additional emissions of NO_X, CO, ROC, SO_2, and diesel fine particulate (PM_{10}).

A portable concrete batch plant is proposed as shown in Figure 3.2-8. The proposed location for the concrete batch plant is an approximately 5-acre site, located about 2,400 feet northeast of the existing CVFP. This level area of CAW property has been disturbed in the past and sufficient lay-down area is available at this location. In addition, eighteen-yard transfer trucks could off-load raw materials directly onto stockpiles for use in concrete production.



SOURCE : Woodward-Clyde International (11/98)

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MWH
Walnut Creek
California

CALIFORNIA AMERICAN WATER

SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
PLAN OF THICKENED DAM

FIGURE #

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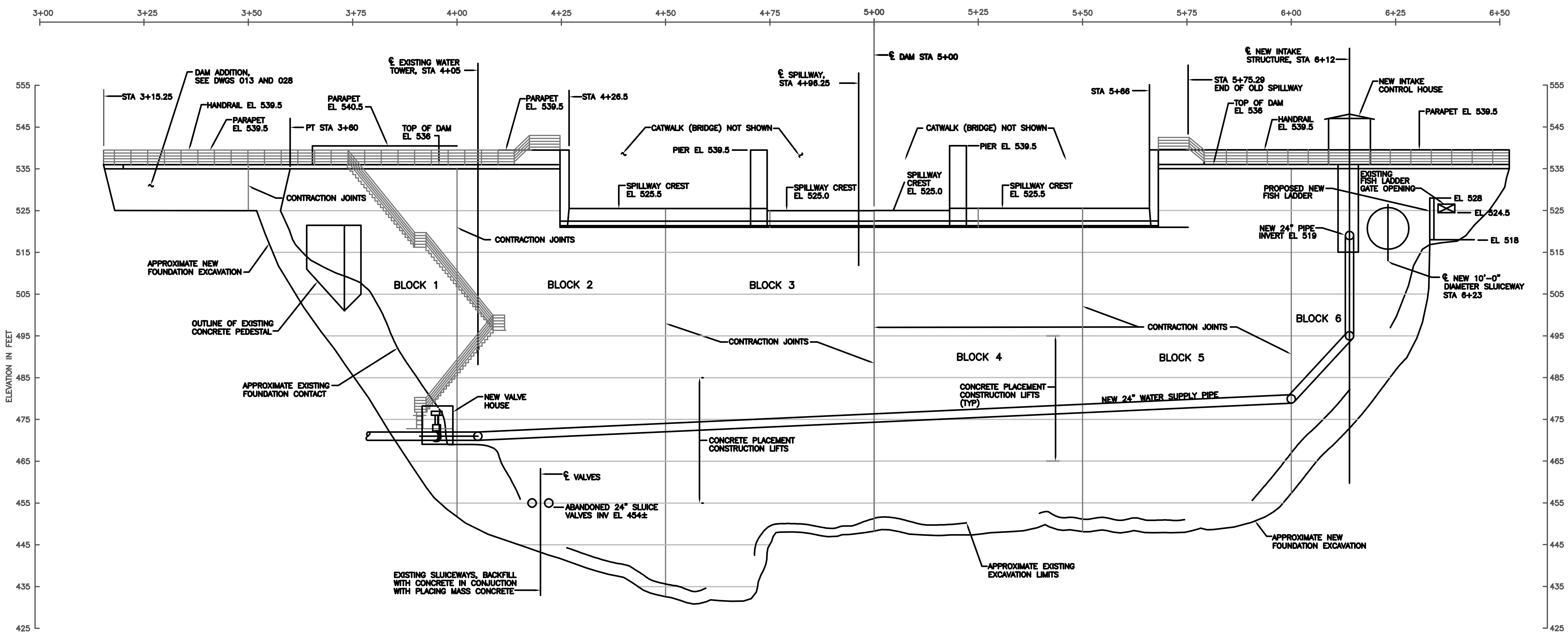

DEVELOPED PROFILE ALONG THE DOWNSTREAM FACE OF NEW CONCRETE
(LOOKING UPSTREAM)

0 10 20 30
SCALE IN FEET

NOTES:

1. CONTRACTION JOINTS SHALL HAVE 1-INCH CHAMFERS ON THE DOWNSTREAM FACE.
2. IF THE MAXIMUM HEIGHT OF A CONSTRUCTION LIFT PLACED AGAINST THE FOUNDATION IS LESS THAN 2-FEET, OR IF THE VOLUME OF CONCRETE IN THE LIFT IS LESS THAN 5-YARDS, INCLUDE THAT LIFT PLACEMENT WITH THE NEXT VERTICAL LIFT.

SOURCE : Woodward-Clyde International (11/98)

REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED / DRAWN / CHECKED	MWH Walnut Creek California	CALIFORNIA AMERICAN WATER SAN CLEMENTE DAM SEISMIC RETROFIT EIR/EIS PROJECT PROFILE OF THICKENED DAM	FIGURE #

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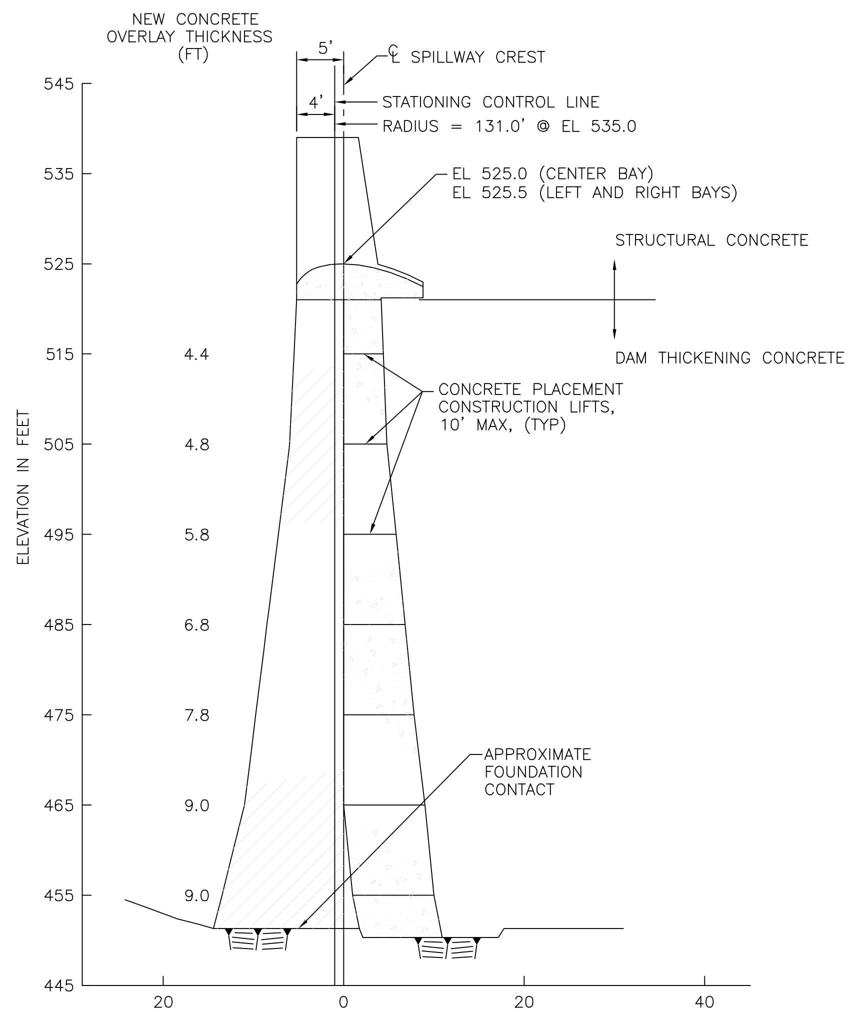

TYPICAL SPILLWAY SECTION
STA 5+00

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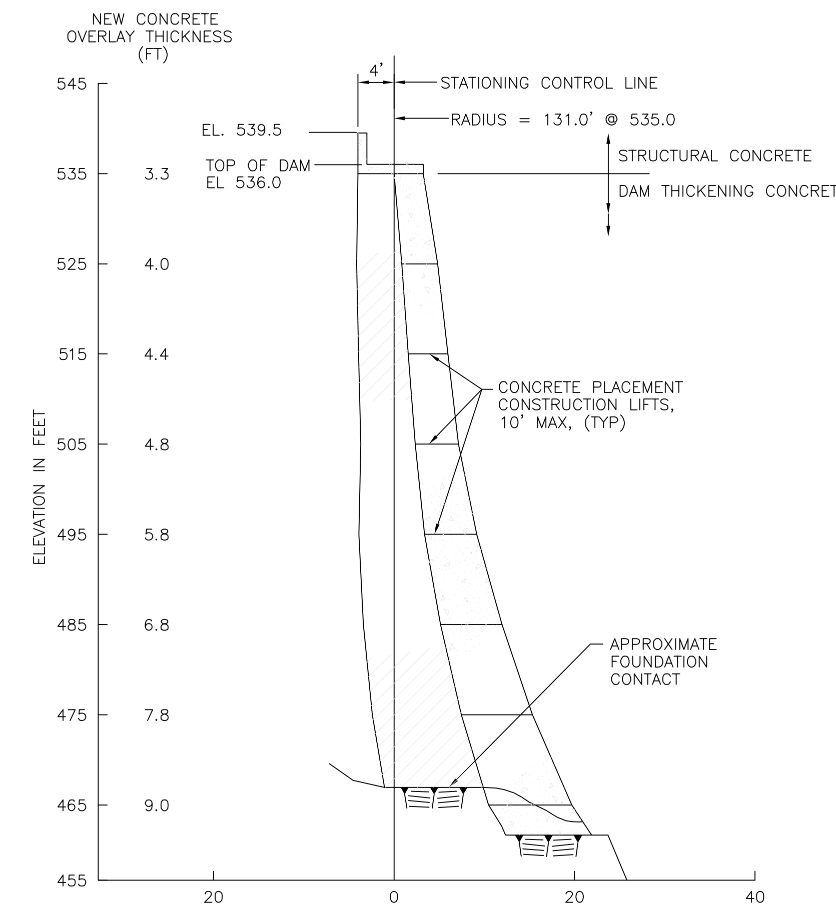
SCALE IN FEET



TYPICAL NON-SPILLWAY SECTION
STA 6+00

0 10 20 30
SCALE IN FEET

NOTES:

1. REFER TO TABLE ON DWG 014 FOR OVERALL DAM GEOMETRY. LAY OUT NEW CONCRETE OVERLAY BASED ON THICKNESS CALLED OUT ON TYPICAL SECTIONS. IN THE EVENT THE ACTUAL RADII OF THE DOWNSTREAM FACE OF THE OVERLAY VARIES FROM THE SPECIFIED RADII ON DWG 014 BY MORE THAN SIX INCHES, NOTIFY ENGINEER BEFORE CONCRETE PLACEMENT.
2. FORM CONCRETE LIFTS WITH VERTICAL CHORDS NO GREATER THAN LIFT HEIGHT.
3. FORM CONCRETE LIFTS WITH HORIZONTAL CHORDS NO GREATER THAN 10 FEET.
4. CONSTRUCTION LIFT HEIGHTS SHOWN ARE MAXIMUM. CONTRACTOR MAY SUBMIT ALTERNATIVE LIFT HEIGHT FOR APPROVAL BY ENGINEER.

SOURCE : Woodward-Clyde International (11/98)

REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED / DRAWN / CHECKED	MWH Walnut Creek California	*CALIFORNIA AMERICAN WATER* SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT TYPICAL SECTIONS OF THICKENED DAM	Figure 3.2-7

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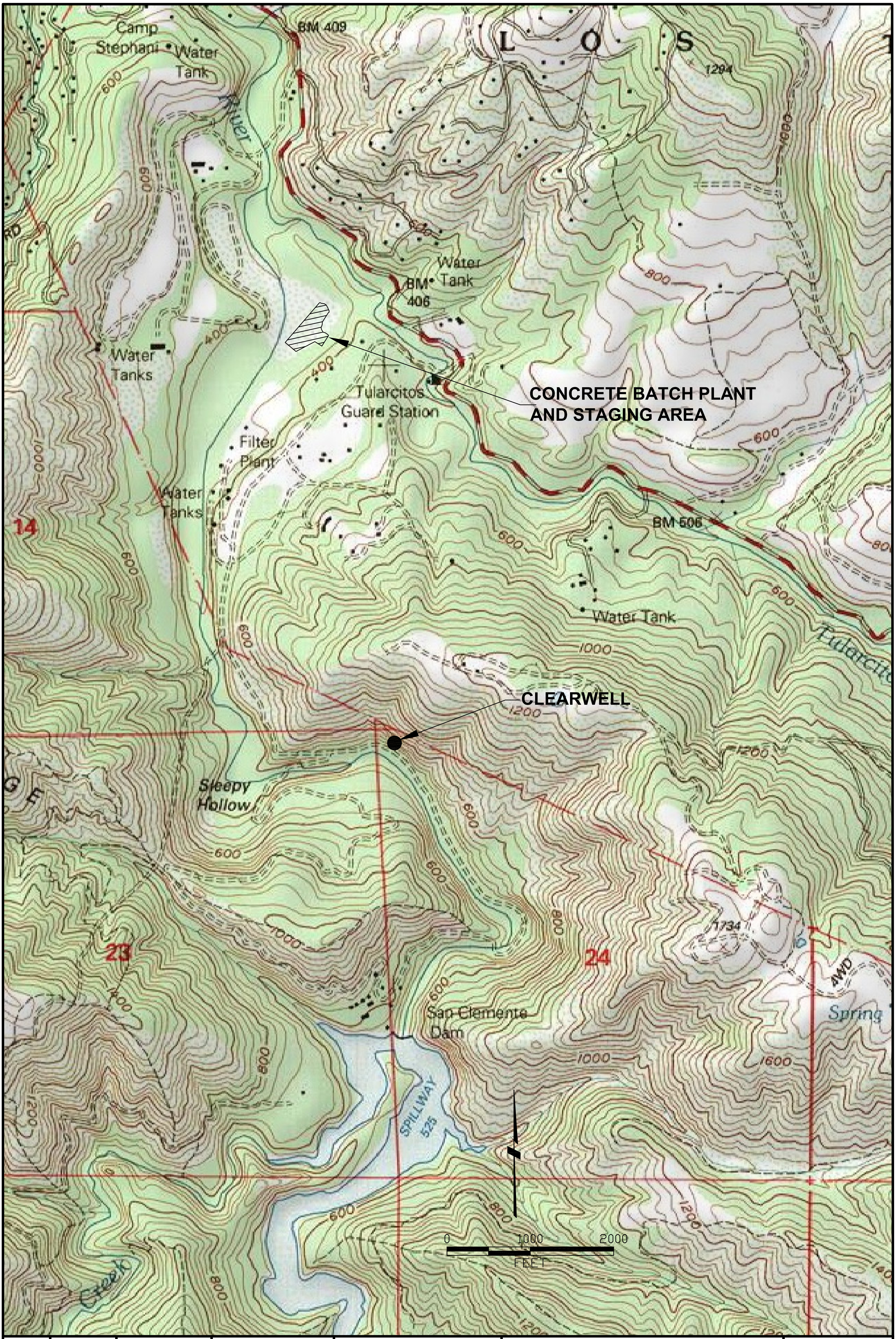

SCALE

WARNING
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CHECKED

MWH
Walnut Creek
California

CALIFORNIA AMERICAN WATER

SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
CONCRETE BATCH PLANT LOCATION

Figure 3.2-8

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An additional proposed location for staging is an approximately 0.65 acre (28,000 square feet) site, located about 2,600 feet south of the CVFP along the unpaved access road that leads from San Clemente Drive to the Dam. The site was used as a construction and soil processing staging site for a facilities improvement project called the CVFP Clearwell (Water Tank) Project. If additional construction staging is necessary, this site may provide area for construction equipment and material storage. However, the Clearwell staging area is not large enough to accommodate the concrete batch plant needed for the project.

Based upon construction materials studies, the preferred source of aggregate is imported aggregate, since the quality of onsite aggregate is highly variable. By using an off-site source of aggregate, processing time can be eliminated and development and maintenance of a construction schedule is more predictable.

Off-site aggregate will be delivered and stockpiled near the concrete batch plant over an extended period of time in advance of the retrofit. Materials hauled to the batch plant for the retrofit include about 10,000 tons of coarse aggregate, 5,000 tons of sand, 24,000 sacks of cement, and 8,000 sacks of fly ash. This material will be used at the batch plant to produce approximately 5,800 cubic yards of concrete for the Dam and 1,400 cubic yards for the fish ladder. The concrete would be hauled to the Dam in concrete mixer trucks.

Dam Construction Reservoir Drawdown and Stream Diversion

The reservoir would be partially drained prior to concrete placement to reduce the hydrostatic force against the Dam while under construction. This would also provide some storage capacity as a contingency in case of unexpected storms. The water surface elevation would be lowered to approximately Elevation 510 feet. In addition, stream flows would be passed downstream to maintain the flow and habitat in the Carmel River during construction. Figure 3.2-9 provides an overview of drawdown characteristics for the proposed dam thickening.

The need to draw down the reservoir during construction constrains the main construction activities to a period when streamflow is low enough to be passed through a bypass pipeline and around the construction dam site. The target streamflow for construction is about 50 cfs.

The following steps would be taken to draw down the reservoir while maintaining the stream flow:

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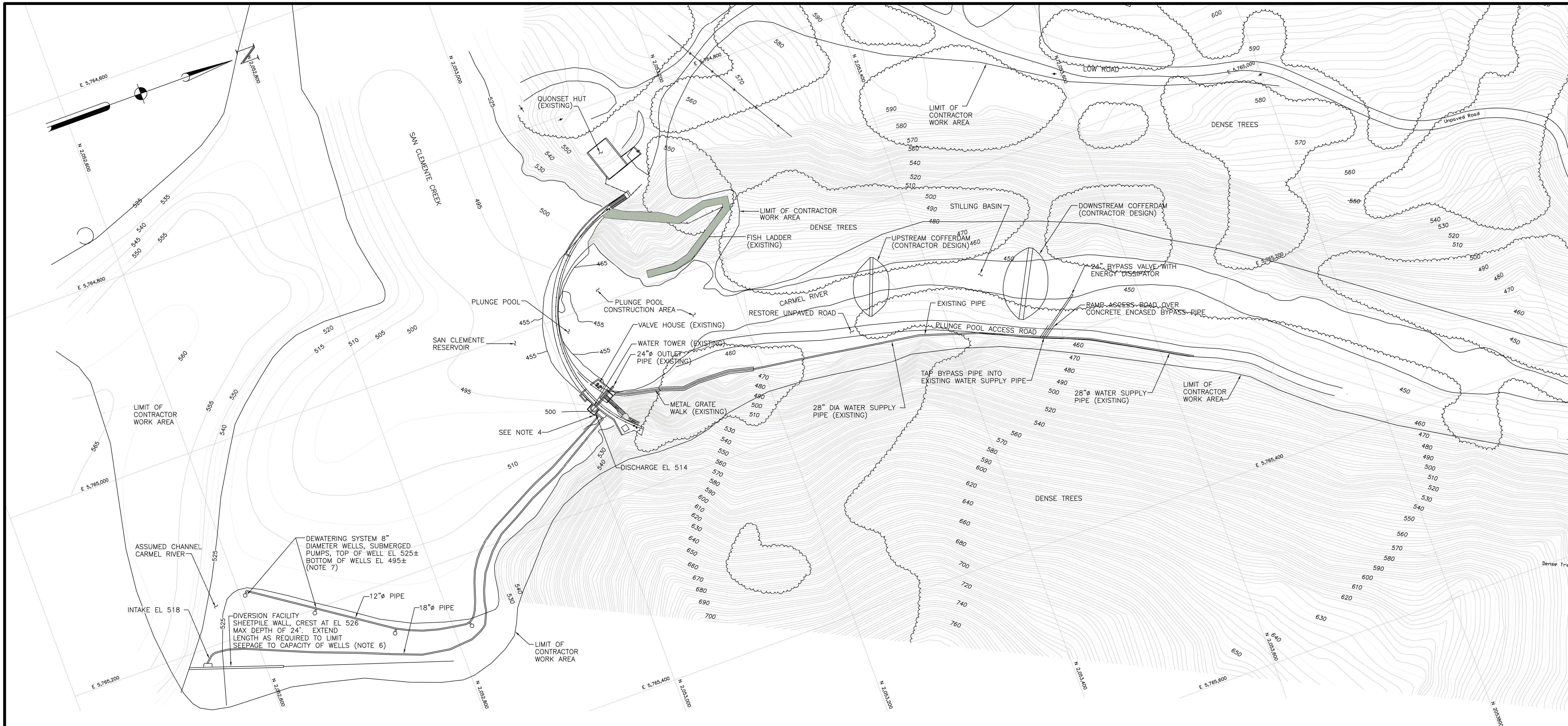

PLAN

0 40 80 120
SCALE IN FEET

1. LOCATION AND DEPTH OF CARMEL RIVER AND SAN CLEMENTE CREEK CHANNELS INTO THE DRAWN DOWN SAN CLEMENTE RESERVOIR ARE APPROXIMATE. CONFIRM PRIOR TO STARTING
2. LOCATION OF SEDIMENT CONTOURS WITHIN SAN CLEMENTE RESERVOIR ARE APPROXIMATE BASED ON CAL AM SURVEY IN SUMMER 1998. CONFIRM PRIOR TO STARTING WORK.
3. FINALIZE WITH ENGINEER LOCATION OF DEWATERING SYSTEM AND DIVERSION CUTOFF AS RESERVOIR IS INITIALLY DRAWN DOWN.
4. PROVIDE CONNECTION OF 12"ø PIPE (DEWATERING SYSTEM) AND 18"ø PIPE (DIVERSION FACILITY) TO FIT INTO 18" x 24" INTAKE VALVE AT EL 514 FT.
5. SIZE AND LOCATE THE COFFERDAMS AND STILLING BASIN FACILITY DOWNSTREAM OF THE PLUNGE POOL CONSTRUCTION AREA TO MEET CONSTRUCTION RELATED REQUIREMENTS.
6. SIZE AND LOCATION OF DIVERSION FACILITY IS DIFFERENT FOR DAM REMOVAL, NOTCHING, AND RIVER REROUTE WITH DAM REMOVAL ALTERNATIVES
7. DEWATERING SYSTEM NOT ANTICIPATED FOR DAM REMOVAL NOTCHING, RIVER REROUTE WITH DAM REMOVAL ALTERNATIVES

SOURCE : Woodward-Clyde International (11/98)

REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED / DRAWN / CHECKED	MWH Walnut Creek California	*CALIFORNIA AMERICAN WATER* SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT PLAN OF DRAWDOWN AND DIVERSION	Figure 3.2-9

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- Draw down the reservoir using the existing intake structure with gates at Elevations 515 feet and 495 feet. The high and mid level intake gates at Elevations 515 and 494 feet will need to be exposed from deposited sediments to draw down water below Elevation 515 feet. A sheetpile barrier would be installed around the intake. The sediment between the sheetpile barrier and the Dam intake would be removed and dewatered in a temporary basin. After the turbidity has cleared the reservoir would be lowered to Elevation 510 feet.

- At some point the turbidity of the water in the reservoir may be too high to release it directly downstream. A diversion facility, consisting of a sheetpile cutoff wall, would be installed in the channel upstream to divert incoming flows from the Carmel River through a 36-inch-diameter bypass pipeline. This pipeline would convey the river flow to the existing mid-level intake (which may be sealed to keep out turbid water) and continue through the existing 30-inch-diameter pipeline approximately 500 feet downstream of the Dam to an energy dissipation structure where the water would be released to the Carmel River bed. During the construction season most of this bypass flow is anticipated to be released from Los Padres Reservoir upstream. A similar, smaller sheetpile diversion facility and pipeline may be required to divert flows from San Clemente Creek around the Dam.

- Well points would be installed within the sediment deposits downstream of the diversion facility, as necessary to capture leakage water to maintain the water surface in the reservoir at the desired level. Pumps would be equipped with filters so that water coming out of the wells would be sufficiently clear to pass downstream.

Exact locations of the diversion facility and well points would depend on the actual sediment level when construction begins, and will be determined in the field at the time.

Site Activities at Plunge Pool

The process of thickening SCD requires dewatering the plunge pool at the downstream toe of the Dam, drying the downstream dam face, and installing two cofferdams downstream of the plunge pool to keep the site dry and to provide a settling basin.

The plunge pool downstream of the Dam would be completely drained prior to construction to prepare the foundation for the new concrete and to allow access for construction workers and machinery for placement of concrete. To keep the plunge pool staging area dry during construction, two cofferdams would be installed. One cofferdam is required to prevent backflow from the Carmel River. The second one would be located upstream to create a settling basin between the cofferdams. This basin would hold any leakage from the downstream cofferdam, and be used to allow settling or filtration of turbid water before it is released downstream.

The lower portion of the thickened dam would not be exposed to the plunge pool waters while the concrete cures. The temporary downstream cofferdam would not be removed until it has cured for at least 28 days, which is the standard concrete curing time. Due to the elevation above the plunge pool, the upper portions of the thickened dam would not have any potential to be in direct contact with water during the curing process. After construction is completed and the cofferdams are removed, the cofferdams and the solids accumulated in the settling basin would be removed and used locally. Larger materials would be placed on-site for erosion protection and fines would be disposed of in the reservoir area.

The foundation surface and the downstream face of the Dam would be prepared prior to placing the new concrete overlay. Foundation preparation includes removal of alluvial deposits, loose rock blocks, overhanging rock, and weathered and highly jointed rock down to sound rock. Material would be taken to a local disposal site or used onsite as described above. Care would be taken not to undermine the existing dam. Other preparation includes cleaning the foundation surface with high-pressure water jets; excessive excavation of shear zones and dikes; dental excavation of loose infill materials and washing these zones; filling of joints with slush grout; and filling of voids and depressions with dental concrete.

Dam downstream face preparation would include: sandblasting or water blasting of the downstream surface to clean the surface; drilling holes and installing steel dowels; and pre-wetting the surface for the 24 hours prior to concrete placement to maximize the bond between the new concrete blocks and the existing concrete.

A large tower crane with a concrete bucket would be used to place the concrete. The crane would be located downstream of the Dam in the drained plunge pool to provide adequate access to the entire footprint of the Dam, from the crest down to the foundation. Bucket placement has been assumed instead of pumping. Pumping is not suitable for this application because it would require a higher slump and smaller aggregate. This would result in more shrinkage and would therefore be detrimental in bonding the new concrete to the old, which is a concern of DSOD.

New outlet valves would be installed and tested after concrete placement. In the final task before demobilization, the construction joints between the concrete blocks would be grouted through a system of embedded grout pipes after the concrete has cured. In a dry year this could occur as late as January, otherwise it would take place after uncontrolled winter spills have stopped.

Abutment Protection

The rock at the right abutment appears to be insufficient to support the loads imposed by the thickened structure. To provide sufficient support for the thickened dam, the right abutment may require extending a new concrete wall approximately up to 50 feet into the abutment to tie into more competent rock. Scaling would be required to remove weathered and fractured rock, and rock bolting may be necessary to secure some potentially unstable rock blocks. In addition, much of the right abutment would be covered with reinforced concrete or shotcrete to protect it from the erosive forces applied by overtopping flows.

The left abutment is likely acceptable except for localized areas that would require dental excavation or strengthening of intensely fractured rock and filling of voids. Rock bolting would be performed to secure potentially unstable rock bolts. Portions of both abutments that exhibit weathering or a significant degree of cracking would be covered with shotcrete as appropriate to protect the surface from scour during overtopping.

Final design would include detailed geologic mapping and a drilling program into rock on both the left and right abutments to further define rock quality, joint orientation and stability, enabling further refinement of the preliminary design assumptions, excavation plan, and construction quantities.

Spillway and Crest Modifications

The spillway and dam crest would be modified to increase the effective spillway width and reduce the amount of overtopping during the PMF. The spillway superstructure (shown in Figure 3.2-4) on the top of the Dam would be removed. The normal maximum controlled water surface will be limited to Elevation 525 feet with no flashboards or gates. The hydraulic capacity of the spillway would be increased by reducing the number of piers from 23 to 2, thereby increasing the effective spillway width. In addition, the increased spacing between piers would reduce the buildup of downed trees and other debris at the existing closely spaced piers. A catwalk bridge would be constructed across the three spillway bays.

The Dam crest would be raised from Elevation 537 feet to Elevation 539.5 feet by constructing a parapet wall along the upstream edge of the crest. This has no effect on current or future water storage. These measures would increase the spillway capacity at the parapet elevation from about 20,000 cfs to about 27,000 cfs. This compares to a 100-year flood flow of about 25,000 cfs. Overtopping of the parapet wall during a PMF would be reduced from 14 feet to 10 feet. The spillway design would be modified to increase the cantilever (overhang) from one foot to 4 feet, maintain the center bay set at Elevation 525.0 feet and raise the crest of the side bays to Elevation 525.5 feet. These modifications to the spillway design have been incorporated into the project to minimize the potential for out-migrating fish to strike the Dam face.

Modification of Low-Level Outlet Works

The existing low-level outlet works include an upstream gate house over a stilling well. Three manually operated sluice gates control inflow into the well. A 24-inch-diameter pipe passes through the Dam and connects the existing well to a 24-inch-diameter steel wye branch just downstream of the Dam. One leg of the wye has a 24-inch gate manual shutoff valve and a 12-inch manual flow control valve and discharges to the river. The other is controlled with a 24-inch manual gate valve and discharges to the 30-inch-diameter pipeline to the CVFP. The wye and valves are in a small valve house at the toe of the Dam that is within the footprint of the proposed concrete buttress.

Due to the sedimentation buildup on the upstream face of the Dam in this area, the existing control structure will be abandoned-in-place and a new structure and outlet pipe will be constructed on the left upstream face of the Dam, in the vicinity of the new 10-ft. diameter sluice pipe at Station (Sta) 6+23. The three manually operated sluice gates controlling inflow into the existing well will be abandoned-in-place and removed from service. The existing 24-inch diameter pipe penetrating the Dam will be abandoned-in-place and infilled with concrete. A single manually operated sluice gate will be installed at the new outlet works location at approximately Sta 6+12 and invert Elevation 519. Trashrack protection of the upstream intake will be provided. The existing wye branch, valves and building downstream of the Dam will be removed. The new 24-inch pipe penetrating the left side of the Dam would be routed down the left downstream face of the existing dam, and across the Dam to the right downstream face, where a new wye branch and 24-inch butterfly valves will be provided connecting to the CAW water system. The leg to the river will include a 24-inch manual shutoff valve and a pneumatically operated 12-inch flow control valve. The leg to the CVFP pipeline will have a 24-inch pneumatically operated shutoff valve. Control of flow will be from the filter plant.

The new 24-inch pipe located on the downstream face of the existing dam will be encased in the new cast-in-place concrete blocks, in order to protect it from discharges over the spillway. The pipe has been routed near the base of the Dam in order to maximize the concrete encasement of the pipe. At the elevations shown, the additional concrete thickness is at least 6 feet, compared to the 2 feet diameter of the pipe. The dowels connecting the new concrete to the Dam are 14 inches long, leaving almost 5 feet of concrete for unobstructed placement of the pipe.

The invert of the new 24-inch pipe on the upstream face of the Dam has been placed as low as reasonably possible (and therefore close to the 10-foot diameter sluice pipe) to maximize water depth, while minimizing blockage from debris near the surface, or passage of sediment from below.

One possible alternative to placement of the pipe within the new downstream concrete face would be to run the pipe across the new downstream face of the Dam, horizontally underneath the new 4-foot wide lip of the spillway. This would eliminate the direct flow of water onto the pipe during spilling by raising it to a protected area. However, service and maintenance of the pipe in this location near the top of the Dam would be difficult.

High-Level Outlets

A high-level outlet equipped with a 10-foot diameter sluice gate would be installed during the proposed dam thickening as shown in Figure 3.2-5. This will enable controlled and limited sediment releases to maintain both upstream passage to the fish ladder exit and access to the upper gates of the existing low-level outlet works. The discharge of sediment would be regulated by the United States Army Corps of Engineers (USACE) as described in Chapter 1. It is anticipated that the high-level outlets would be operated during the rising limb of early to mid-season storms to release small amounts of sediment while maintaining flow in the fish ladder.

The outlet would be positioned near the fish ladder exit with the invert below the level of the spillway crest (Figures 3.2-5 and 3.2-6). The exact location and elevation of the outlet would be determined in conjunction with the final design of the fish ladder. The gate could be opened during high flows (in excess of ladder flow capacity) to keep the river flowing through the approach channel to the ladder exit as much as practicable. The objective would be to keep the river channel through the reservoir sediments directed at the vicinity of the ladder exit. Therefore, the sluice gate would be located as close as possible to the ladder exit consistent with downstream plunge pool conditions, abutment protection requirements, and fish fall-back considerations.

The outlet would be formed in the new concrete section of the Dam. In the existing concrete section, it would be constructed by drilling an oversized conduit through the existing concrete, placing an inner steel liner in the conduit, and grouting the annulus between the steel liner and the excavated conduit. The lined outlet would discharge to the downstream face of the thickened dam. This gate would be installed against the upstream face of the existing dam. A trashrack would be installed upstream of the gate to protect it from logs and large debris. Minor sediment excavation would be needed to allow installation of the gate and trashrack. This may be accomplished by installing a small sheetpile barrier around the proposed gate inlet. The sediment between the sheetpile barrier and the gate inlet would be removed.

Electrical System

The existing electrical service is supplied by a Pacific Gas & Electric (PG&E) 12-kilovolt (kV) 3-phase pole line located immediately outside an onsite structure above the left abutment of the Dam. Pole mounted transformers provide 3-phase service, which in turn provides service to the Dam itself and a nearby CAW owned residence. Construction power requirements are dependent upon the type and location of any cranes, and dewatering requirements. The need for 480-volt 3-phase 150-kilovolt-ampere (kVA) service has been identified for electrical upgrades for the Dam thickening. This would require changing the transformer but would not require new power poles. A new 50-ampere (amp) service panel would be installed in place of the existing 15-amp service panel. The existing structure would be replaced with a small pre-engineered building that would house the electronic controls for the outlet valves.

3.2.5 PROJECT ACCESS AND IMPROVEMENTS

Access from Carmel Valley Road to San Clemente Dam

Access to the Dam and reservoir is currently provided via San Clemente Drive, a gated road that extends from Carmel Valley Road, through the Sleepy Hollow Subdivision. San Clemente Drive crosses Tularcitos Creek over a single-lane bridge approximately 17 feet wide and leads to CAW gates at the southern bounds of the Sleepy Hollow subdivision. This locked gate prevents public access to the reservoir. San Clemente

Drive is paved from Carmel Valley Road to the locked gate. The road is unpaved from the locked gate to the reservoir. Two other private roads have gated access to the Project Site from private properties to the south and west.

From the turnoff to the filter plant, San Clemente Drive runs approximately 1.7 miles to the base of the Dam. A narrow "pipeline access route" parallels a portion of this route. Access to the left abutment of the Dam is possible by either the "High Road," crossing a ford across the Carmel River, or via the "Low Road," using an existing bridge across the river at the OCRD 1,800 feet downstream from SCD. Improvements will consist of widening and providing turnouts along sections where the terrain permits, and grading and pruning sections of the road. Improvement of the plunge pool access road between the OCRD and the base of SCD would also be necessary to stage the tower crane and other construction equipment at the base of the Dam. The Old Carmel River Dam Bridge (OCRB) would also require upgrading to accommodate heavy loads and large trucks carrying construction equipment. Approaches to the bridge would require modification for long loads and some structural members would be replaced.

Access from Carmel Valley Road to CVFP (Tularcitos Access Route)

The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. Road realignment includes construction of a new access road (Tularcitos Route) to provide a better line of sight and to bypass the Sleepy Hollow subdivision. The new road would start at Carmel Valley Road about 800 feet west of San Clemente Drive, transverse Tularcitos Creek over a new bridge, and provide access to the proposed staging area and batch plant. The existing road between the staging area and the filter plant would be upgraded and widened.

This road would be developed as a permanent access road to the CVFP and SCD. After completion of the road, the portion of the San Clemente Road that runs through Sleepy Hollow would no longer be used except for emergencies. The location of the proposed turnoff from Carmel Valley Road was selected along a straight section of Carmel Valley Road and provides a sight distance of at least 300 feet in either direction. "Truck Crossing – 500 Feet" signs would likely be necessary on both Carmel Valley Road approaches. An encroachment permit would be required from the County of Monterey. A 100-foot transition on the West Side of the intersection would be constructed. Asphalt pavement for the transition section and 25 feet from the intersection would be installed to protect the Carmel Valley Road edge of pavement and to reduce dust at the intersection.

Approximately 175 feet south of Carmel Valley Road the alignment crosses Tularcitos Creek, where a permanent single-lane bridge will be constructed. This is planned to be a steel truss bridge with a span of approximately 200 feet with a wood deck and concrete abutments. Though this creek normally contains minimal flow, the contributing watershed at this location is approximately 36,000 acres. A 100-year storm would result in a flow of approximately 5,500 cfs. It has been estimated that a bridge with a clear area of approximately 800 square feet underneath would be necessary to pass flood flows of this magnitude.

The proposed road itself from Carmel Valley Road to the CVFP would consist of a 22-foot wide graded section with a 3-foot-wide drainage ditch. The surface would have 6 inches of Class II base rock installed. After construction of the Dam improvements, a double seal coat would be placed as a minimum-wear surface. Fifteen-inch diameter culverts with inlet structures would be installed at approximately 400-foot intervals for drainage.

About 1,100 feet from Carmel Valley Road the access road must cross the existing 30-inch diameter discharge line from the CVFP. This pipe is supported approximately three feet above the ground by concrete piers at approximately every joint. This crossing is also located on a ridge at a saddle. The proposed access road would pass over the pipe. This will require removal of the concrete pipe supports and subsequent burial of the pipeline below the planned road surface.

Beyond 1,300 feet from Carmel Valley Road towards the CVFP, the proposed access road is on flat land where little grading is required. From 2,700 feet from Carmel Valley Road, the proposed access road follows an existing single lane road until about 4,300 feet from Carmel Valley Road. At approximately 3,250 feet from Carmel Valley Road the road crosses over the existing 30-inch diameter pipeline again. At approximately 3,900 feet from Carmel Valley Road, the alignment connects with existing pavement next to the CAW caretaker's house. The existing pavement would be widened to two lanes to approximately 4,300 feet from Carmel Valley Road. At this point the two-lane road could be split into two one-lane roads: the existing single-lane paved road leading up to and beyond the existing water tanks to San Clemente Drive (approximately 900 feet), and the pipeline access road, which also joins San Clemente Drive.

Access from Existing Gate to San Clemente Dam

San Clemente Drive is a one-lane unpaved service road with turnouts from the locked gate (at San Clemente Drive Station Sta 51+80; refer to Figure 3.2-2 for station reference location) to the junction of the upper and lower dam roads, a 3,200-foot-long reach. Under the Proposed Project, this section is to be widened where conditions warrant, providing an 11 to 12-foot road width for one-way, controlled traffic. Rock outcrops or trees may make two-way travel difficult on several short segments of this route. This may be acceptable provided there is adequate sight distance for approaching vehicles. The General Contractor can also use flagmen, radios, and designated pullouts to control two-way traffic on one-lane access roads.

San Clemente Drive splits at the concrete ford over the Carmel River (near Sta 83+00), with one lane providing access to the base of the Dam, and one lane providing access to the top of the Dam. The low road to the top of the Dam crosses Carmel River at the OCRB. The OCRB has an overall length of approximately 200 feet and requires structural improvements to carry heavy trucks. These improvements would consist of replacing the existing piers with stronger and more deeply set piers, resetting the steel structure and replacing the wood deck with a wider, stronger steel deck. Two piers that extend approximately 15 feet above the OCRD crest currently support a bridge constructed of steel I-beams with timber decking and guardrails. The bridge is supported by the two intermediate piers as well as abutments at either end of the bridge on the river's northern and southern side, completing the bridge span and access road connection across the Carmel River. The southern bridge abutment is reinforced by a masonry wall that extends down to the edge of the river bank.

The existing OCRB would require structural improvements in order to accommodate heavy loads from construction equipment using the bridge to access the SCD left abutment and as part of the one-way access route for construction traffic (for the Proponent's Proposed Project only). The new bridge will be designed to handle double-axle loads (Caltrans category H1544, Type 3 legal loads), whereas the current bridge is rated to handle only light duty traffic.

In addition, approaches to the bridge would need to be modified for long loads. The new alignment of the bridge would change slightly by moving the north bridge abutment approximately 10 feet west. The bridge improvements would include:

- Demolition and replacement of the existing piers just upstream of OCRD with stronger and more deeply set, 4-foot diameter drilled piers;
- Excavation of a new foundation at the northern abutment;
- Demolition and replacement of the existing beams that support the bridge on the abutments;
- Removal (prior to pier demolition) and then resetting the steel structure (i.e., I-beams that support the bridge deck); and
- Replacing the wood deck with a wider, stronger steel deck.

The high road access to the Dam begins at the junction with the low access road. This road is a single lane and climbs approximately 500 feet then drops almost 400 feet to the top of the Dam, an overall distance of approximately 10,500 feet. The road requires grading and some widening, cut or fill slope stabilization, and vegetation removal.

At the OCRD, an existing unimproved single lane road follows the East Side of the Carmel River to the plunge pool at the base of the Dam ("plunge pool access road"). This road has been in limited use and has a number of washouts from the 1995 and 1998 floods. The roadbed would be filled with sand and gravel and topped with crushed rock to create a safe, uniform surface. This road can be upgraded with minimum tree pruning and removal to provide one lane, two-way access and designated pullouts.

The majority of truck traffic would use the low road and plunge pool access road to the staging and work area at the base of the Dam. It is possible that the low road could be the route for "inbound" traffic to the top of the Dam and the high road could be the route for "outbound" vehicles, for materials that are brought to the top of the Dam.

Pipeline Access Road

A 3,000-foot-long existing dirt road (pipeline road) begins at the southerly end of the filter plant and parallels the raw water pipeline to the Dam until it joins San Clemente Drive. Because of a switchback and its steep grade, this road could be used by empty trucks returning to the batch plant as a partial one-way loop. After leaving the filter plant, the pipeline road immediately crosses over the pipeline and heads south adjacent to the westerly side of the exposed pipeline. Within 300 feet of the crossing, the road narrows. There are three sections of this road that are between 9.0 and 9.5 feet wide. Attempts have been made to install wooden retaining walls (one to two feet high) to retain the fill on the downhill side. These retaining walls are failing and would not stand up to 10-wheel truck traffic. Clearing of limbs and grading to a smooth surface would be necessary. The road passes over the raw water pipeline at three locations. Sufficient cover over the pipeline must be maintained to prevent damage to the pipeline.

The three narrow sections would require widening to approximately 11 feet for use by construction equipment. Retaining walls approximately 30 to 50 feet long and up to three feet high would need to be installed. A switchback near the southern end of the road would be improved, but there may not be sufficient space for a 10-wheel truck to make a continuous turn without having to stop and back up at least one time.

From the switchback, the road rises over a distance of 400 feet to join San Clemente Drive (San Clemente Drive approximate Sta 64+50). Most of this section of road (approximately 300 feet) is at a 21 percent grade. Because of the switchback, which probably would require one back-up movement to negotiate, and the 300 feet of 21 percent grade, it is likely the pipeline access road would only be used for empty vehicles during construction.

3.2.6 FISH PASSAGE

Old Carmel River Dam (OCRD) Fish Passage Improvements

The OCRD, approximately 1,800 feet downstream of SCD, was built in 1893. This 32-foot high masonry-faced dam was originally constructed as a water diversion facility, but no longer serves any diversion function. It is approximately 140 feet long, 8 feet wide at the base and 4 feet wide at the crest. A pool and weir fish ladder is located on the left bank (looking downstream) of the Dam, constructed in part by excavating rock from the steep wall of the canyon. The right bank contains an open passageway approximately 4 feet wide by 15 feet high that at one time was equipped with a gate and operated as a sluiceway and control to raise water levels for operation of a diversion. This structure was modified in 1992 and 2000 by removing several stoplogs and the gate structure from the passageway.

The OCRD was retrofitted with a fish ladder on the west side (left, looking downstream) about the time that SCD was constructed. Significant problems with adult upstream fish passage at OCRD have been documented. These include poor attraction flow and rock and debris jams in the fish ladder, causing the majority of fish to bypass the ladder and attempt to jump the Dam. The thick dam crest creates an area of local high velocity that often results in fallback of fish that successfully jump the Dam. Therefore, the project proposes to notch the east end of the OCRD (right side in downstream) about 9 feet deep and 19 feet wide to improve low flow passage without inducing geomorphic changes to the downstream pool configuration. The proposed OCRD notching and bridge improvements are shown in Figures 3.2-10 and 3.2-11).

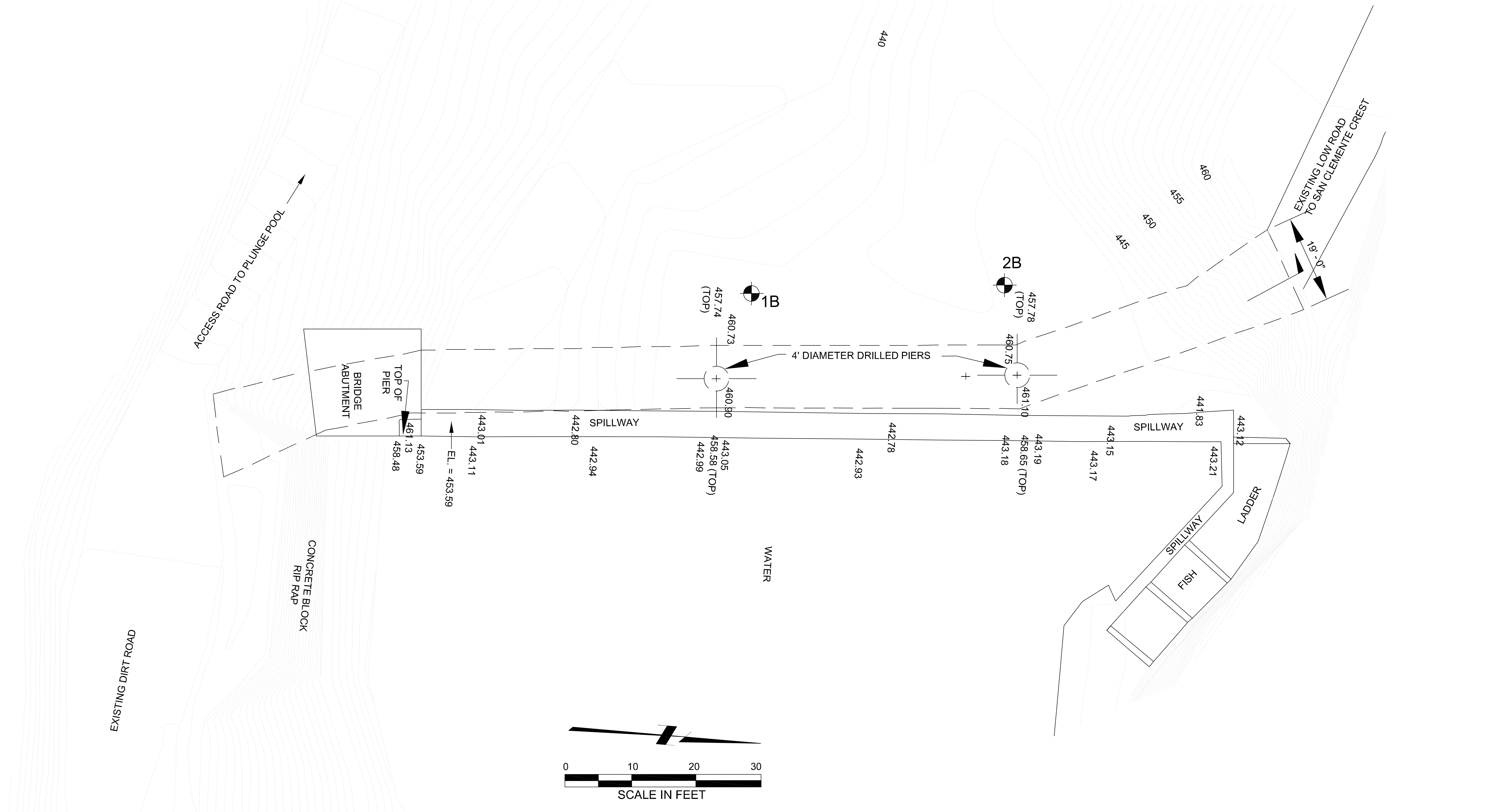
San Clemente Dam Fish Ladder Replacement

The existing fish ladder does not conform to current fish ladder criteria. It would be removed and replaced with a vertical-slot ladder. The ladder would be demolished after the migration season ends (June) to make way for grading and framing a new ladder.

The new ladder would be poured and finished by late summer/fall in time for fish to use it in the next migration season.

The proposed ladder entrance is located on the left bank (looking downstream) of the plunge pool, near the location of the existing ladder entrance. The proposed ladder exit is located on the left abutment at the top of the Dam, approximately 68 feet in elevation above the plunge pool water surface level. The transportation channel of the proposed ladder would be comprised of 68 pools, each having typical dimensions of 10 feet long by 8 feet wide, resulting in an average slope of 10 percent and a total length of 730 feet (including entrance, outlet and resting pools). The proposed layout divides the transportation channel into four segments; each connected by a switchback that also serves as a resting pool (Figure 3.2-12)

The conceptual fish ladder hydraulic operating conditions are summarized as follows. For stream flows up to 55 cfs, all flow would pass through the proposed ladder. For stream flows in the range of approximately 55 to 115 cfs, most of the flow (55 to 62 cfs) would pass through the proposed ladder. The remaining flow would spill over the lower, center spillway (at Elevation 525.0 feet). Above stream flows of approximately 115 cfs, spill would also occur at the higher two spillway segments (Elevation 525.5 feet). The high design flow of 773 cfs (based on five percent exceedence) is expected to occur at approximate reservoir Elevation 526.7 feet. At this elevation, approximately 73 cfs would pass through the proposed ladder, while approximately 700 cfs would pass over the spillway. At the low fish passage design flow, there would be approximately 2 feet of water depth in the vertical slot above the 12-inch sill, resulting in a pool depth of about 3 feet.



SOURCE : Woodward-Clyde International (11/98)

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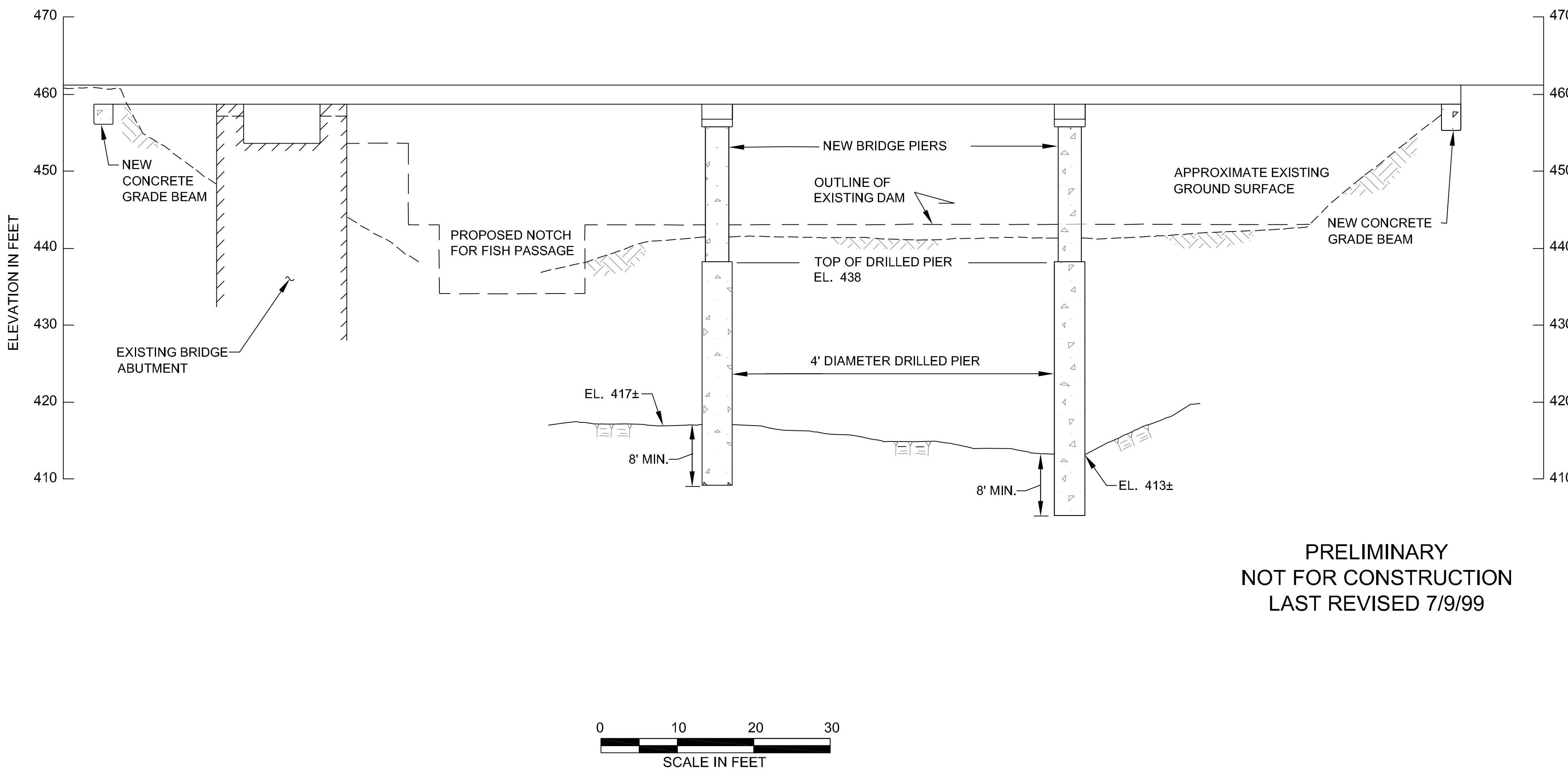

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LAST REVISED 7/9/99

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MWH Walnut Creek California

CALIFORNIA AMERICAN WATER
SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
OLD CARMEL RIVER DAM BRIDGE PROFILE

Figure 3.2-11

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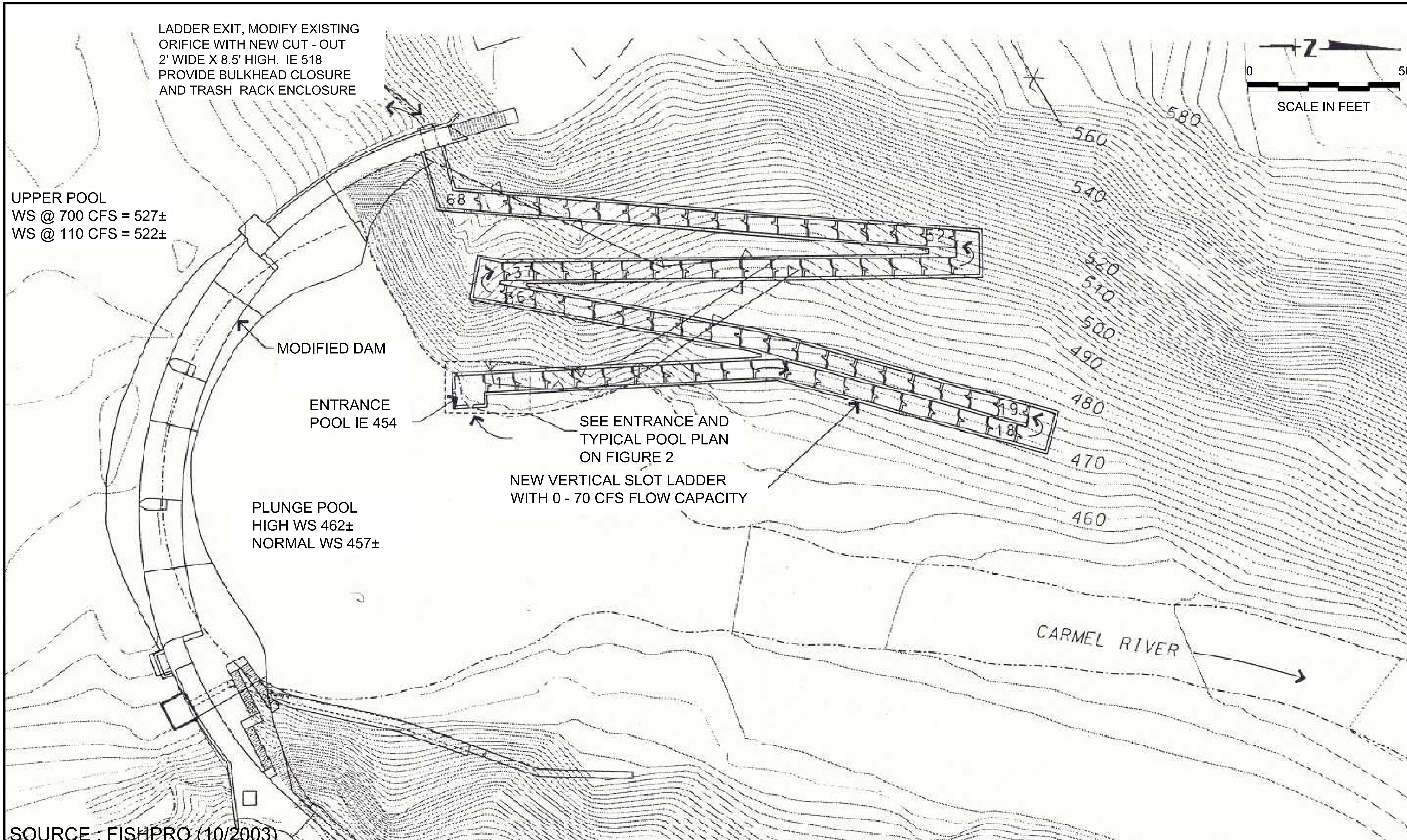

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MWH
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CALIFORNIA AMERICAN WATER
SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
FISH LADDER PLAN

Figure 3.2-12

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The proposed ladder would be equipped with baffle walls at 10-foot intervals that create 68 standard pools within the transportation channel. Each baffle wall would have a 15-inch-wide vertical slot that extends the full height of the channel, except for a 12-inch-sill located at the bottom of the slot (Figure 3.2-13). At 70 cfs flow, the water depth would be approximately 8.5 feet above the top of the sill, and there would be a consistent velocity of approximately 6.6 feet per second through the slot regardless of depth. A total depth of 12 feet in each step of the ladder (including the 1-foot sill) would give the ladder a maximum capacity of approximately 90 cfs. The entire ladder would be covered with grillage to prevent fish from jumping out of the ladder, as well as to prevent falling rock from entering the ladder.

The entrance pool for the proposed ladder (located in the plunge pool) would be designed to provide a minimum of 3 feet water depth under low flow conditions. Given the estimated low water surface at Elevation 457 feet, the entrance pool would have an estimated floor at Elevation 454 feet.

The existing ladder exit orifice (at the upstream face of the Dam) would be modified to achieve proposed hydraulic operating conditions in which all stream flow up to 55 cfs would be routed through the ladder. The existing orifice is 4 feet wide by 2 feet high with invert at Elevation 524.5 feet. The proposed ladder exit would lower the invert to Elevation 518.0 feet and would provide a 2-foot wide slot that is 8.5 feet high. The ladder exit would be equipped with a trash rack on the upstream face of the Dam, and it would have a bulkhead closure to allow ladder closure for maintenance or for protection under extreme high flow conditions. Dredging may be used to establish a fish passage channel prior to the beginning of each migration season.

Reservoir Maintenance

The river channel upstream of the fish ladder exit would be regularly inspected to assure that adequate channel depths exist for upstream passage of adult steelhead. When necessary, and when flow and rainfall conditions are met, sediment management operations would be conducted to maintain the upstream river channel for fish passage (see the Sediment Operations and Management Plan [SOMP] for Fish Passage, Appendix J for further detail).

The sluice gate and associated sluice way will be installed through the Dam at invert elevation of 515 feet, offset 10 feet horizontally and 2.7 feet vertically (down) from the fish ladder invert (Figures 3.2-5 and 3.2-6). The sluice way will be constructed by sawcutting a 10+ foot diameter orifice into the existing dam and inserting a 10 foot nominal diameter steel liner to complete passage through the thickened dam to the downstream face. The 10-foot internal diameter sluice gate, constructed of steel and cast iron (Figures 3.2-5 and 3.2-6), will be anchored to the Dam upstream face and remotely operated by an automated gate opening mechanism. The automated operating mechanism and manual emergency crank will be located at the Dam crest, where a physical connection to the gate via a threaded steel bar is turned to lift the gate for opening and closing.

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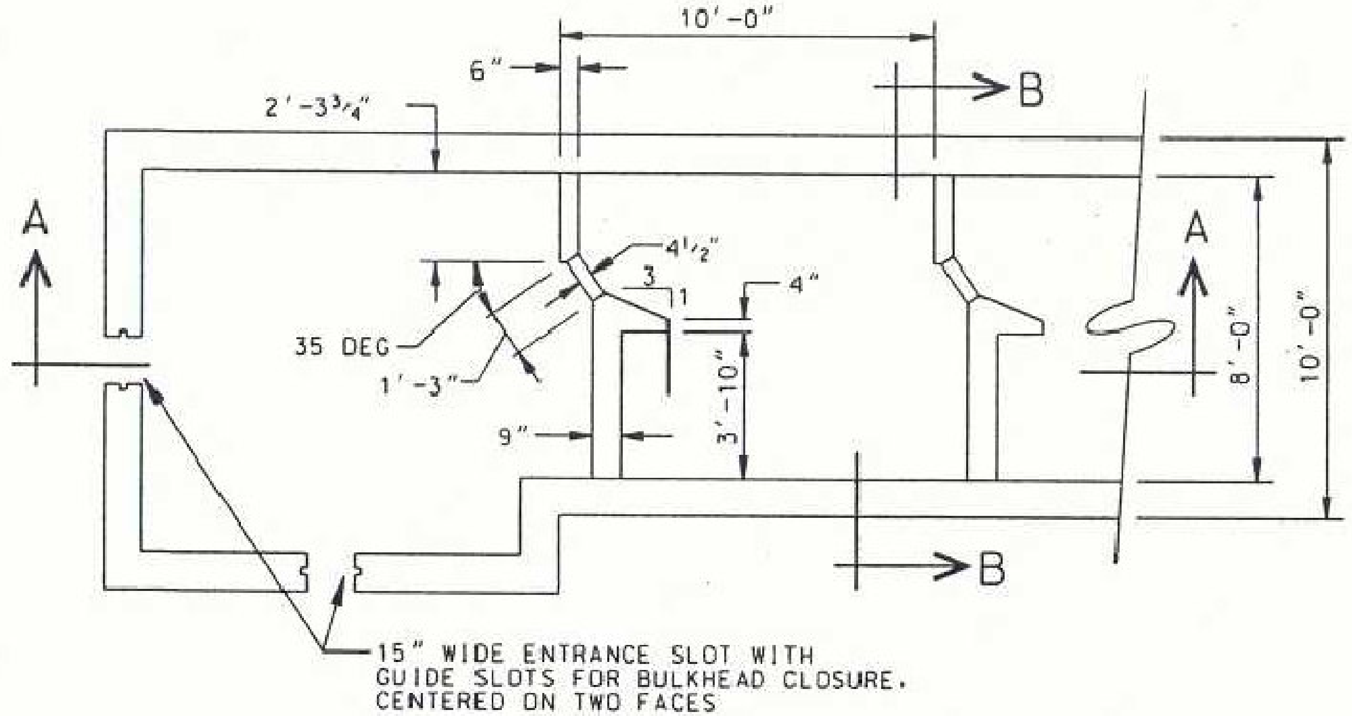

ENTRANCE AND TYPICAL POOL PLAN

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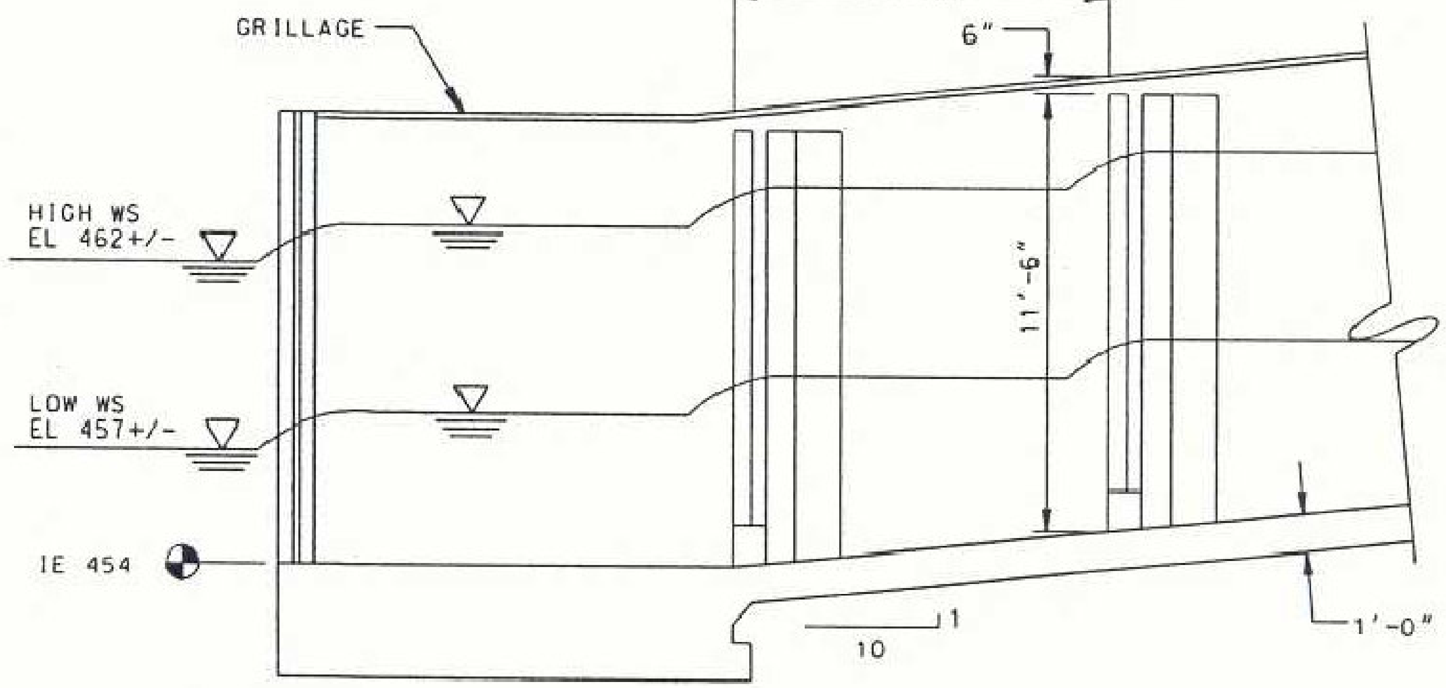

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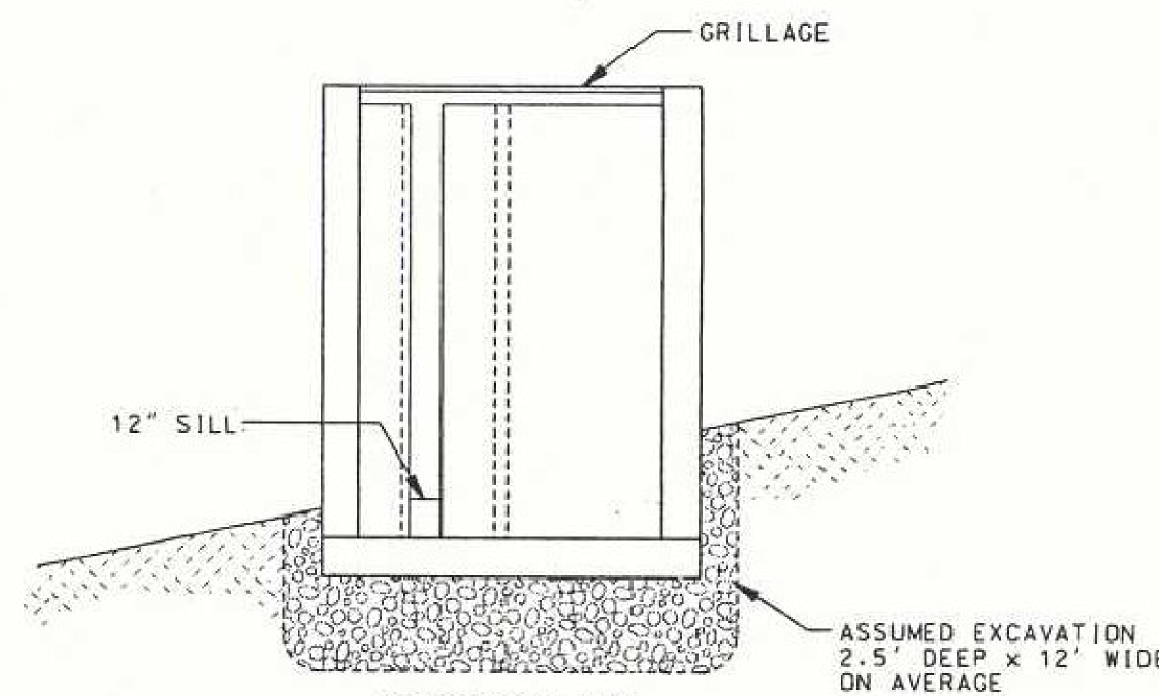

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MWH
Walnut Creek
California

CALIFORNIA AMERICAN WATER
SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
FISH LADDER ALTERNATIVES

Figure 3.2-13

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3.2.7 CONSTRUCTION SCHEDULE AND OPERATIONS

A conceptual schedule is presented in Figure 3.2-14. Following the State Notice of Determination (NOD) and Federal Record of Decision (ROD), final engineering studies would begin in CY 2. Preparation of final design drawings for the Dam, development of studies and design drawings for the fish ladder, and bidding of a construction contract package would occur in CY 3. Actual schedules will vary depending on when work begins.

Construction will occur in two distinct phases. Phase 1 generally includes mobilization, construction of the new Tularcitos Access Road to the CVFP, OCRD bridge improvements, road aggregate delivery, improvements to existing access roads and demobilization. Phase 2 includes the seismic retrofit of the Dam and fish ladder construction, including mobilization, delivery of concrete aggregate, reservoir dewatering and diversion, foundation excavation for the Dam thickening and fish ladder, concrete placement for both dam and fish ladder, valve and gate installation, joint grouting, and demobilization.

The majority of the work in Phase 1 is planned to take approximately 10 months between December of CY 2 and October of CY 3. Phase 2 is planned to take approximately one year beginning in February of CY 4 and concluding the following February.. Fieldwork in the reservoir area would start on or about February 25. Installation of the dewatering system is estimated to take one month, with closure of the cofferdams on or about May 31. Fish rescue and drawdown of the reservoir and plunge pool would continue until about June 30. In-stream construction operations would take place from June to December of the CY 2. Placement of the concrete would be completed in prior to commencement of the rainy season. Removal of cofferdams and demobilization of in-stream construction operations would occur from December of year to February of CY 5.

From January to February of CY 5, only minor activities are planned, including joint grouting valve installation and testing, and electrical, instrumentation and controls completion. Joint grouting would begin at least 90 days after each individual section of concrete has been poured and only when any uncontrolled spills have been eliminated. The upper portions of the Dam thickening outside of the spillway would be scheduled for grouting last. In wetter years this would mean final joint grouting could end several months later during the next dry season.

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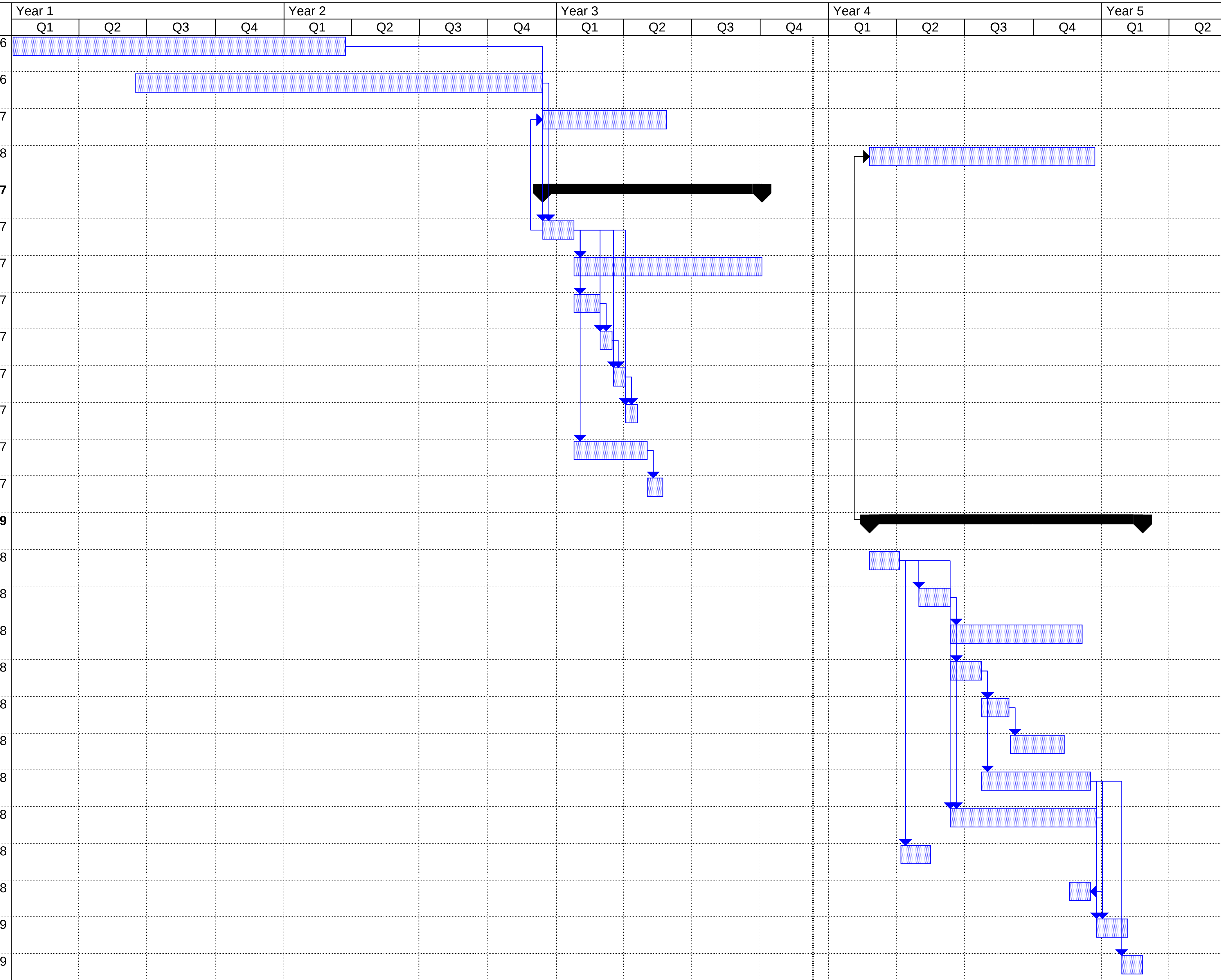
Figure 3.2-14 SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT
PROPONENT'S PROPOSED PROJECT
CONCEPTUAL SCHEDULE

ID	Task Name	Duration	Start	Finish
1	PERMITTING	320 days	Mon 1/3/05	Fri 3/24/06
2	ENGINEERING DESIGN	390 days	Thu 6/16/05	Wed 12/13/06
3	SH &CRLF MIT MONTORING PHASE 1	118 days	Thu 12/14/06	Mon 5/28/07
4	SH &CRLF MIT MONTORING PHASE 2	216 days	Mon 2/25/08	Mon 12/22/08
5	**PHASE 1**	**210 days**	**Thu 12/14/06**	**Wed 10/3/07**
6	MOBILIZATION	30 days	Thu 12/14/06	Wed 1/24/07
7	ACCESS ROAD UPGRADE	180 days	Thu 1/25/07	Wed 10/3/07
8	PIPELINE ACCESS	25 days	Thu 1/25/07	Wed 2/28/07
9	TRAFFIC CONTROL SECTION	12 days	Thu 3/1/07	Fri 3/16/07
10	LOW ROAD ACCESS	12 days	Mon 3/19/07	Tue 4/3/07
11	HIGH ROAD ACCESS	12 days	Wed 4/4/07	Thu 4/19/07
12	BRIDGE WORK	70 days	Thu 1/25/07	Wed 5/2/07
13	DEMOBILIZATION	15 days	Thu 5/3/07	Wed 5/23/07
14	**PHASE 2**	**262 days**	**Mon 2/25/08**	**Tue 2/24/09**
15	MOBILIZATION	30 days	Mon 2/25/08	Fri 4/4/08
16	INSTALL DEWATERING SYSTEM	30 days	Thu 5/1/08	Wed 6/11/08
17	DEWATERING & CARE OF WATER	127 days	Thu 6/12/08	Fri 12/5/08
18	EXCAVATION AT DAM BASE	30 days	Thu 6/12/08	Wed 7/23/08
19	EXCAVATION AT ABUTMENTS	27 days	Thu 7/24/08	Fri 8/29/08
20	ABUTMENT PROTECTION	52 days	Mon 9/1/08	Tue 11/11/08
21	CONCRETE	104 days	Thu 7/24/08	Tue 12/16/08
22	FISH LADDER	140 days	Thu 6/12/08	Wed 12/24/08
23	BUTLER BUILDING	30 days	Mon 4/7/08	Fri 5/16/08
24	CATWALK	20 days	Wed 11/19/08	Tue 12/16/08
25	DEMOBILIZATION	30 days	Thu 12/25/08	Wed 2/4/09
26	JOINT GROUTING	20 days	Wed 1/28/09	Tue 2/24/09



Project: SAN CLEMENTE THICKENING
Date: Mon 12/10/07

Task | Split | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Split | Rolled Up Milestone | Rolled Up Progress | External Tasks | Project Summary | External Milestone | Deadline

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Construction Crews

The requirements for labor, which affects the number of vehicle trips to and from the site, vary from an approximate average of 15 workers per day during Phase I (road construction and improvements scheduled for one season for approximately eight months), to an approximate average of 60 workers per day during Phase II (dam rehabilitation and fish ladder construction). A maximum of about 80 workers would be needed during July through October when forming and concrete placement would occur for the Dam and the fish ladder. Construction crews could be transported to work in car pools to minimize construction traffic.

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3.3 ALTERNATIVE 1: DAM NOTCHING

3.3.1 OVERVIEW

This alternative would notch SCD to guard against failure from an MCE and a PMF, as described in Section 3.2. It would meet the need to reduce seismic and PMF safety risks by notching the Dam to approximately elevation 506 feet in the area of the existing spillway bays. Accumulated sediment behind the Dam would be removed down to the level of the notch. Approximately 1.5 million cubic yards (930 AF) of accumulated sediment would be removed from behind the Dam over three seasons by excavation with heavy earthmoving equipment. A conveyor-belt system would be used to transport the sediment to a disposal area east of the reservoir.

The existing fish ladder at SCD would be replaced to accommodate the new spillway and reservoir height. In addition, a notch would be cut into OCRD, which is about 1800 feet downstream of SCD, in order to provide adequate fish passage. The river channel exposed through partial removal of sediment in the historic reservoir inundation zone would be reconstructed.

During the active construction seasons, the Carmel River and San Clemente Creek would be diverted and the reservoir would be dewatered around the reservoir and dam site. CAW’s new diversion intake would be installed upstream to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply. The intake would divert through a separate temporary bypass line around the construction site into CAW’s existing system. The permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process.

This project is expected to take six years to complete, including environmental review, permitting, design, infrastructure improvements, sediment removal, dam notching, and channel reconstruction. The schedule could be affected by the effects of annual precipitation on river flow conditions in the spring. Construction activities necessary to complete the project are summarized below. Improvements to and/or new roads as part of the proposed project are also conceptually described.

3.3.2 PROJECT LOCATION & ACCESS

The project study area, area of potential effect, facilities, and land ownership are described in Section 3.2. Figures 3.2-1 and 3.2-2 depict the project region and vicinity, respectively.

3.3.3 EXISTING STRUCTURE & OPERATIONS

SCD and reservoir associated facilities; dam and reservoir operations, the CVFP, the existing fish ladder, and current provisions for fish passage are described in Section 3.2.

3.3.4 PROJECT CHARACTERISTICS

This section describes the SCD dam notching project, including modification of the CAW water diversion point; electrical system; sediment excavation, transport and disposal; access roads; stream diversion and reservoir drawdown and dewatering; and replacement of the fish ladder. It also summarizes construction activities necessary to complete the project.

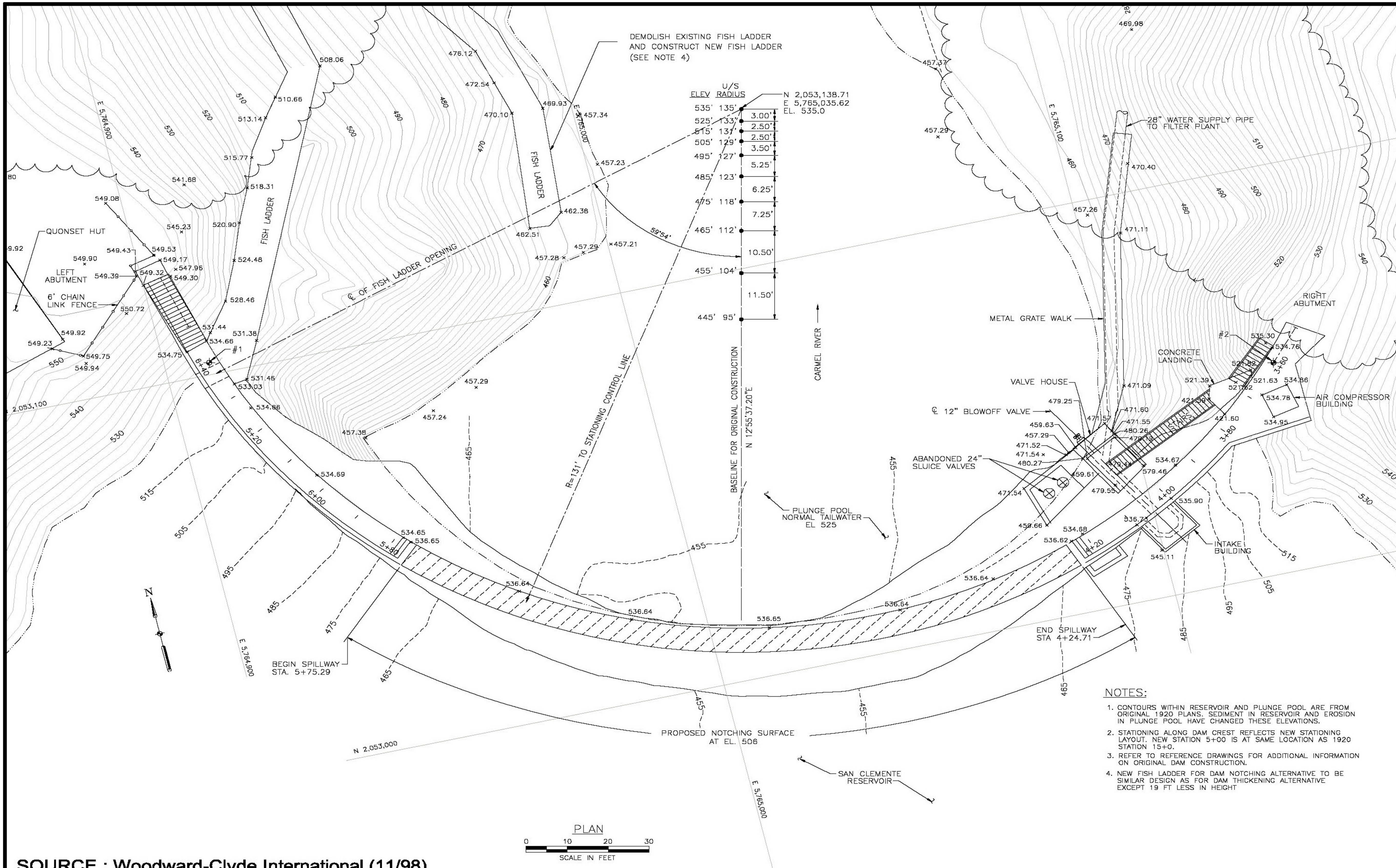
Dam Notching

Notching SCD to approximately elevation 506 feet in the area of the existing spillway bays would reduce the pressure on the Dam sufficiently to avoid catastrophic failure of the Dam during a MCE event. Notching to this elevation would also be sufficient to prevent overtopping of the Dam during the PMF. the Dam notching plan and profile is illustrated in Figures 3.3-1 and 3.3-2.

Notching would not proceed until sediment removal is complete (see discussion below). As shown on Figure 3.3-2, the existing spillway piers, gates, catwalk, and the concrete that forms the existing dam directly under the spillway would be removed down to about elevation 503 feet. A new concrete overflow weir would be constructed above the saw-cut surface to provide a hydraulically smooth overflow section with invert elevation at 506 feet. The new concrete would be tied to the existing concrete using reinforcing steel dowels. The new wing walls due to deepening of the spillway will be reinforced for safety if needed. The deepening of the spillway opening and the removal of the intermediate piers would increase the spillway capacity from the existing 20,000 cfs to the PMF peak flow of about 81,000 cfs when the reservoir water surface is at the parapet elevation.

The plunge pool downstream of the Dam would be completely drained prior to dam notching to allow access for construction workers and machinery for notching operations and new fish ladder construction. To keep the plunge pool staging area dry during construction, two cofferdams would be installed as described in Section 3.2

Notching would be accomplished by saw-cutting the concrete in large blocks. Approximately 700 cubic yards of concrete would be removed. A large tower crane would be used to remove the sawcut concrete blocks and to place the new concrete at the Dam and fish ladder. The crane would be located downstream of the Dam in the drained plunge pool to provide adequate access to the Dam and fish ladder. The concrete blocks would then be further broken up into pieces of sizes that could be loaded and transported by off-highway trucks to the sediment disposal pile for use in erosion control. A large excavator equipped with a hydraulic hammer would be used to reduce the size of the concrete blocks as needed. Light blasting may also be used to break up the largest concrete pieces into smaller, more manageable pieces.



NOTES:

1. CONTOURS WITHIN RESERVOIR AND PLUNGE POOL ARE FROM ORIGINAL 1920 PLANS. SEDIMENT IN RESERVOIR AND EROSION IN PLUNGE POOL HAVE CHANGED THESE ELEVATIONS.
2. STATIONING ALONG DAM CREST REFLECTS NEW STATIONING LAYOUT. NEW STATION 5+00 IS AT SAME LOCATION AS 1920 STATION 15+0.
3. REFER TO REFERENCE DRAWINGS FOR ADDITIONAL INFORMATION ON ORIGINAL DAM CONSTRUCTION.
4. NEW FISH LADDER FOR DAM NOTCHING ALTERNATIVE TO BE SIMILAR DESIGN AS FOR DAM THICKENING ALTERNATIVE EXCEPT 19 FT LESS IN HEIGHT

SOURCE : Woodward-Clyde International (11/98)

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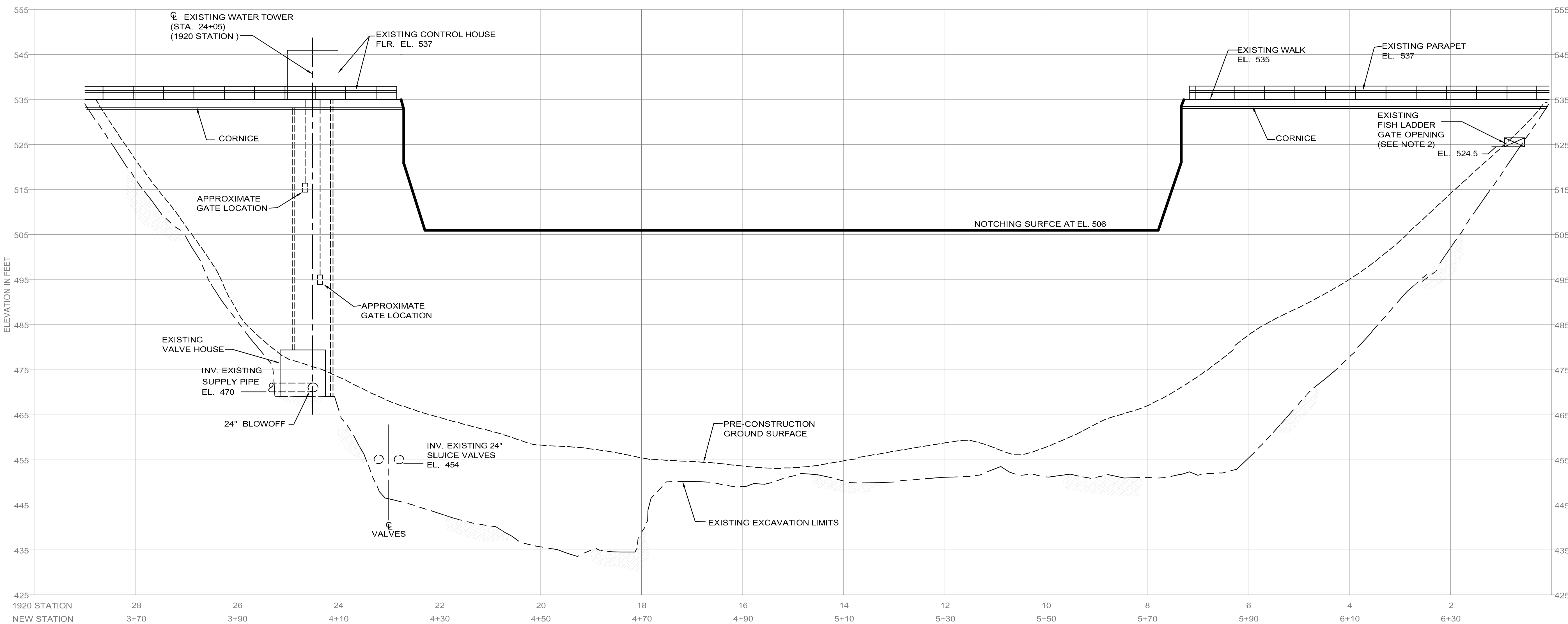
Figure 3.3-1



PROFILE ALONG VERTICAL PROJECTION
OF DOWNSTREAM ARC OF EL. 535
(LOOKING UPSTREAM)

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SCALE IN FEET

NOTES:

1. ALL INFORMATION WAS GENERATED FROM ORIGINAL DRAWINGS DATED AUGUST 31, 1920.
2. NEW FISH LADDER FOR DAM NOTCHING ALTERNATIVE TO BE SIMILAR IN DESIGN AS FOR DAM THICKENING ALTERNATIVE, EXCEPT 19 FT LESS IN HEIGHT.

SOURCE : Woodward-Clyde International (11/98)

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Modification of Low-Level Outlet Works and CAW Water Diversion Point

The existing low-level outlet works are described in Section 3.2.

Current CAW infrastructure and operations depend upon a water surface elevation of 525 feet at the point of diversion at San Clemente Reservoir (The Dam's low-level outlet works) to provide the required hydraulic head in the conveyance pipeline between the Dam and the downstream filter plant, to drive the water through the existing filters to the clearwell for distribution. The clearwell provides the hydraulic head for distributing the treated water into the distribution system. Therefore, the point of diversion would need to be replaced at a 525-foot elevation to avoid extensive improvements to the existing filter plant. The maximum anticipated rate of diversion is 16 cfs, although summer diversions are not expected to exceed 3 to 4 cfs. The existing intake at the Dam could not be used for the notching alternative because the 19-foot loss in reservoir height would not meet minimum head requirements.

Based on cost and operational considerations, a subsurface screened intake at the head of San Clemente Reservoir was tentatively selected as the new water diversion point for the Dam notching alternative. This option, similar to a Ranney intake system, would consist of a network of 12-inch diameter stainless-steel perforated pipes embedded in the gravels and cobbles that line the river bottom. The intake pipes would discharge to a common manifold and to a conveyance pipeline. Based on the longitudinal profile of the Carmel Branch developed by MEI (MEI 2003), the screened intake would need to be constructed and maintained approximately 6,000 to 6,500 feet upstream of the Dam in order to provide a diversion at an elevation of 525 feet. The exact location of the intake would need to be determined in the field in conjunction with sediment removal operations. CAW's new diversion intake would be installed upstream to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply. During the construction phase, the intake would divert through a separate temporary bypass line around the construction site into CAW's existing system. The existing 30-inch-diameter steel conveyance pipeline would be extended from its current end at the Dam site to the location of the new intake. This permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process.

The approximate location of the new screened intake and anticipated alignment of the pipeline extension are shown on Figure 3.3-3. The new pipeline would connect to the existing 30-inch pipeline at the downstream toe of the Dam, just upstream of the existing control valves. The existing wye branch, dam outlet valves, and building would be abandoned. Control of flow would be from the filter plant.

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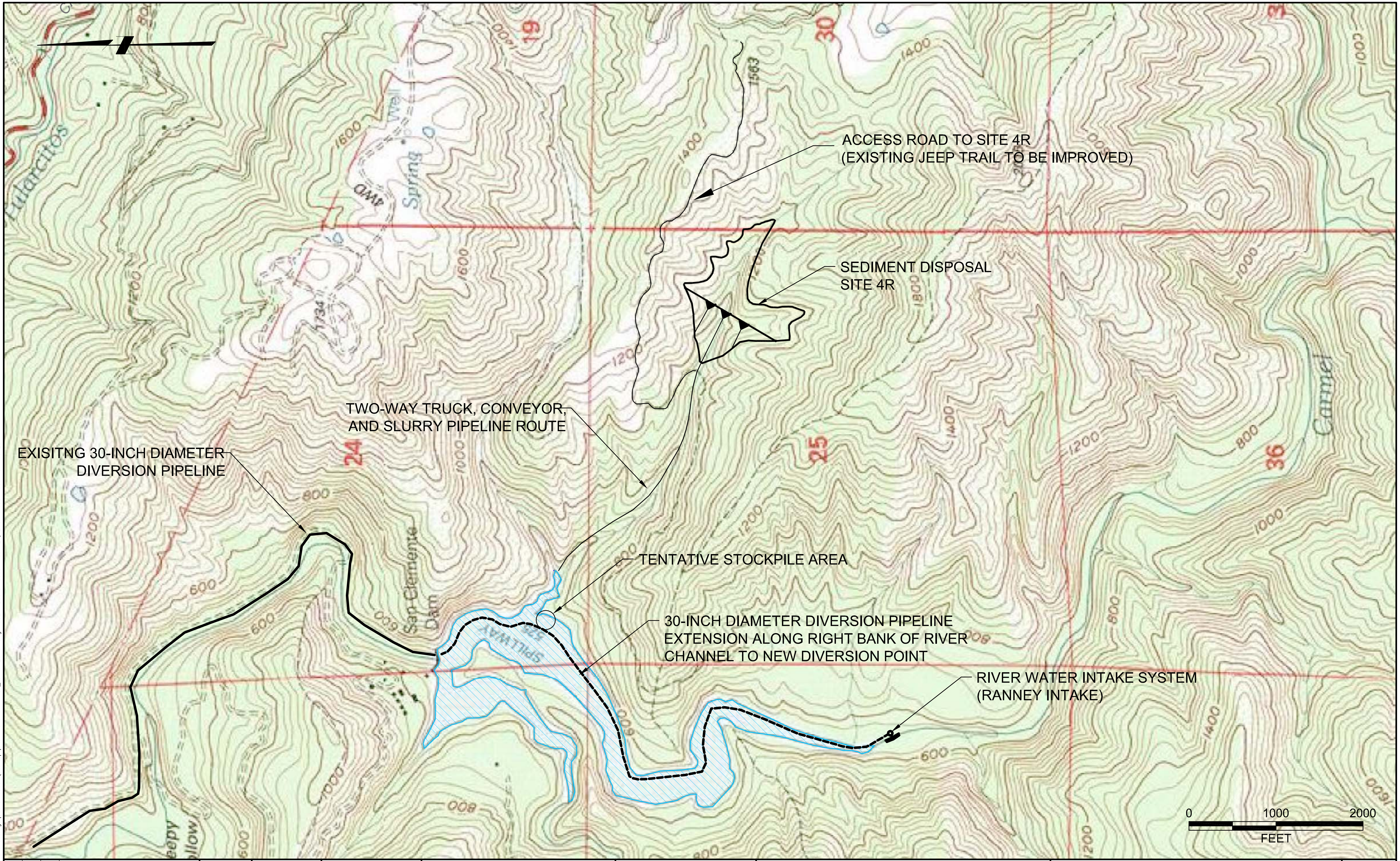

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SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
PLAN OF SEDIMENT DISPOSAL SITE 4R

Figure 3.3-3

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High-Level Outlet

A high-level outlet equipped with a sluice gate would be installed during the proposed dam notching in order to provide the ability to make controlled and limited maintenance sediment releases to maintain upstream passage to the fish ladder exit. The sluice gate would be operated as described in Section 3.2. The outlet would be positioned in the left (west) part of the Dam, near the fish ladder exit and below the level of the new spillway crest. The exact location of the outlet would be determined in conjunction with the final design of the fish ladder, following the criteria stated in Section 3.2.

The outlet would be constructed by excavating an oversize conduit through the concrete of the existing dam, placing an inner steel liner in the conduit. Construction details for the outlet and trashrack would be similar to those described in Section 3.2. Minor sediment excavation to allow installation of the gate and trashrack would be accomplished as part of sediment removal operations during the final season of sediment excavation in the reservoir.

Electrical System

The existing electrical service to SCD is supplied by PG&E via an existing 60-kV transmission line from the Laureles substation in Carmel Valley. The 60-kV line follows San Clemente Drive to the High Road intersection, continuing west from that point away from the Project Area. A 12-kV 3-phase pole line branches from the Sleepy Hollow intersection to provide power to SCD, terminating outside an onsite structure above the left abutment of the Dam. Pole mounted transformers provide 3-phase service to the Dam and a nearby CAW-owned residence.

Power requirements for this alternative are governed by the power needs for the conveyor system. The sediment would be transported via connected conveyor segments with 75- to 200-horsepower (HP) (100- to 350-kilowatt [kW]) motors at each segment. Motor load is estimated to total 1,850 HP on an operating basis. Dewatering requirements, construction office trailers, equipment maintenance shop, and night lighting would impose smaller additional loads. Preliminary discussions with PG&E indicate that the configuration of the existing PG&E 60-kV and 12-kV power lines would not be able to handle the total load demand and supply the needed power. Based on preliminary power system evaluations, the most efficient way of supplying the needed power may be to use one or more diesel-power generator sets. A combined capacity of two megawatts would be sufficient to meet project electrical needs. The diesel generator would be comparable to a CAT 3608 TA turbocharged and after-cooled unit, with capacity of 2,000 kW, run in a primary mode (full-time) and equipped with a secondary reduction catalytic device and an add-on particulate filter to meet local air quality requirements.

Sediment Excavation, Transport and Disposal

Accumulated sediment behind the Dam would be removed down to the level of the notch. San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards of sediment (MEI 2003). The sediment consists of sandy gravel, gravelly sand, sand, silty sand, and sandy silt. The finer-grained sediment is located nearest to the Dam in both the Carmel River and San Clemente Creek arms of the reservoir. The coarser (more gravelly and cobbly) materials are encountered in the upper reaches of the Carmel River arm. Previous sediment transport modeling studies determined that removing or notching the Dam and letting the river flush the sediments downstream in an uncontrolled manner would pose unacceptable risks for sediment accumulation and flooding in downstream reaches of the river. To mitigate these risks, notching of the Dam requires the prior removal of the sediment accumulated in the reservoir to a depth (near the Dam) that coincides with the new spillway elevation. Based on recent studies (MEI 2005), the volume of sediment removal would be approximately 1.5 million cubic yards. As a result of the sediment removal efforts, the upstream reaches of the original (pre-1921) Carmel River and San Clemente Creek stream channels would be exposed and require reconstruction.

Several excavation methods (mechanical excavation and hydraulic dredging) are considered feasible (see Appendix G for more detail). Mechanical excavation and transport by conveyor appear to have a slight cost advantage, are simpler, and would have lesser environmental impacts than other methods. The selected approach is described in more detail below.

Sediment Excavation

The sediment would be removed in planes approximately parallel to the existing surface of the sediment in the reservoir. This approach would minimize the amount of sediment movement in the winter. In combination with reservoir dewatering and sediment pre-draining activities described below, it would also help maintain the excavation work above the groundwater level for as long as possible. A portion of the original streambed that existed in 1921 would be exposed in the upper reaches of the Carmel River and San Clemente Creek during the second season of sediment removal operations.

Excavation of sediment above the water table would be performed using self-loading scrapers or similar self-propelled excavating equipment. The scrapers would transport the material to a central stockpile area within the reservoir area, where the material would be allowed to drain further. The stockpile area would be located at the mouth of the ravine where the sediment disposal site is located. The tentative stockpile site, called Site 4R, is shown on Figure 3.3-3.

Sediment Transport

The excavated sediment would be transported to a central stockpile in the reservoir near the mouth of the ravine where Site 4R is located. From the stockpile, a gravity-feed reclaim tunnel system would be used to feed the sediment to a 3,500-foot-long, 36-inch overland belt-conveyor system that would transport the sediment to the site. Gravity feed reclaim tunnel systems are used typically used in mining applications, and consist of a buried hopper (box structure with opening at the top) underneath the excavated sediment stockpile that collects and deposits sediments onto the conveyor system, a tunnel structure (similar to a half round culvert) that protects the conveyor leading to the hopper, and the conveyor equipment.

The conveyor system would possess a peak capacity of 700 cubic yards per hour. An average sustained rate of 500 cubic yards per hour is assumed for purposes of calculating seasonal production. The belt conveyor would be installed along a 25-foot-wide access road linking the reservoir and the disposal site. The road would be used for access to the reservoir and operation and maintenance of the conveyor. The approximate route and profile of the road and conveyor is shown in Figure 3.3-4. At the disposal site, a traveling radial stacker conveyor would be used to discharge and spread the sediment across the disposal area in preparation for compaction.

Sediment Disposal

Sediment disposal for this alternative would be at Site 4R, located in a relatively steep, undeveloped, forested ravine approximately 3,500 feet east of San Clemente Reservoir. The ravine supports an ephemeral stream that carries local runoff during storm events. Existing access to the ravine is via a Jeep Trail that begins at the Cachagua Grade. The Jeep Trail would need to be improved significantly to enable the mobilization of construction equipment to the site and the reservoir (see discussion below).

A plan of Site 4R and a capacity curve for the site is shown in Figure 3.3-5. The maximum capacity of the site is undetermined but is well in excess of the estimated required volume of 1.5 million cubic yards (ample capacity to store all sediment excavated under this alternative). The toe of the sediment pile would be located at approximate elevation 920 feet. The top of the sediment pile would be at about elevation 1,110 feet in order to contain all of the sediment accumulated in the reservoir. The footprint area of the sediment pile would be approximately 16 acres. The watershed area tributary to the sediment pile site is approximately 252 acres.

The property where Site 4R is located is owned by the Monterey Peninsula Regional Park District (MPRPD). The use of Site 4R as sediment disposal site and access easements would need to be negotiated with the MPRPD.

Site preparation prior to sediment disposal would include (1) the clearing and grubbing of trees and vegetation from the sediment pile footprint, (2) the removal of any existing facilities (none have been identified), and (3) the stripping and stockpiling of organic soils for use in subsequent restoration and revegetation of the site once sediment placement has been completed. In addition, a culvert pipe would likely be placed along the ravine bottom the full length of the site to help manage storm waters and minimize erosion during construction operations. BMPs identified in the SWPPP (Appendix K) would be implemented for site preparation.

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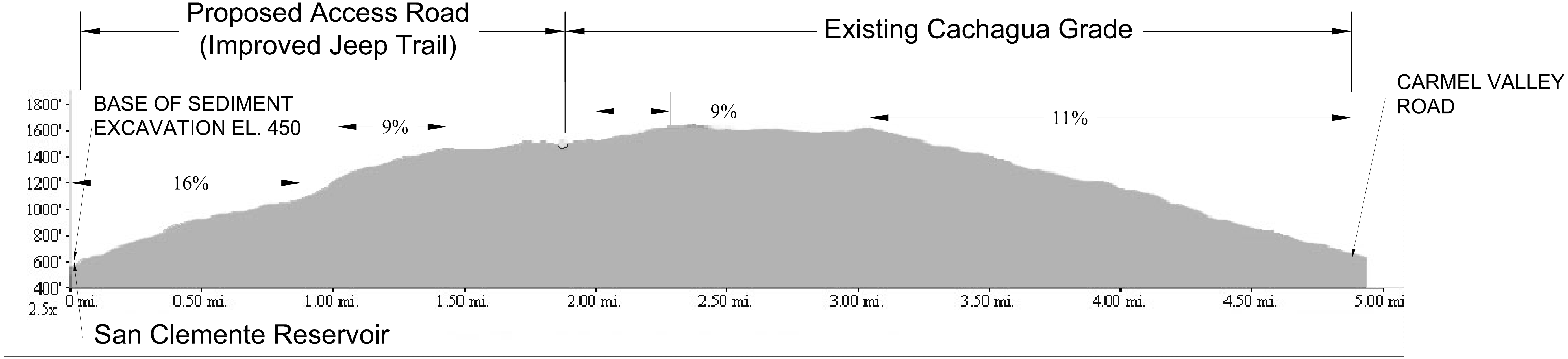
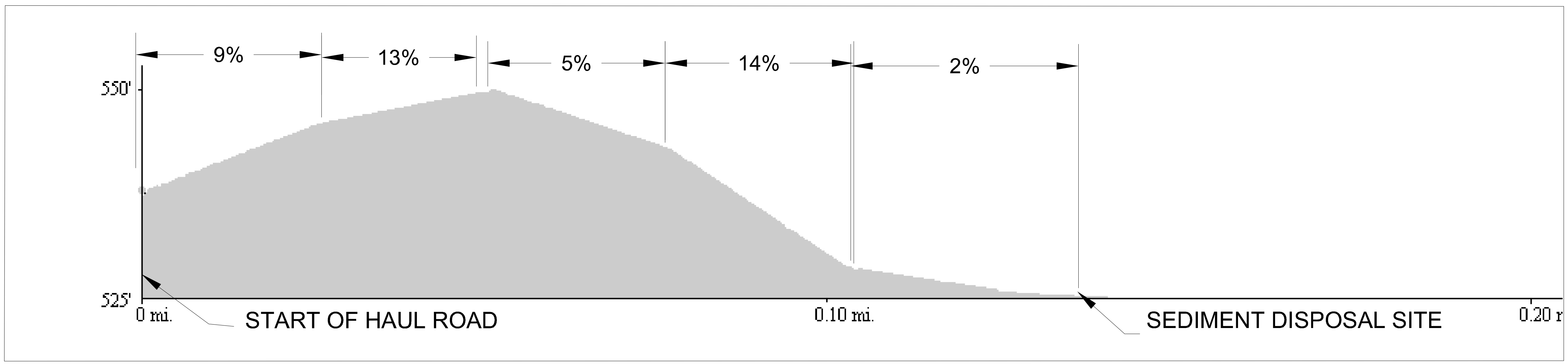
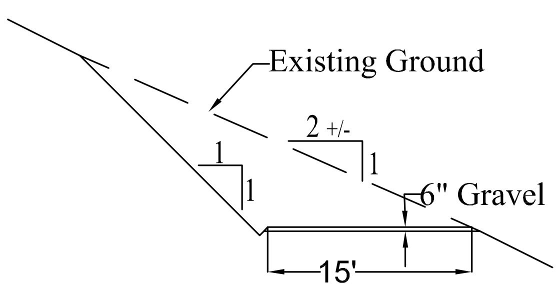


PROFILE OF ACCESS ROAD TO RESERVOIR SITE



PROFILE OF HAUL ROAD



TYPICAL ACCESS ROAD SECTION

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SEISMIC RETROFIT EIR/EIS PROJECT
PROFILES OF SITE ACCESS AND HAUL ROADS

Figure 3.3-4

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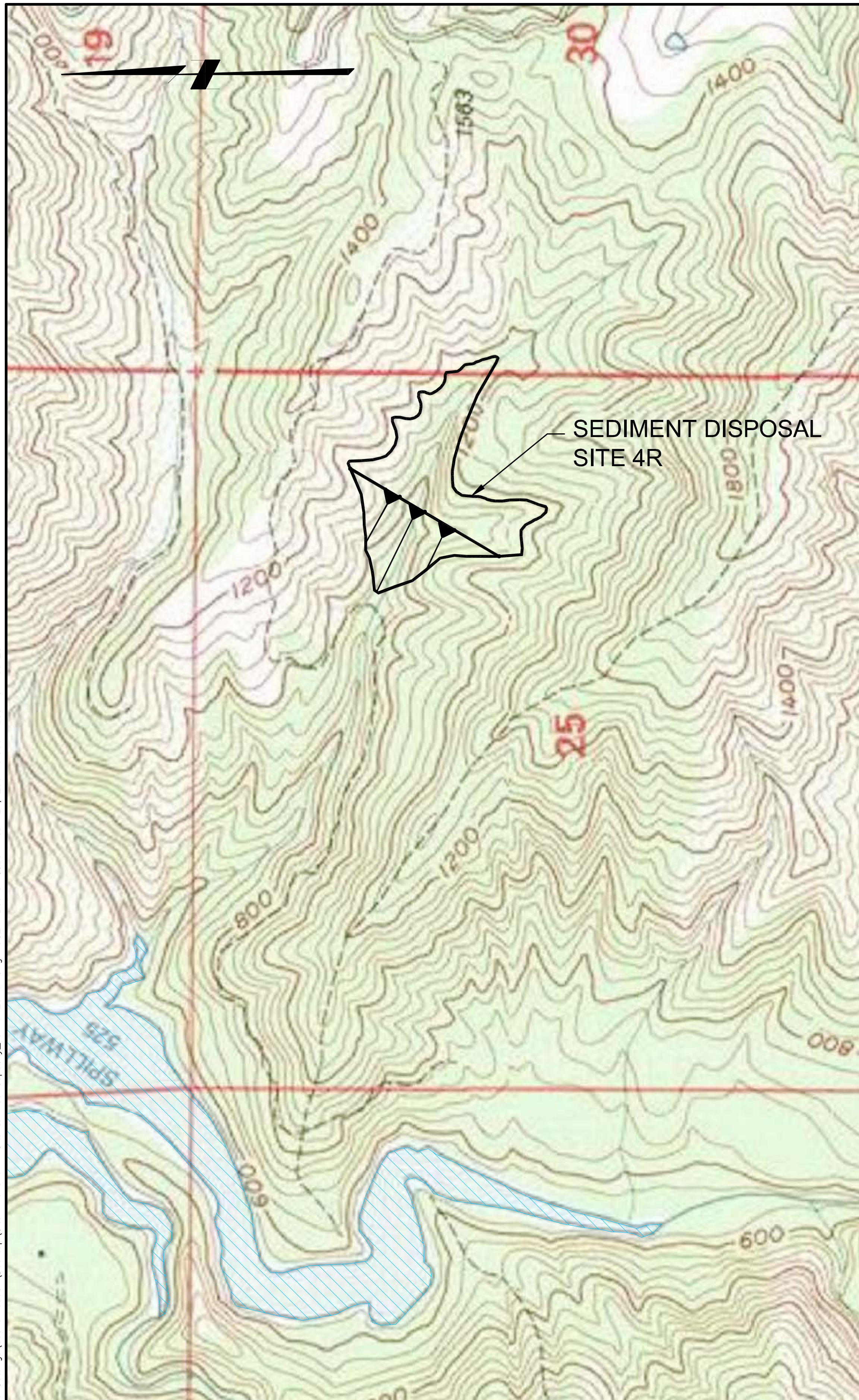

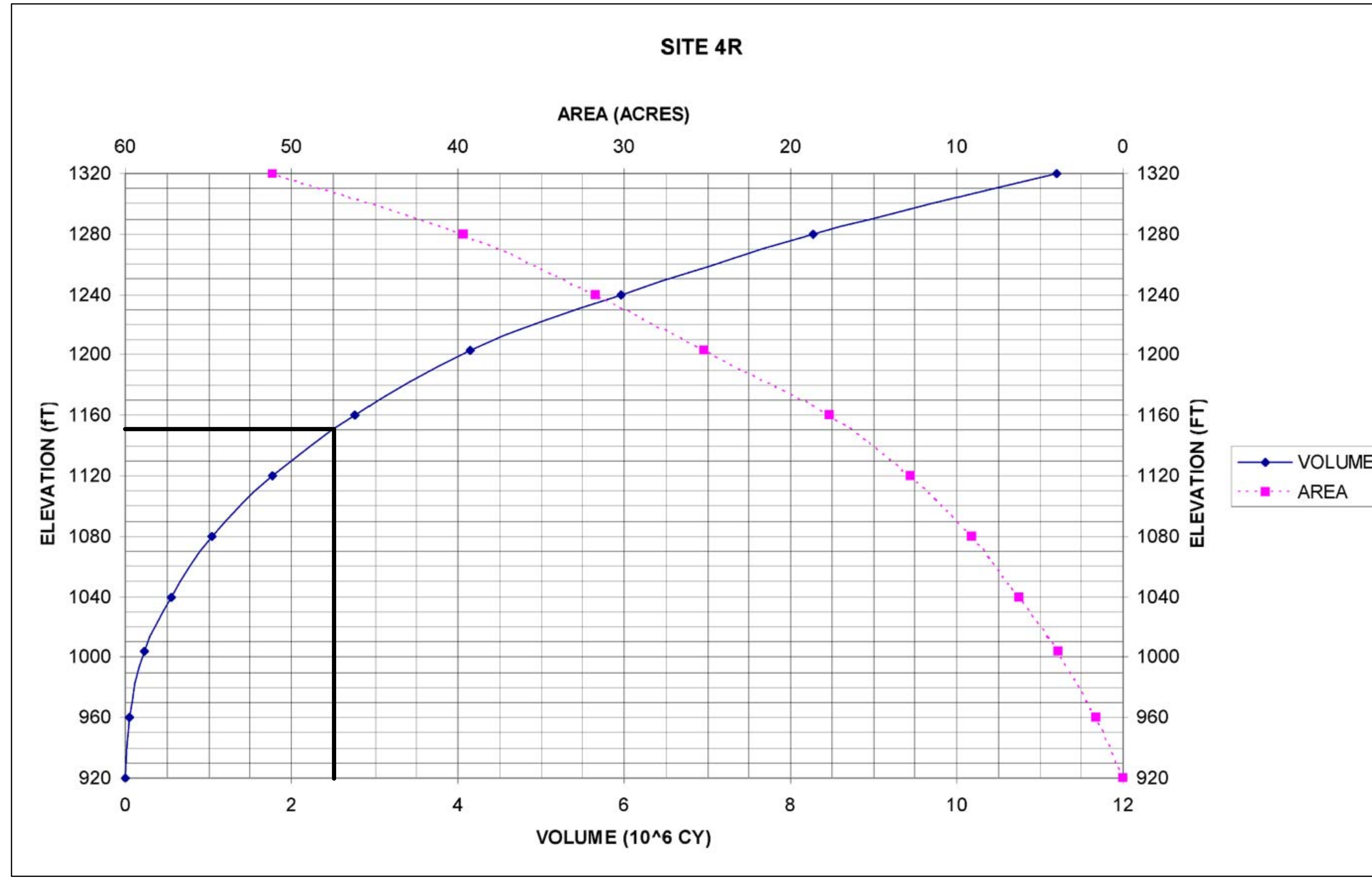

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SEISMIC RETROFIT EIR/EIS PROJECT
AREA–CAPACITY CURVES OF SEDIMENT DISPOSAL SITE 4R

Figure 3.3-5

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Bulldozers would be used to spread sediment into thin, nearly horizontal lifts. Each lift would be compacted using the bulldozers or vibratory compactors. The sediment pile would be constructed with a stable side slope (averaging 2.75:1). Concrete debris from dam notching could be placed on the pile for long-term erosion protection at the toe of the pile and on the groins along the contact between the pile and the hillside abutments.

At the end of each construction season, the site would be winterized by: (1) providing interim drainage and diversion of ravine flows, (2) stabilizing sloping sediment surfaces and other disturbed areas by installing erosion protection features such as erosion control mats or straw mulch and wattles, and (3) providing sediment collection features such as silt fences, straw bales, and sediment traps along the toe of the pile and other disturbed areas.

Once placement of sediment and concrete debris has been completed, the topsoil from the temporary topsoil stockpile set aside during site stripping would be spread over the sediment pile. The graded surface would be stabilized with erosion control measures as described above and revegetated with native plants and trees obtained from the site vicinity. A typical section for the sediment pile is shown in Figure 3.3-6.

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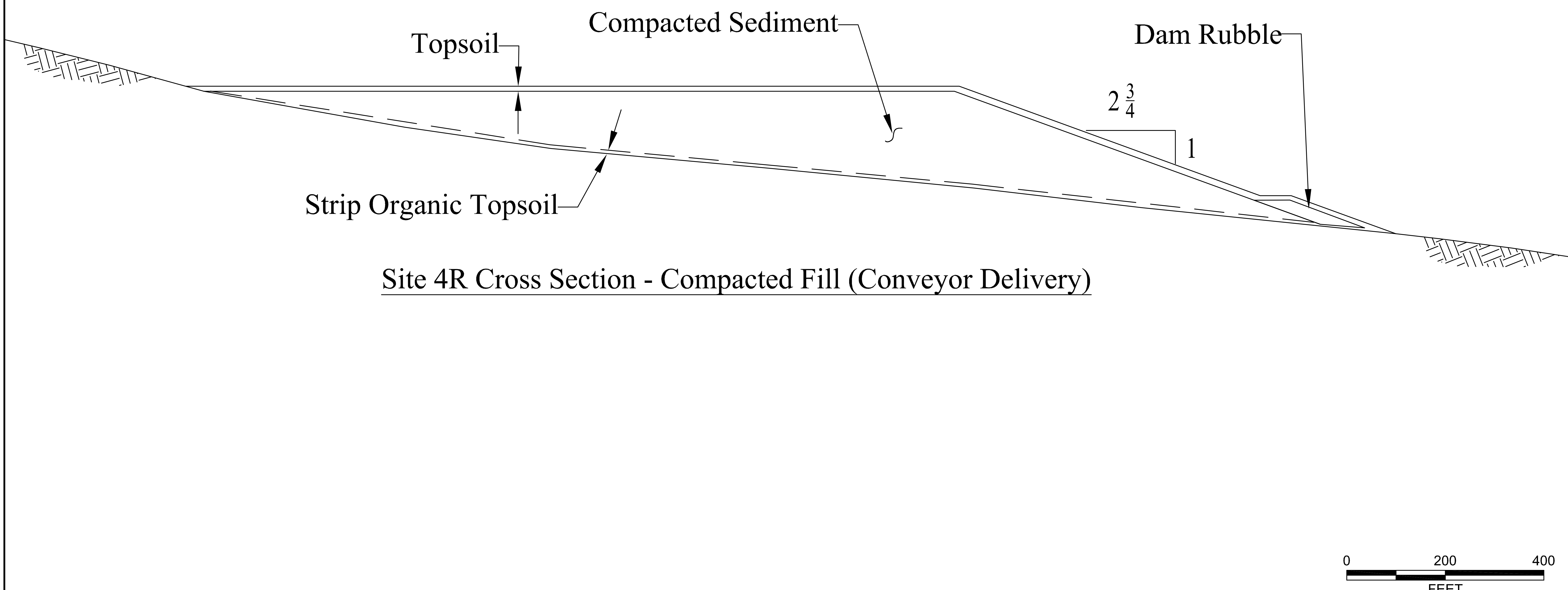

Site 4R Cross Section - Compacted Fill (Conveyor Delivery)

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Stream Diversion and Reservoir Drawdown and Dewatering

Both the Carmel River and the San Clemente Creek would be diverted around the active areas of sediment excavation during the construction season. Stream flows would be passed downstream to maintain the flow and habitat in the Carmel River during construction. Within the reservoir area, the reservoir level would be drawn down, and the sediment deposits would be pre-drained to keep the active excavation area as dewatered and drained as possible to enable operation of scrapers and similar self-propelled earthmoving equipment.

A construction requirement for reservoir drawdown constrains the main construction activities to a period when streamflow is low enough to be passed through a bypass pipeline and the Dam outlet works. The target streamflow to divert the Carmel River is assumed to be a flow of about 50 cubic feet per second (cfs) or less A diversion facility, consisting of an interlocking sheetpile cofferdam, would be installed in the channel at the upper end of the reservoir to divert incoming flows from the Carmel River through a 36-inch-diameter bypass pipeline. The sheetpiles would be driven down through the sediment to bedrock. The upper end of the sheetpiles would extend about five feet above the existing streambed to develop sufficient head at the bypass pipe intake. A removable section would be disassembled annually to allow stream and fish passage during non-construction periods.

Another sheetpile cofferdam would be constructed across San Clemente Creek to divert it into an 18-inch pipeline. These bypass pipelines would convey the stream flows to some of the existing drawdown ports at SCD and/or to the existing mid-level intake (which may be sealed to keep out turbid water). Water passed through the drawdown ports would discharge to the existing plunge pool downstream of the Dam. Water discharged through the mid-level intake would continue through the existing 30-inch-diameter pipeline approximately 500 feet downstream of the Dam to an energy dissipation structure where the water would be released to the Carmel River bed. During the construction season most of this bypass flow will be released from Los Padres Reservoir upstream.

Prior to commencing excavation, the reservoir would be drawn down below the level of the drawdown ports, if possible, by using the existing mid-level intake structure with gate invert at elevation 494 feet. The reservoir water surface first would be drawn down by gravity to the invert of the drawdown ports at elevation 515 feet and then further lowered to the lowest level possible, approximately elevation 495 feet. However, sediment has accumulated against the upstream face of the Dam to about elevation 510 feet. This sediment deposited at the mid-level intake structure (at elevation 494 feet) would need to be removed to draw the reservoir water below elevation 515 feet. A sheetpile barrier would be installed around the intake. The sediment between the sheetpile barrier and the Dam intake would be removed. After the turbidity has cleared, the reservoir would be lowered to elevation 495 feet. Alternatively, water could be pumped from the deepest part of the reservoir near the central part of the Dam and discharged to the river either by pumping into the outlet works or the drawdown ports.

Reservoir drawdown and sediment excavation operations would be managed to promote pre-drainage of the sediments ahead of the excavation. As the level of the sediment is lowered, drainage trenches would be excavated to drain to low points, from where water would be removed. Water originating from local precipitation, springs, and/or seepage through the stream diversion structures may seep into the construction area, bounded upstream by the diversion structures and downstream by the Dam. This excess water would also need to be drained, conveyed, collected and removed from the excavation. In addition to drainage trenches, well points may be installed within the sediment deposits, as necessary to help capture leakage water and maintain the water surface in the reservoir at the desired level, i.e., below the bottom of the excavation.

Water within the construction area would be turbid due to the earthmoving operations. The remaining pond adjacent to the Dam would be used as a desilting basin during the construction season. At some point the turbidity of the water in the reservoir may be too high for directly releasing it downstream. Excess water from within the reservoir would then need to be treated using a filtration system to remove turbidity and excess iron compounds. The treated water would be discharged to the river.

At the end of the first sediment excavation season, the initial storms that exceed the diversion capacity would fill the reservoir, after which time the diversion pipe would be disconnected from the sheetpile cutoff and the river flow would be re-established through the reservoir.

For the second sediment excavation season, before re-starting the sediment excavation operation, the water level in the reservoir would need to be drawn down again as described above.

Exact locations of the diversion cutoff walls and pipelines, drainage trenches and well points would depend on the actual sediment level when construction begins, and will be field determined at that time.

3.3.5 PROJECT ACCESS AND IMPROVEMENTS

Existing vehicle access to SCD and the filter plant from Carmel Valley Road is described in Section 3.2. Improvements to these existing access roads are also described in Section 3.2.

Access to Sediment Disposal Site and Reservoir

Road access to the sediment disposal site and San Clemente Reservoir would be established via Cachagua Grade. An existing Jeep Trail that extends between a gated entrance off Cachagua Grade and the sediment disposal site would be improved, and a conveyor-belt system would be installed between the reservoir and the sediment disposal site.

The primary access used to develop the sediment disposal site and access the reservoir would be via Carmel Valley Road and Cachagua Grade. An existing dirt road leads to the sediment disposal site, entering off Cachagua Grade approximately three miles from the intersection with Carmel Valley Road. A locked steel swing gate controls the entrance. "Truck Crossing — 500 Feet" signs would likely be necessary on both Cachagua Grade approaches. Asphalt pavement would be placed at the intersection to protect the Cachagua Grade edge of pavement and to reduce dust at the intersection.

About 1.5 miles of this existing dirt road (from the intersection with Cachagua Grade to the sediment disposal site) would need to be improved to allow access of construction personnel and equipment. Improvement of the existing road would consist of widening the road to a width of 20 feet (minimum width of 15 feet with turnouts for passing in tight reaches), improving the radius of curvature at sharper curves to allow passage of large trucks, and constructing a drainage ditch along the uphill edge of the road. The road surface would have 6 inches of Class II base rock installed. A double chip seal coat would be placed as a minimum wearing surface. Fifteen-inch-diameter or larger culverts with inlet structures would be installed at approximately 400-foot intervals for drainage. The Jeep Trail would be left in its improved condition. No additional maintenance would be required on the Jeep Trail than already exists.

A new 0.5-mile-long access road would be constructed from the disposal site to the reservoir. A typical cross-section is shown on Figure 3.3-5. The road would be excavated along the slope of the ravine and would consist of a 25-foot-wide surface and 3-foot drainage ditch. The excavated slope above the road would be stabilized with small anchors, wire mesh and shotcrete as needed. The road surface would have 6 inches of Class II base rock installed. The belt conveyor would be installed along the outside edge of the road and would be accessible to maintenance equipment operating from the road. The road's travel surface would be sealed with a double chip seal coat. Fifteen-inch diameter or larger culverts with inlet structures would be installed at approximately 400-foot intervals for drainage. This road would be restored to pre-construction conditions after completion of the project.

3.3.6 FISH PASSAGE

Old Carmel River Dam Fish Ladder Improvements

Fish passage improvements to the OCRD are the same as are described for the Dam strengthening project in Section 3.2.

San Clemente Dam Fish Ladder Replacement

The existing fish ladder is described in Section 3.2. The ladder would be demolished after the migration season ends (June) to make way for grading and framing a new ladder. The new ladder would be poured and finished by late summer/fall in time for fish to use it in the next migration season.

The design of the replacement fish ladder would be substantially the same as shown in Section 3.2 (Figure 3.2-12), except shorter. The proposed ladder entrance is located on the left bank (looking downstream) of the plunge pool, near the location of the existing ladder entrance. The proposed ladder exit is located on the left abutment, ascending approximately 49 feet from the pool below. The transportation channel of the proposed ladder would be comprised of 49 pools, each having typical dimensions of 10 feet long by 8 feet wide, resulting in an average slope of 10 percent and a total length of 540 feet (including entrance, outlet and resting pools). The proposed layout divides the transportation channel into four segments, each connected by a switchback that also serves as a resting pool.

The conceptual fish ladder hydraulic operating conditions are summarized as follows. For stream flows up to 55 cfs, all flow would pass through the proposed ladder. For stream flows in the range of approximately 55 to 115 cfs, most of the flow (55 to 62 cfs) would pass through the proposed ladder. The remaining flow would discharge over the spillway (at elevation 506.0 feet). The high flow fish passage condition of 773 cfs is expected to occur at approximate reservoir elevation 507.3 feet. At this elevation, approximately 65 to 70 cfs would pass through the proposed ladder, while just over 700 cfs would pass over the spillway. At the low flow fish passage condition of 15 cfs, there would be approximately 2 feet of water depth in the vertical slot above the 12-inch slot, resulting in a pool depth of about 3 feet.

The proposed ladder would be equipped with baffle walls at 10-foot intervals that create 49 standard pools within the transportation channel. Each baffle wall would have a 15-inch-wide vertical slot that extends the full height of the channel, except for a 12-inch-sill located at the bottom of the slot. At 70 cfs flow, the water depth would be approximately 8.5 feet above the top of the sill, and there would be a consistent velocity of approximately 6.6 feet per second through the slot regardless of depth. A total ladder depth of 12 feet (including the 1-foot sill) would give the ladder a maximum capacity of approximately 90 cfs. The entire ladder would be covered with grillage to prevent fish from jumping out of the ladder, as well as to exclude falling rock from entering the ladder.

The entrance pool for the proposed ladder (located in the plunge pool) would be designed to provide a minimum of 3 feet water depth under low flow conditions. Given the estimated low water surface at Elevation 457 feet, the entrance pool would have an estimated floor at Elevation 454 feet.

The existing ladder exit orifice (at the upstream face of the Dam) would be lowered in a manner consistent with the overall lowering of the reservoir surface. In addition, the exit orifice would be located to achieve proposed hydraulic operating conditions in which all stream flow up to 55 cfs would be routed through the ladder. The existing orifice is 4 feet wide by 2 feet high with invert at elevation 524.5 feet. The proposed ladder exit would lower the invert to Elevation 499.0 feet and would provide a 2-foot wide slot that is 8.5 feet high. The ladder exit would be equipped with a trash rack on the upstream face of the Dam, and it would have a bulkhead closure to allow ladder closure for maintenance or for protection under extreme high flow conditions.

Dredging may be used to establish a fish passage channel prior to the beginning of each migration season

Reservoir Maintenance

Maintenance of the river channel through the reservoir upstream of the fish ladder exit would be the same as described in Section 3.2 for the Proponent's Proposed Project.

3.3.7 PARTIAL RECONSTRUCTION OF THE RIVER CHANNEL AND REVEGETATION OF THE VALLEY FLOOR

Excavation under this alternative would lower the surface of the sediment deposits in San Clemente Reservoir by approximately 19 feet. The new sediment surface in the reservoir would be at about the same grade as the current sediment surface. The partial removal of the reservoir sediment would expose a portion of the pre-1921 alluvial deposits in the river channel and floodplain along the sides and the upstream reaches of the historic reservoir inundation zone, uncovering approximately 2,000 feet of the upstream portion of the Carmel River branch and 900 feet of the San Clemente Creek branch in the current reservoir inundation area.

After the sediment surface is lowered to its planned depth, the following three-stage channel would be provided through selective contouring along both the Carmel River and San Clemente Creek:

- The relatively wide river/creek valley formed by the remaining alluvial deposits;
- A bankfull channel appropriately sized with capacity for a two-year flood event;
- A thalweg (low-flow channel) to pass median annual flows and provide depths needed for fish migration even during low flows.

The broad valley containing the reconstructed stream channel would generally follow the 1921 contours in the upper reaches of the Carmel River and San Clemente Creek and the lowered sediment surface in the portions of the reservoir closer to the Dam. The bankfull and thalweg channels would be reconstructed by limited grading of the existing alluvial deposits. Habitat complexity would be promoted within the channel by constructing pools, runs, and riffles, to provide suitable depth and velocity conditions for steelhead migration. Instream structures such as downed trees and boulders would be placed at strategic locations to improve conditions along the stream channels.

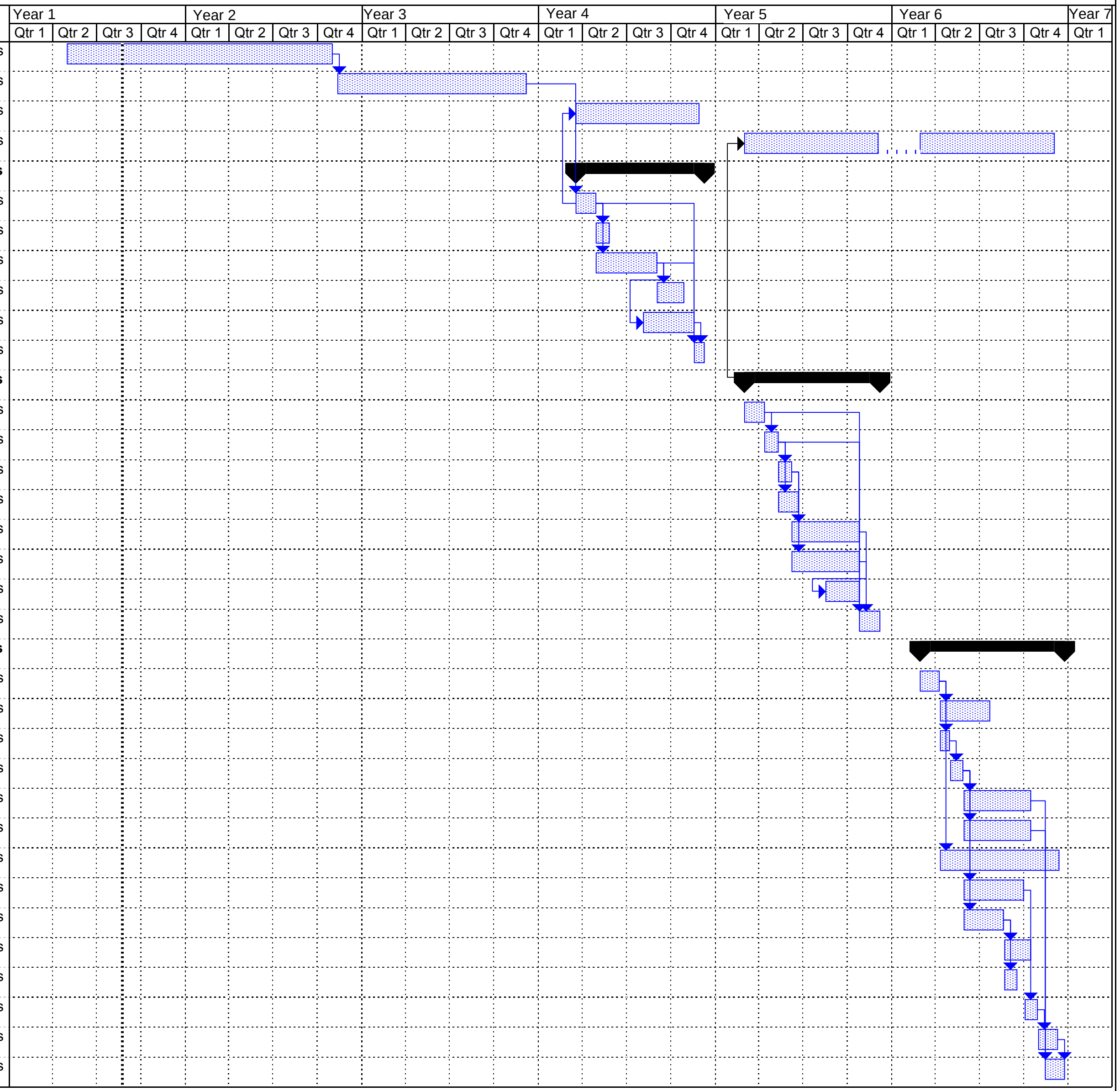
Stabilization of exposed land would be accelerated by planting the exposed reservoir canyon slopes with native upland vegetation. Likewise, once the channel has been contoured, the establishment of riparian vegetation on the lowered sediment terraces would be accelerated through cultivation and planting of selected areas of the valley floor. Native saplings of suitable riparian species would be obtained from nearby reaches of the Carmel River and San Clemente Creek and planted at appropriate densities along the stream banks. Temporary stabilization of stream banks would also be provided using vegetative matter and plantings.

3.3.8 CONSTRUCTION SCHEDULE AND OPERATIONS

A conceptual schedule is presented in Figure 3.3-7. Following the state NOD and federal ROD, final engineering studies would begin in Year 2. These include geotechnical investigations for the sediment site and access roads; design of the access roads and conveyor system; design of the sediment pile including stability and hydrologic analyses; design of the new fish ladder and high-level outlet; design of the new water intake and conveyance pipeline extension; design of the Dam notching; planning and design of stream bypass and dewatering facilities; design of the reconstruction of the Carmel River and San Clemente Creek channels; and design of mitigation or habitat enhancement plans for red-legged frogs and steelhead. A construction contract package is planned to be developed and construction bids solicited late in CY 1, for award in early in CY 2.

SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT
DAM NOTCHING ALTERNATIVE
CONCEPTUAL SCHEDULE

ID	Task Name	Duration
1	PERMITTING	393 days
2	ENGINEERING DESIGN	280 days
3	SH &CRLF MIT MONTORING PHASE 1	183 days
4	SH &CRLF MIT MONTORING PHASE 2	399 days
5	**PHASE 1 - PRE-CONSTRUCTION ACTIVITIES**	**190 days**
6	MOBILIZATION	30 days
7	SET-UP STREAM DIVERSION	20 days
8	CACHAGUA GRADE TO RESERVOIR ACCESS ROAD UPGRADE	90 days
9	DISPOSAL & RESERVOIR LOADING AREA SITE PREPARATION	40 days
10	CONVEYOR FOUNDATIONS, POWER, AND ERECTION	75 days
11	DEMOBILIZATION / WINTERIZATION	15 days
12	**PHASE 2 - SEDIMENT REMOVAL (SEASON 1)**	**200 days**
13	MOBILIZATION	30 days
14	FINALIZE STREAM DIVERSION / INSTALL DEWATERING SYSTEM	20 days
15	DRAWDOWN RESERVOIR	20 days
16	LOW ROAD & PLUNGE POOL ACCESS ROAD IMPROVEMENTS	30 days
17	DEWATERING & CARE OF WATER	100 days
18	SEDIMENT EXCAVATION AND DISPOSAL	100 days
19	RIVER RESTORATION	50 days
20	DEMOBILIZATION / WINTERIZATION	30 days
21	**PHASE 2 - SEDIMENT REMOVAL (SEASON 2)**	**215 days**
22	MOBILIZATION	30 days
23	INSTALL CAL-AM'S WATER DIVERSION INTAKE AND PIPELINE	75 days
24	RE-INSTALL DEWATERING SYSTEM/COFFERDAMS	15 days
25	DRAWDOWN RESERVOIR/PLUNGE POOL	20 days
26	DEWATERING & CARE OF WATER	100 days
27	FISH LADDER DEMOLITION & CONSTRUCTION	100 days
28	RIVER RESTORATION	176 days
29	SEDIMENT EXCAVATION AND DISPOSAL	90 days
30	DAM NOTCHING & CONCRETE REMOVAL OPERATIONS	60 days
31	SPILLWAY WEIR CONSTRUCTION	40 days
32	SLUICEWAY / GATE INSTALLATION	20 days
33	CONVEYOR SYSTEM REMOVAL	20 days
34	RESTORE RESERVOIR ACCESS ROAD	30 days
35	DEMOBILIZATION	30 days



Project: SAN CLEMENTE DAM NOTCHING
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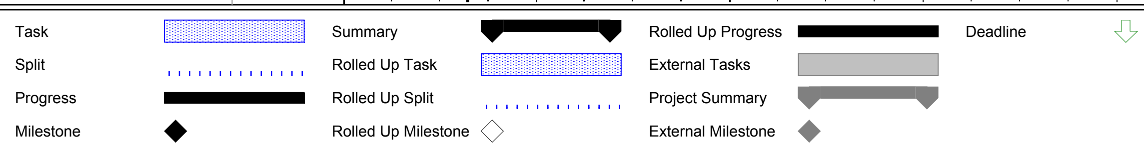

Construction would occur in two distinct phases. Phase 1, in CY 3, would include mobilization, construction of the new access road to the CVFP, OCRD bridge improvements, road aggregate delivery, improvements to existing access roads (high road, low road, plunge pool access road, and pipeline access road), improvement of the access road from Cachagua Grade to the sediment disposal site, and construction of a new access road from the sediment disposal site to the reservoir. The sediment disposal site would be cleared of vegetation and prepared for delivery of the conveyors and radial stackers. After the new road is completed, the supports for the conveyor would be installed and eventually the conveyor sections would be fastened to the supports. First year work may also possibly include construction of some of the stream diversion features and would conclude with demobilization for the winter. In addition, a new water diversion facility would be constructed to replace CAW's existing water diversion at the Dam.

Phase 2 (CY 4, 5 and 6) would include the construction of temporary roads across the reservoir sediment surface to allow access of excavating equipment, the removal of sediment, the notching of the Dam, construction of the new fish ladder, construction of the new river intake and conveyance pipeline extension, the reconstruction of stream channels, and the restoration and revegetation of the sediment pile and reservoir area. It would include seasonal mobilization, stream diversion and reservoir dewatering, and interim stabilization of the sediment pile the first winter.

The majority of the work in Phase 1 is planned to take approximately 10 months between March and December of year three. Phase 2 is planned to take three years. During CY 4, 5 and 6, mobilization would occur during the month of March. Fieldwork in the reservoir area would start early May. Installation of diversion and dewatering facilities would take about one month, with closure of the cofferdams on or about May 31. Fish rescue would continue until June 30. Drawdown of the reservoir would continue until about October. Actual sediment removal operations would take place during a five-month period from June through October. Removal of cofferdams and demobilization of in-stream construction operations would occur October to the end of November. Allowing for holidays and a few days of bad weather, it was assumed that each season would have approximately 100 working days of actual sediment-removal production operations.

Sediment excavation, transport and placement operations would be conducted in two 10-hour shifts, five days per week. The equipment for sediment excavation and transport can sustain an average rate of 500 cubic yards per hour with a peak capacity of 700 cubic yards per hour. The estimated sediment removal rate is about 900,000 cubic yards per season. Two seasons would be required for sediment removal for the Dam notching alternative.

During the last year of sediment removal operations, sediment removal would be completed in August. The Dam notching activities would begin around June of year 6, concurrently with the sediment removal operations, Notching and sediment removal would be completed August of CY 6. Fish ladder construction would take place during a five-month period from June to October of CY 5. Spillway overflow weir construction would occur August to September of CY 6. Approximately 1,500 cubic yards of concrete would be procured from an off-site commercial concrete plant and would be transported to the site by ready-mix trucks. Concrete placement operations may require an average of four or five concrete truckloads per day. Placement of concrete would be completed in mid November prior to commencement of the rainy season. Removal of cofferdams and demobilization of in-stream construction operations would occur later in November.

Reservoir restoration and channel reconstruction activities would take place concurrently with sediment removal activities. This work would begin at the upstream end of the reservoir and progress downstream as new areas of the historical stream terraces and channel are uncovered. Additional time would be needed at the conclusion of the sediment removal, dam notching, and cofferdam removal operations to complete the reconstruction of the newly exposed portions of the river channel and the revegetation of the old reservoir and sediment inundation areas.

Construction Crews

The requirements for labor, which affects the number of vehicle trips to and from the site, vary from an approximate average of 20 workers per day during Phase I (road construction and improvements scheduled for one season for approximately eight months), to an approximate average of 45 workers per day during Phase II (sediment excavation and disposal, dam modification, and fish ladder construction). A maximum of about 60 workers would be needed during the third year, when sediment excavation and removal would be completed at the same time that dam notching and form erection and concrete placement occur for the fish ladder. Construction crews could be transported to work in car pools to minimize construction-related traffic.

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3.4 ALTERNATIVE 2: DAM REMOVAL

3.4.1 OVERVIEW

This alternative would remove SCD to prevent failure from an MCE and a PMF, as described in Section 3.2. Approximately 2.5 million cubic yards (1,555 AF) of accumulated sediment would be removed from behind the Dam over three seasons by excavation with heavy earthmoving equipment. A conveyor belt system would be used to transport the sediment to a disposal area east of the reservoir. The Dam would be demolished and removed from the site. The fish ladder will be demolished and removed.

During the active construction seasons, the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered. CAW's new diversion intake would be installed upstream to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply. During construction, the intake would divert through a separate temporary bypass line around the construction site into CAW's existing system. The permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process. A notch would be cut into OCRD, which is about 1800 feet downstream of SCD, in order to provide adequate fish passage. The river channel exposed through removal of sediment in the historic reservoir inundation zone would be reconstructed.

This project is expected to take seven years to complete, including environmental review, permitting, design, infrastructure improvements, sediment removal, dam demolition, and channel reconstruction. Actual site work, from mobilization to demobilization, would require about five years. The effects of annual precipitation on river flow conditions could affect the schedule in the spring. Construction activities necessary to complete the project are summarized below. Improvements to and/or new roads as part of the proposed project are also conceptually described.

3.4.2 PROJECT LOCATION & ACCESS

The project study area, area of potential effect, facilities, and land ownership are described in Section 3.2. Figures 3.2-1 and 3.2-2 depict the project region and vicinity, respectively.

3.4.3 EXISTING STRUCTURE & OPERATIONS

SCD and reservoir, associated facilities, dam and reservoir operations, the CVFP, the existing fish ladder, and current provisions for fish passage are described in Section 3.2.

3.4.4 PROJECT CHARACTERISTICS

This section describes the SCD removal alternative, including demolition and removal; sediment excavation, transport and disposal; access roads; and stream diversion and reservoir drawdown and dewatering. It also summarizes construction activities necessary to complete the project.

Dam Removal

Dam removal would not proceed until sediment removal is complete (see discussion below). At the conclusion of the sediment removal process, SCD would be demolished using explosives. This involves the demolition and removal of about 7,000 to 8,000 cubic yards of concrete from the site. The concrete debris would be further broken up into pieces of sizes that could be loaded and transported by off-highway trucks to the sediment disposal pile for use in erosion control.

The plunge pool downstream of the Dam would be completely drained prior to dam demolition to allow access for construction workers and machinery for demolition operations. To keep the plunge pool staging area dry during demolition, two cofferdams would be installed as described in Section 3.2.

A truck-mounted crane may be used to drill the holes into the Dam and load the explosives. The crane could be located downstream of the Dam in the drained plunge pool to provide adequate access to the entire footprint of the Dam, from the crest down to the foundation. The crane would also be used to lift out the concrete debris. Large excavators equipped with hydraulic hammers or shears would be used to reduce the size of the concrete debris as needed. Light blasting would also be used to break up the largest concrete pieces into smaller, more manageable pieces.

The existing fish ladder on the left (west) abutment of the Dam will be demolished and removed. The instrument hut near the left abutment also would be removed. The Dam-tender dwelling would be preserved and possibly converted to other uses.

Modification of CAW Water Diversion Point

Section 3.3 describes current CAW infrastructure and operations requirements for a point of diversion that will provide the required hydraulic head to drive the water through the existing filters to the clearwell for distribution. A subsurface screened intake at the head of San Clemente Reservoir was tentatively selected as the new water diversion point for the Dam removal alternative. This option is described in Section 3.3. The approximate location of the new screened intake and anticipated alignment of the pipeline extension are shown on Figure 3.3-3.

Electrical System

The existing electrical service and proposed modifications required to meet power requirements for this alternative (primarily for the conveyor system) are described in Section 3.3.

Sediment Excavation, Transport & Disposal

San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards of sediment (MEI 2003). The characteristics of this sediment are described above, in Section 3.3. To mitigate risks for sediment accumulation and flooding in downstream reaches of the river, removal of the Dam requires the prior removal of the sediment accumulated in the reservoir since the Dam was placed in service in 1921 (note that during dam construction the streambed was excavated to about 20 feet below its original level at the Dam). As a result of the sediment removal efforts, the Carmel River and San Clemente Creek stream channels would be exposed and require reconstruction.

Several excavation methods (mechanical excavation and hydraulic dredging) are considered feasible (see Appendix G for more detail). Mechanical excavation and transport by conveyor appear to have a slight cost advantage, are simpler, and would have lesser environmental impacts than other methods. The selected approach is described in more detail below.

Sediment Excavation

The mechanical excavation of sediment would be conducted using the methods described in Section 3.3. During the first sediment removal season, the sediment would be excavated from a starting elevation ranging between 525 to 545 feet to an elevation of 505 to 525 feet. During the second season, excavation would reach a target elevation of approximately 480 to 500 feet. During the third construction season, the remaining sediment would be removed to approximately the depth of the original streambed that existed in 1921.

Pre-drainage of sediments prior to excavation would likely become ineffective in the silt deposits that exist below about elevation 485 feet within 600 to 900 feet of the Dam (see Figures 3.5a and 3.5.b in MEI 2003). These materials would not be reached until the last sediment excavation season. They would be mucked out using large excavators, draglines, or clamshells working from firm ground. The excavated materials would be placed in a drying/staging area in the immediate vicinity of the point of excavation, from where they would be excavated again and transported to the central stockpile area and conveyor loading facility.

Sediment Transport

The excavated sediment would be transported to a central stockpile in the reservoir near the mouth of the ravine where Site 4R is located. Section 3.3 describes the conveyor belt system proposed for use.

Sediment Disposal

A plan of Site 4R and a capacity curve for the site are shown in Figure 3.3-4. The maximum capacity of the site is undetermined but is well in excess of the estimated required volume of 2.5 million cubic yards. The footprint area of the sediment pile would be approximately 23 acres. The watershed area tributary to the sediment pile site is approximately 252 acres.

Site preparation prior to sediment disposal, disposal site operations and maintenance, and site restoration would all be the same as described in Section 3.3.

Stream Diversion and Reservoir Drawdown and Dewatering

Both the Carmel River and the San Clemente Creek would be diverted around the active areas of sediment excavation during the construction season. The approach to diversion, reservoir drawdown and dewatering is the same as described in Section 3.3.

3.4.5 PROJECT ACCESS AND IMPROVEMENTS

Road access to the sediment disposal site and San Clemente Reservoir would be established via Cachagua Grade. An existing jeep trail that extends between a gated entrance off Cachagua Grade and the sediment disposal site would be improved, and a conveyor belt system and maintenance road would be installed between the reservoir and the sediment disposal site. Road realignment and improvements are discussed in more detail below.

Access from Carmel Valley Road to San Clemente Dam

Existing vehicle access to SCD and the filter plant from Carmel Valley Road is described in Section 3.2. Improvements to these existing access roads are also described in Section 3.2.

Minor improvements may be made to the “High Road” (crossing a ford over the Carmel River) or “Low Road” (using an existing bridge across the river at the OCRD). These roads may require localized grading and/or widening, cut or fill slope stabilization, and vegetation removal. However, no major improvements are contemplated since the primary access to the reservoir will be via Cachagua Grade as described below.

At the OCRD, an existing unimproved single lane road follows the southeast side of the Carmel River to the plunge pool at the base of the Dam. This road has been in limited use and had a number of washouts from the 1995 and 1998 floods. This plunge pool access road would be improved to place the downstream cofferdams and stage the crane and other construction equipment used in demolition operations at the base of the Dam. Some tree pruning and removal would be needed. The roadbed would be filled with sand and gravel and topped with crushed rock to provide one lane, two-way access and designated pullouts. An asphaltic sealant coat would be applied to the crushed rock to stabilize it and prevent it from moving into the river.

Access to Sediment Disposal Site and Reservoir

The primary access used to develop the sediment disposal site and access the reservoir would be via Carmel Valley Road and Cachagua Grade. This access and proposed improvements to it are described in Section 3.3.

3.4.6 PARTIAL RECONSTRUCTION OF THE RIVER CHANNEL AND REVEGETATION OF THE VALLEY FLOOR

Removal of the reservoir sediment would expose the pre-1921 alluvial deposits in the river channel and floodplain through the historic reservoir inundation zone. A three-stage channel would be provided through selective contouring along both the Carmel River and San Clemente Creek. The channel would be similar to but longer than the one described in Section 3.3.

3.4.7 CONSTRUCTION SCHEDULE AND OPERATIONS

A conceptual schedule is presented in Figure 3.4-1 Project Schedule. Following the State Notice of Determination and Federal Record of Decision, final engineering studies would begin in CY 2. These include geotechnical investigations for the sediment site and access roads; design of the access roads and conveyor system; design of the sediment pile including stability and hydrologic analyses; design of the new water intake and conveyance pipeline extension; planning for demolition of the Dam; planning and design of stream bypass and dewatering facilities; design of the reconstruction of the Carmel River and San Clemente Creek channels; and design of mitigation or habitat enhancement plans for CRLF and steelhead. A construction contract package is planned to be developed and construction bids solicited late in CY 1, for award early in CY 2.

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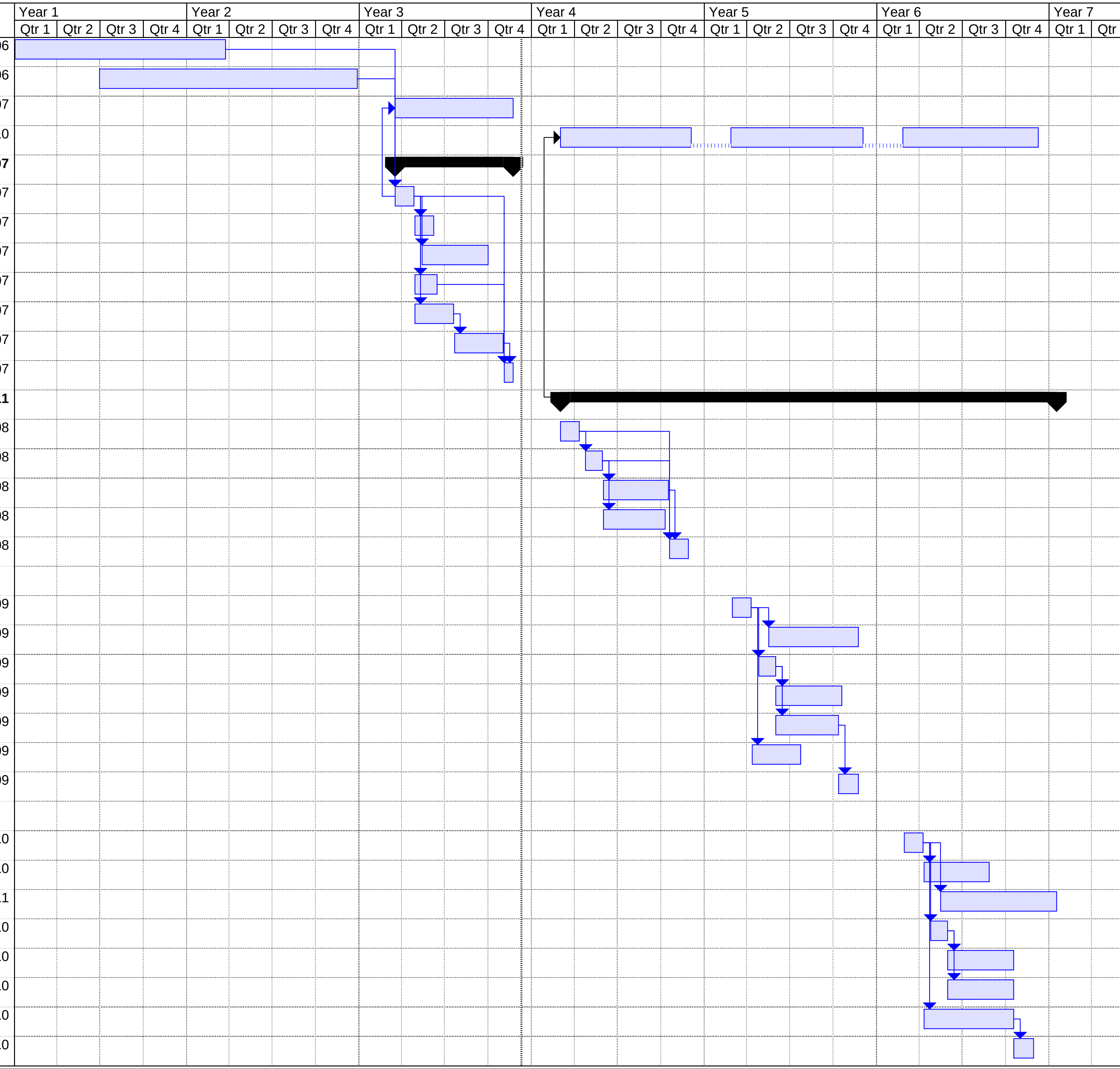
Figure 3.4-1 SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT
ALTERNATIVE 2- DAM REMOVAL
CONCEPTUAL SCHEDULE

ID	Task Name	Duration	Start	Finish
1	PERMITTING	320 days	Mon 1/3/05	Fri 3/24/06
2	ENGINEERING DESIGN	390 days	Fri 7/1/05	Thu 12/28/06
3	SH &CRLF MIT MONTORING PHASE 1	180 days	Mon 3/19/07	Fri 11/23/07
4	SH &CRLF MIT MONTORING PHASE 2	604 days	Mon 3/3/08	Thu 12/9/10
5	**PHASE 1**	**180 days**	**Mon 3/19/07**	**Fri 11/23/07**
6	MOBILIZATION	30 days	Mon 3/19/07	Fri 4/27/07
7	SET-UP STREAM DIVERSION	30 days	Mon 4/30/07	Fri 6/8/07
8	INSTALL CAL-AM'S WATER DIVERSION INTAKE AND PIPELINE	100 days	Tue 5/15/07	Mon 10/1/07
9	ACCESS ROAD UPGRADE	35 days	Mon 4/30/07	Fri 6/15/07
10	RESERVOIR/CONVEYOR ACCESS ROAD	60 days	Mon 4/30/07	Fri 7/20/07
11	CONVEYOR FOUNDATIONS AND SECTIONS	75 days	Mon 7/23/07	Fri 11/2/07
12	DEMOBILIZATION	15 days	Mon 11/5/07	Fri 11/23/07
13	**PHASE 2**	**751 days**	**Mon 3/3/08**	**Mon 1/17/11**
14	MOBILIZATION	30 days	Mon 3/3/08	Fri 4/11/08
15	INSTALL DEWATERING SYSTEM	26 days	Fri 4/25/08	Fri 5/30/08
16	DEWATERING & CARE OF WATER	100 days	Mon 6/2/08	Fri 10/17/08
17	SEDIMENT EXCAVATION AND DISPOSAL	95 days	Mon 6/2/08	Fri 10/10/08
18	DEMOBILIZATION	30 days	Mon 10/20/08	Fri 11/28/08
19				
20	MOBILIZATION	30 days	Mon 3/2/09	Fri 4/10/09
21	RIVER RESTORATION	136 days	Mon 5/18/09	Mon 11/23/09
22	INSTALL DEWATERING SYSTEM	26 days	Mon 4/27/09	Mon 6/1/09
23	DEWATERING & CARE OF WATER	100 days	Tue 6/2/09	Mon 10/19/09
24	SEDIMENT EXCAVATION AND DISPOSAL	95 days	Tue 6/2/09	Mon 10/12/09
25	DRILL DAM ABOVE EL. 525	75 days	Mon 4/13/09	Fri 7/24/09
26	DEMOBILIZATION	30 days	Tue 10/13/09	Mon 11/23/09
27				
28	MOBILIZATION	30 days	Mon 3/1/10	Fri 4/9/10
29	INSTALL CAL-AM'S PERMANENT WATER DIVERSION PIPELINE	100 days	Mon 4/12/10	Fri 8/27/10
30	RIVER RESTORATION	176 days	Mon 5/17/10	Mon 1/17/11
31	INSTALL DEWATERING SYSTEM	26 days	Mon 4/26/10	Mon 5/31/10
32	DEWATERING & CARE OF WATER	100 days	Tue 6/1/10	Mon 10/18/10
33	SEDIMENT EXCAVATION AND DISPOSAL	100 days	Tue 6/1/10	Mon 10/18/10
34	DAM DRILLING & DEMOLITION	136 days	Mon 4/12/10	Mon 10/18/10
35	DEMOBILIZATION	30 days	Tue 10/19/10	Mon 11/29/10



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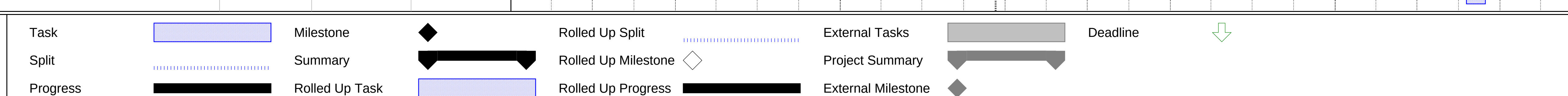

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Construction would occur in two distinct phases. Phase 1, in CY 3, would include mobilization, improvement of the access road from Cachagua Grade to the sediment disposal site, and construction of a new access road from the sediment disposal site to the reservoir. The sediment disposal site would be cleared of vegetation and prepared for delivery of the conveyors and radial stackers. After the new road is completed, the supports for the conveyor would be installed and eventually the conveyor sections would be fastened to the supports. Phase 1 work may also possibly include construction of some of the stream diversion features and would conclude with demobilization for the winter. In addition, a new water diversion facility would be constructed to replace CAW's existing diversion facility at the Dam. Phase 2, in CY 4, 5 6, and January of CY 7 would include the construction of temporary roads across the reservoir sediment surface to allow access of excavating equipment, removal of sediment, demolition of the Dam; reconstruction of stream channels, and restoration and revegetation of the sediment pile and reservoir area. It would include seasonal mobilization, stream diversion and reservoir dewatering, and interim stabilization of the sediment pile the first winter. The permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process.

The majority of the work in Phase 1 is planned to take approximately nine months between March and November of CY 3. Phase 2 is planned to take three years and one month. During each of these years, mobilization would occur during the month of March. Fieldwork in the reservoir area would start approximately around May. Installation of diversion and dewatering facilities would take about one month, with closure of the cofferdams on or about May 31. Fish rescue would continue until June 30. Drawdown of the reservoir would continue until about October Actual sediment removal operations would take place during a five-month period from June through October. Removal of cofferdams and demobilization of in-stream construction operations would occur in November. Allowing for holidays and a few days of bad weather, it was assumed that each season would have approximately 100 working days of actual sediment-removal production operations.

Sediment excavation, transport and placement operations would be conducted in two 10-hour shifts, five days per week. The equipment for sediment excavation and transport can sustain an average rate of 500 cubic yards per hour with a peak capacity of 700 cubic yards per hour. The estimated sediment removal rate is about 900,000 cubic yards per season. Three seasons would be required for sediment removal for the Dam removal alternative.

During the last year of sediment removal operations, sediment removal would be completed in October. The upper portion of the Dam would be demolished while sediment removal is being completed, and dam demolition and removal activities would continue into the fall and be completed in October. Removal of cofferdams and demobilization of in-stream construction operations would occur from October to the end of November.

Reservoir restoration and channel reconstruction activities would take place concurrently with sediment removal activities. This work would begin at the upstream end of the reservoir and progress downstream as new areas of the historical stream terraces and channel are uncovered. Additional time would be needed at the conclusion of the sediment removal, dam demolition, and cofferdam removal operations to complete the reconstruction of the newly exposed portions of the river channel and the revegetation of the old reservoir and sediment inundation areas.

Construction Crews

The requirements for labor, which affects the number of vehicle trips to and from the site, vary from an approximate average of 15 workers per day during Phase I (road construction and improvements scheduled for one season for approximately eight months), to an approximate average of 40 workers per day during Phase II (sediment excavation and disposal). A maximum of about 60 workers would be needed during July through October. Construction crews could be transported to work in car pools to minimize construction-related traffic.

3.5 ALTERNATIVE 3: CARMEL RIVER REROUTE & DAM REMOVAL

3.5.1 OVERVIEW

This alternative would remove SCD to prevent failure from a MCE and a PMF, as described in Section 3.2. Approximately ~~380,000~~ **830,000** **(URS, 2011)** cubic yards (~~235~~ **about 513** AF) of accumulated sediment behind the Dam on the San Clemente Creek arm of the reservoir **and a portion of the Carmel River** would be relocated to the Carmel River arm **sediment disposal area**, where the bulk of accumulated sediment already has been deposited. A portion of the Carmel River would be permanently bypassed by cutting a**n approximately** 450-foot-long channel between the Carmel River and San Clemente Creek, approximately 2500 feet upstream of the Dam. The bypassed portion of the Carmel River would be used as a sediment disposal site for the accumulated sediment. The **rock** spoils from channel construction (~~235,000 or 145 AF~~ **approximately 342,000 cubic yards of material, or about 212 AF**) would be used for construction of a diversion dike at the upstream end of the bypassed reservoir arm. **Any remaining rock spoils will be used to help stabilize the sediment slopes.** ~~The Dam and fish ladder would be demolished and removed from the site.~~

The Dam and fish ladder would be demolished and clean concrete from them would be used to stabilize sediment slopes. Any material not used to stabilize sediment slopes will be removed from the site.

During the active construction seasons, the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered. CAW's new diversion intake would be installed upstream to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply during construction. The intake would divert **water** through a separate temporary bypass line around the construction site into CAW's existing system. Accumulated sediment would be removed from behind the Dam over one **or two** season**s** by excavation with heavy earthmoving equipment. The equipment would transport the sediment to a disposal area in the bypassed portion of the reservoir. The sediments at the downstream end of the bypassed reservoir arm would be stabilized and protected from erosion. The San Clemente Creek channel would be reconstructed through its historic inundation zone from the exit of the diversion channel to the dam site. The permanent transmission line to connect the new diversion intake to the existing transmission line to CVFP would be installed at an appropriate point in the construction process.

A notch would be cut into OCRD, which is about 1800 feet downstream of SCD, in order to provide adequate fish passage.

This project is expected to take five years to complete, including environmental review, permitting, design, infrastructure improvements, sediment removal, bypass channel excavation, diversion dike construction, dam demolition, ~~and~~ creek channel reconstruction**, vegetation planting, and other habitat restoration as required for**

mitigation. The effects of annual precipitation on river flow conditions could affect the schedule in the spring. Construction activities necessary to complete the project are summarized below. Improvements to and/or new roads proposed as part of the project are also conceptually described.

3.5.2 PROJECT LOCATION & ACCESS

The project study area, area of potential effect, facilities, and land ownership are described in Section 3.2. Figures 3.2-1 and 3.2-2**a** depict the project region and vicinity, respectively. An overview of the site is shown on Figure 3.5-1a, and a detailed site plan is shown on Figure 3.5-2**a**.

3.5.3 EXISTING STRUCTURE & OPERATIONS

SCD and reservoir, associated facilities, dam and reservoir operations, the CVFP, the existing fish ladder, and current provisions for fish passage are described in Section 3.2.

3.5.4 PROJECT CHARACTERISTICS

This section describes the Carmel River reroute and dam removal project, including demolition and removal of the SCD; sediment excavation and relocation; access roads; stream channel restoration; and stream diversion and reservoir drawdown and dewatering. It also summarizes construction activities necessary to complete the project.

Dam Removal

One option for Dam removal would **be to first remove all sediment from** ~~not proceed until sediment in~~ the San Clemente Creek arm **and** ~~is~~ relocate~~d~~ **it to the sediment disposal area in the** ~~to the~~ Carmel River arm. At the conclusion of the sediment removal process, SCD and existing fish ladder would be demolished in the same manner as described for alternative 2 (Section 3.4)**, however clean concrete from the Dam and fish ladder would be used to stabilize the sediment slopes; any unused concrete and other debris would be removed from site**.

SCD would be demolished, as would the remaining portion of the fish ladder. The instrument hut near the left abutment also would be removed, and the debris would be taken off site. The Dam-tender dwelling (Dam Keeper's Cottages, see section 4.10) would be preserved and possibly converted to other uses. The demolition of SCD could occur in one step during the third construction season or in two steps during the third and fourth construction seasons.

An alternative method for demolishing SCD would be to use a combination of wire sawing and hydraulic hoe-ram methods. A truck-mounted crane would be used to lift out the concrete debris. The concrete would be used to stabilize the sediment slope.

Figure 3.5-1: Carmel River Bypass Site Plan (Replaced by Figure 3.5-1a)

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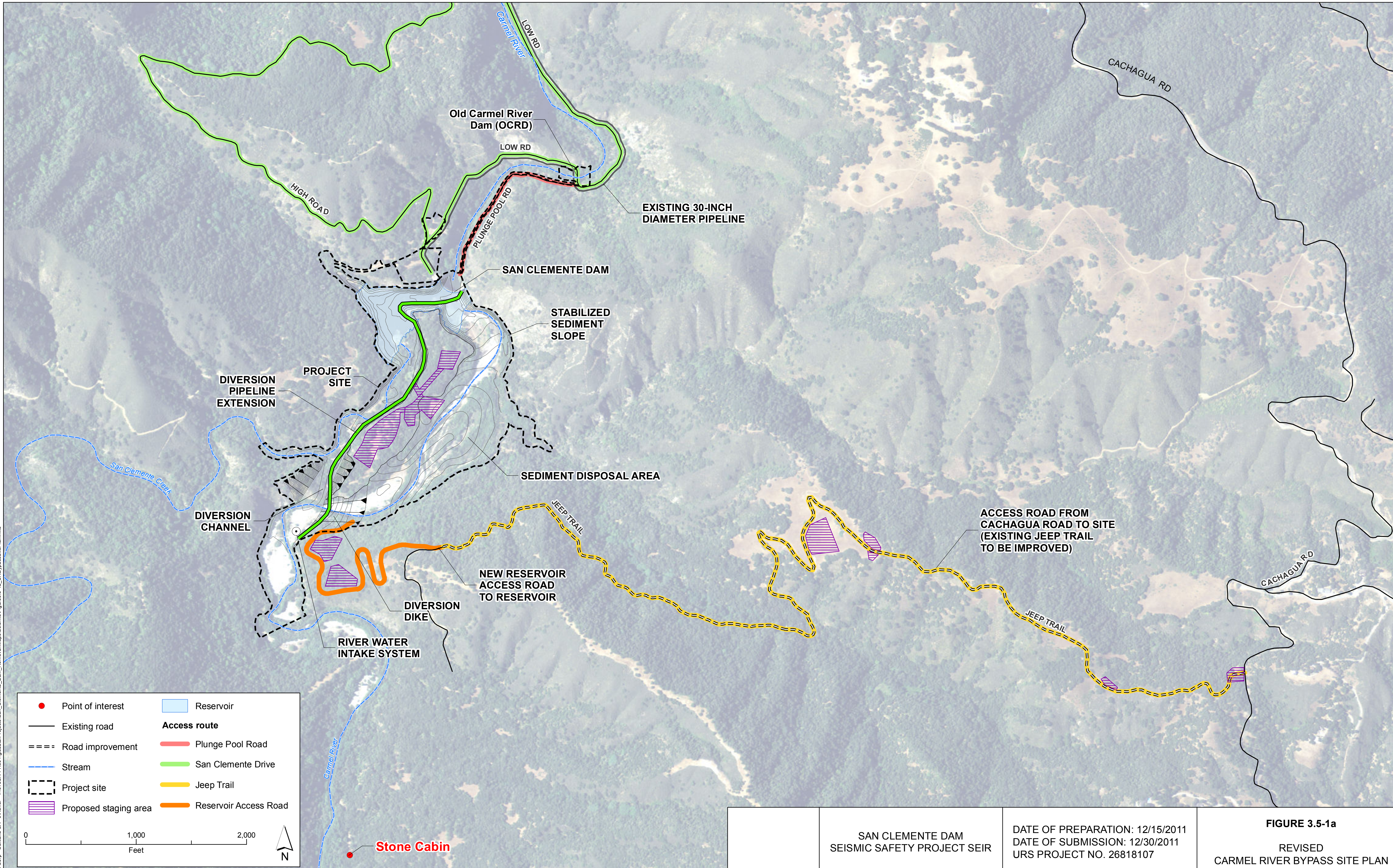

	SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR	DATE OF PREPARATION: 12/15/2011 DATE OF SUBMISSION: 12/30/2011 URS PROJECT NO. 26818107	**FIGURE 3.5-1a** REVISED CARMEL RIVER BYPASS SITE PLAN

URS Corp - Oakland CA - J.Rehor - \\1575SR-PRJ01\gisdata\Projects\San_Clemente_Dam_Removal\Maps\Seismic\Figure3.5-1a_CRBypassSitePlan.mxd

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Figure 3.5-2: ~~*Revised*~~ Detailed Carmel River Bypass Site Plan (Replaced by Figure 3.5-2a)

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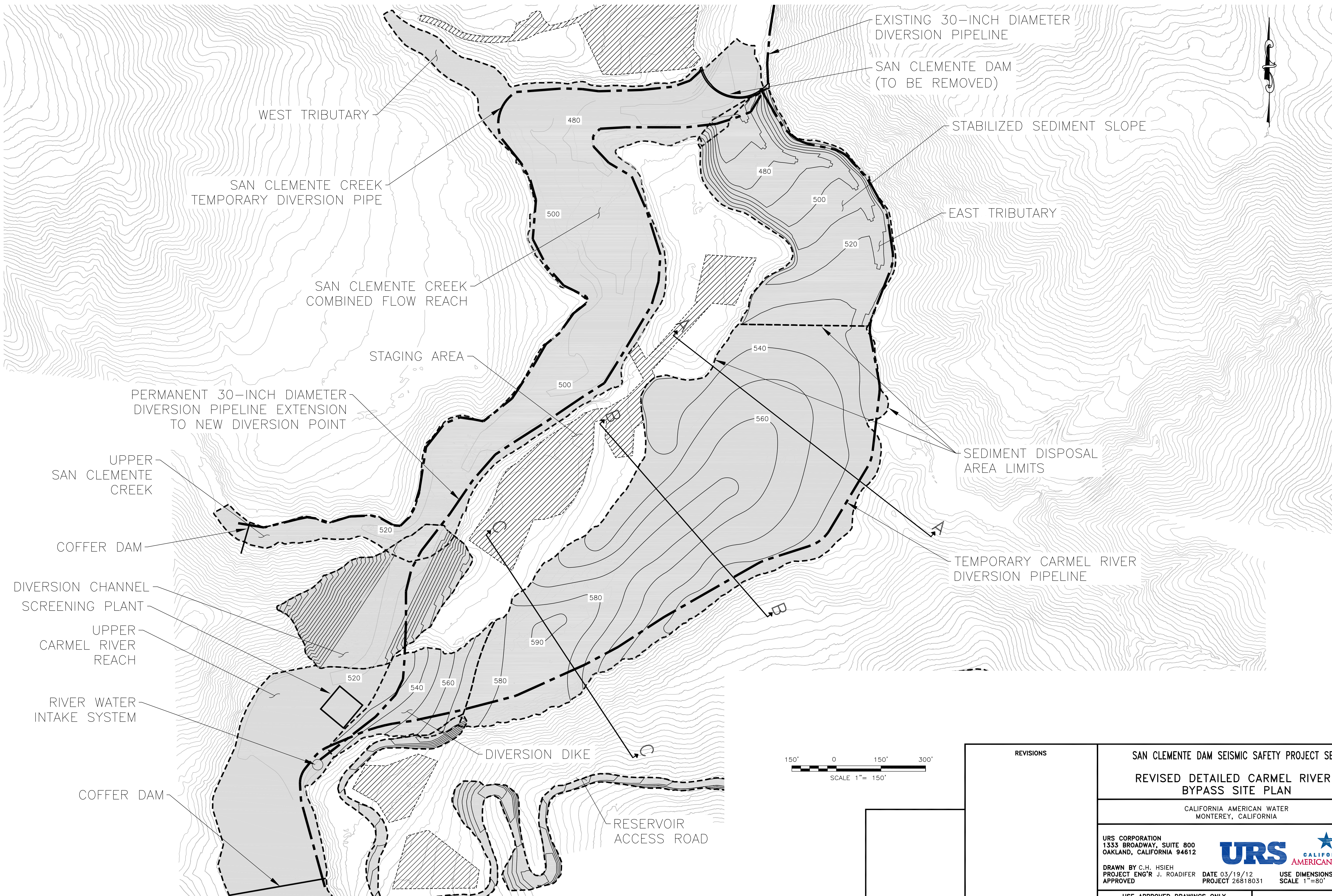

REVISIONS

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR

REVISED DETAILED CARMEL RIVER BYPASS SITE PLAN

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3.5–2a

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Demolition during a single construction season would likely use a combination of wire sawing and hydraulic hoe-ram methods. Any reinforcing steel would be separated from the concrete and transported off-site for disposal. The clean, demolished concrete would be hauled from the Dam to the sediment disposal area to stabilize the sediment slopes. Demolition of the dam would be sequenced such that the elevation of the sediment remaining in San Clemente Creek would be lower than the demolished level of the dam.

Another option for dam removal would be to partially remove the dam during the first construction season after removing sediment from the upstream toe of the Dam. The upper sections of the fish ladder would be removed during partial demolition and a temporary connection from the reservoir to the lower level of the fish ladder would be built prior to the end of the construction season in October. Removal of the remainder of the dam during the subsequent construction season would involve using a combination of wire sawing and hydraulic hoe-ram methods. A truck-mounted crane would be used to lift out the concrete debris. The concrete from the dam and fish ladder would be used to stabilize the sediment slopes.

Temporary stockpile areas will be established to store clean concrete from the demolished Dam and fish ladder before it is used to stabilize sediment slopes. The concrete stockpile areas will be located in the designated staging areas located between the Carmel River and San Clemente Creek (see Figure 3.5-2a). The staging areas comprise approximately four acres and will also be used for other project activities.

Modification of CAW Water Diversion Point

Section 3.3 describes current CAW infrastructure and operations requirements for a point of diversion that will provide the required hydraulic head to drive the water through the existing filters to the clearwell for distribution. A subsurface screened intake at the head of San Clemente Reservoir was tentatively selected as the new water diversion point for the Dam removal alternative. This option is described in Section 3.3. The approximate location of the new screened intake and anticipated alignment of the pipeline extension are shown on Figure ~~3.3-3~~ **3.5-2a**. The permanent diversion intake and temporary water diversion pipeline would be installed to replace the existing intake at the Dam to avoid interruption of this source of CAW's water supply while the project is under construction. The permanent pipeline will be installed at an appropriate point in the construction process.

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Figure 3.5-3: ~~*Revised*~~ Channel, Dike and Disposal Site Cross-Sections (Replaced by Figure 3.5-3a)

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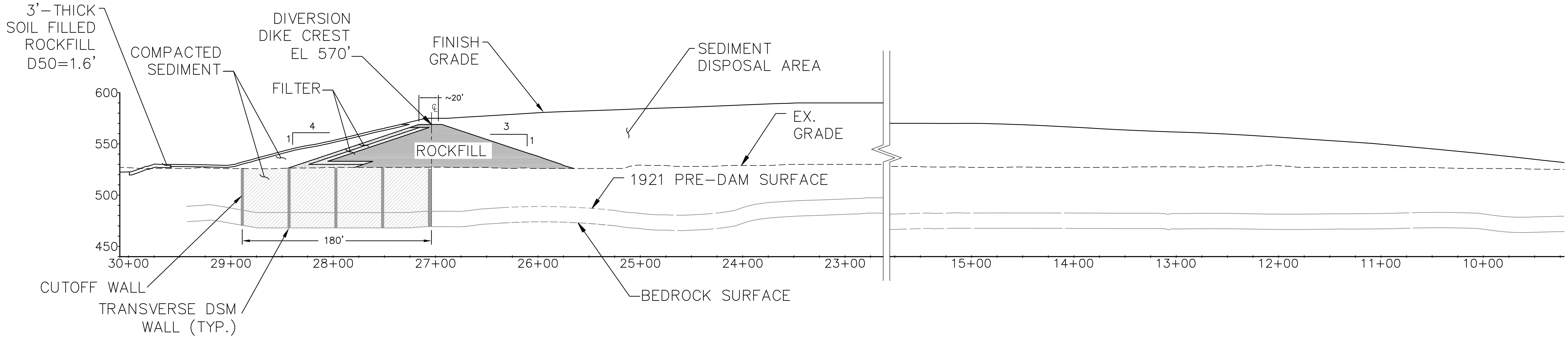
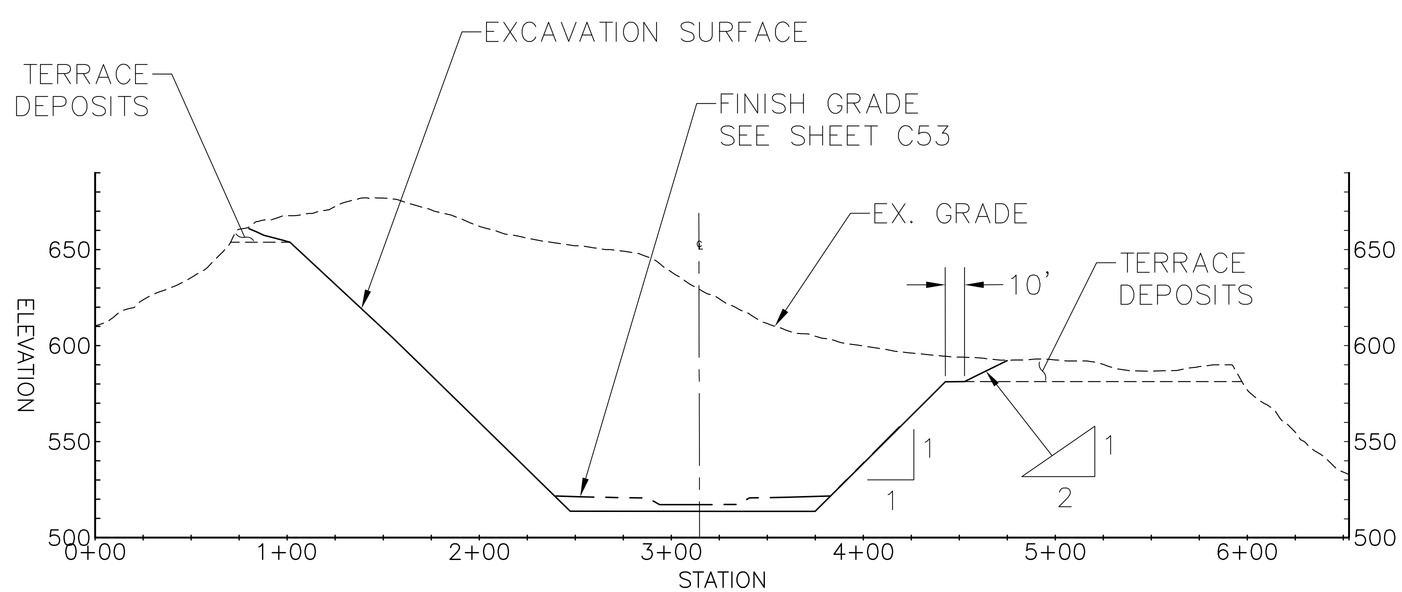
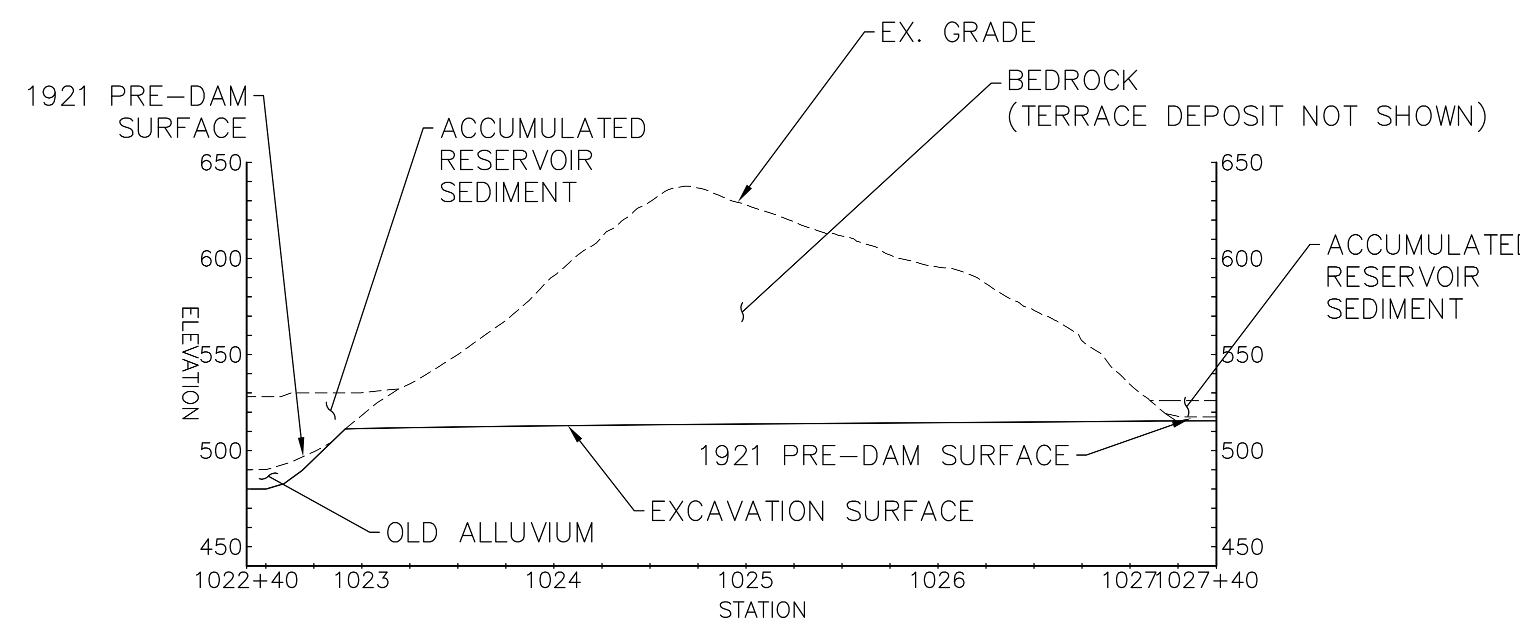


DIVERSION CHANNEL AND SEDIMENT PILE TYPICAL CROSS-SECTION
SCALE: 1" = 50'



DIVERSION CHANNEL TYPICAL CROSS-SECTION
SCALE: 1" = 50'



DIVERSION CHANNEL TYPICAL PROFILE
SCALE: 1" = 50'

50' 0 50' 100'
HORIZONTAL SCALE 1"= 50'

50' 0 50' 100'
VERTICAL SCALE 1"= 50'

REVISIONS

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR

REVISED CHANNEL, DIKE AND DISPOSAL SITE CROSS-SECTIONS

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Electrical System

The existing electrical service is described in Section 3.3. Construction power requirements would be limited for the bypass construction and dam removal because the sediment and dam removal operations would be primarily performed with diesel-powered equipment. However, it is anticipated that sediment removal would include smaller loads due to factors such as dewatering requirements, construction office trailers, equipment maintenance shop, and night lighting. Based on preliminary discussions with PG&E, the configuration of the existing PG&E 60-kV and 12-kV power lines would be able to handle the construction load and supply the needed power through temporary 12-kV extensions from the left abutment. Several substations (transformers, breakers, motor starters, controls, etc.) would be installed along the extended line to power lighting, dewatering pumps, etc. The feasibility of this alternative approach would need to be confirmed during design by PG&E by conducting the appropriate utility load studies, protection studies, short circuit studies, and coordination studies. Associated changes that the utility might require as a result of these studies would need to be implemented.

Sediment Excavation and Relocation

San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards (1,550 AF) of sediment (MEI 2003). The characteristics of the sediment are described above, in Section 3.3.

Sediment Disposal Site

The Carmel River Reroute and Dam Removal alternative would use the bypassed arm of the Carmel River (where the bulk of accumulated sediment has already been deposited) as a disposal site, minimizing sediment excavation quantities and transport distances. This alternative would confine all work, excluding access improvements, within the existing reservoir site boundaries. ~~Because of the site's remoteness,~~ ~~s~~ **S**ediment removal could proceed in two daily shifts **if necessary to complete the project within the construction schedule.** ~~without disturbing neighboring communities or sensitive receptors,~~ ~~thus resulting in a shorter schedule than for some of the other sites considered.~~

The maximum capacity of the disposal site is **estimated to be 1,200,000 cubic yards (URS, 2012)** ~~undetermined but is~~ **which is** well in excess of the required excavated volume of ~~380,000~~ **830,000** cubic yards. **Some of this sediment would be excavated from San Clemente Creek upstream of the Dam, sediment would also come from the existing Carmel River sediment pile upstream of the Dam, and from excavation for the diversion dike.** ~~estimated by MEI (MEI 2005) Thus, t~~ **T**he bypass site has ample capacity to store all sediment. The toe of the sediment pile would be located at approximate elevation 530 feet. The top of the sediment pile would be at about elevation **570** ~~550~~ feet in order to contain all of the sediment. ~~accumulated. in the San Clemente Creek portion of the reservoir~~ The footprint area of the sediment

disposal area ~~pile~~ would be approximately 13 acres. The watershed area tributary to the sediment **disposal** ~~pile~~ site is approximately 21 acres.

Sediment Excavation, Transport, and Placement

Several excavation methods (mechanical excavation and hydraulic dredging) are considered feasible (see Appendix G for more detail). Mechanical excavation appears to have a slight cost advantage, is simpler, and would have lesser environmental impacts than other methods.

Sediment removal will occur over at least ***~~two construction seasons~~*** **two construction seasons.** It is anticipated that the sediment would be removed in planes approximately parallel to the existing surface of the sediment in the San Clemente Creek arm of the reservoir. This approach is consistent with the ~~preferred~~ excavation method using scrapers. In combination with reservoir dewatering and sediment pre-draining activities described above, this method would also help maintain the excavation work above the groundwater level for as long as possible. ~~The third year of construction will be dedicated to access improvements and temporary stream diversion features. During the fourth construction season, t~~**T**he sediment would be removed to approximately the depth of the original streambed that existed in 1921 (note that, at the Dam, the streambed was excavated to about 20 feet below its original level). However, it is anticipated that final sediment removal and clean up would occur ~~during the fourth construction season~~ prior to **complete** dam removal operations.

Excavation of sediment above the water table would be performed using self-loading scrapers or similar self-propelled excavating equipment. The scrapers**, or other earth moving equipment,** would transport the ~~material~~ **sediment** to the disposal area on the bypassed reservoir arm, where the material would be allowed to drain further, and then compacted in place. **The sediment slopes will be stabilized with rock from the diversion channel as well as clean concrete from the demolished dam and fish ladder.** The proposed disposal site location and layout is shown on Figure 3.5-2**a**.

Pre-drainage of sediments prior to excavation would likely become ineffective in the silt deposits that exist below about elevation 485 feet within 600 to 900 feet of the Dam (see Figures 3.5a and 3.5.b in MEI 2003). These materials would be reached towards the end of the initial sediment excavation season. They would need to be mucked out using large hydraulic excavators, draglines, or clamshells working from firm ground. The excavated materials would be placed in a drying/staging area in the immediate vicinity of the point of excavation, from where they would be excavated again and transported to the disposal area on the bypassed reservoir arm.

Scrapers and other earthmoving equipment would transport the excavated sediment from San Clemente Creek to the bypassed Carmel River arm via a connecting road that traverses the land peninsula between the two reservoir arms. The approximate route and profile of the road is shown in Figure 3.5-4. At the disposal site, a bulldozer would be used to spread the sediment across the disposal area in preparation for compaction.

Site preparation prior to sediment disposal would include (1) the clearing and grubbing of trees and vegetation from the sediment pile footprint, (2) the removal of t**<u>he instrument hut near the left abutment, however the other the Dam-tender dwelling [Dam Keeper's Cottages] and other historic structures would be preserved (see section 4.10.), and </u>**~~any existing facilities (none have been identified)~~ (3) the stripping and stockpiling of organic soils (minimal) for use in subsequent restoration and revegetation of the site once sediment placement has been completed.

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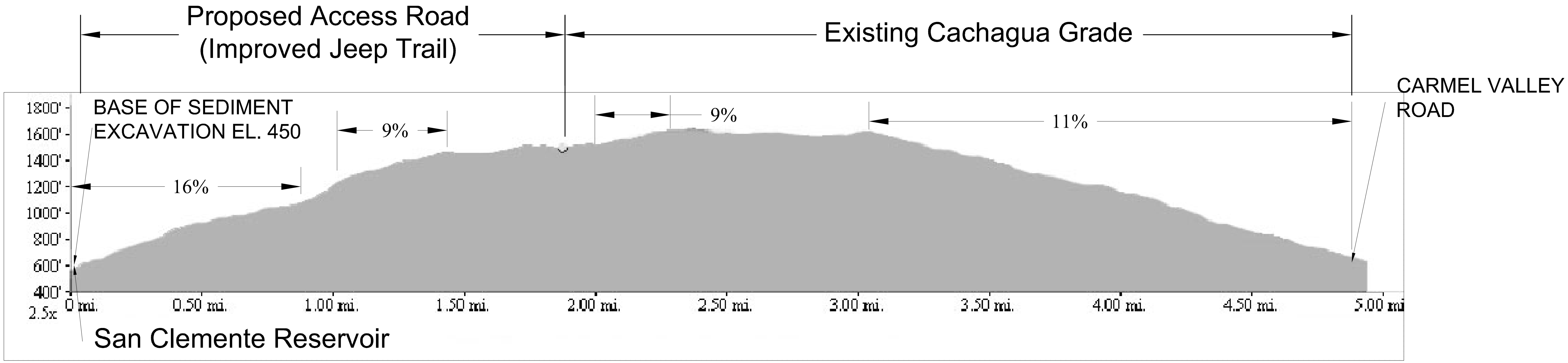
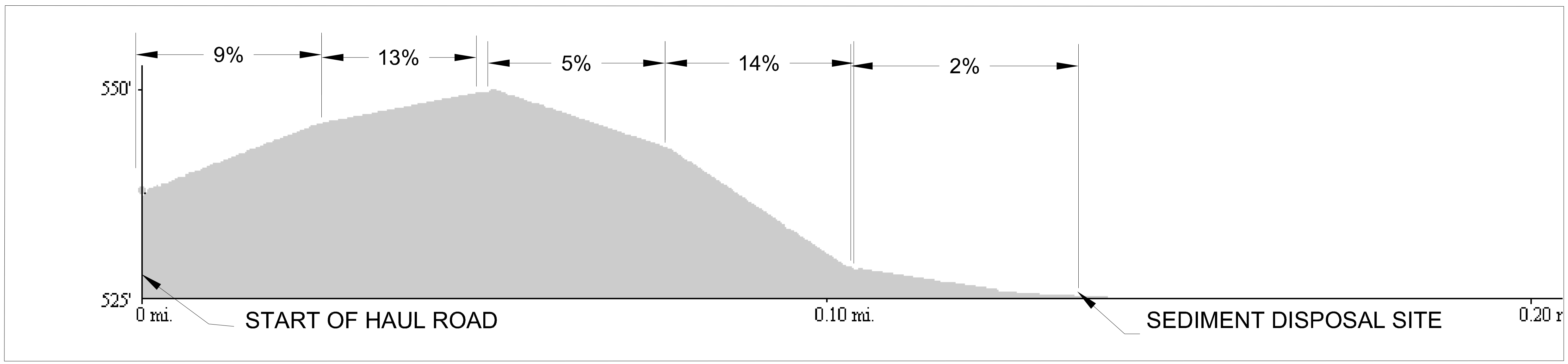
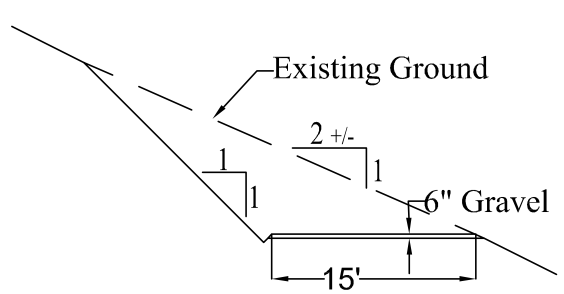


PROFILE OF ACCESS ROAD TO RESERVOIR SITE



PROFILE OF HAUL ROAD



TYPICAL ACCESS ROAD SECTION

Scale: 1" = 15'

REV	DATE	BY	DESCRIPTION	SCALE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED / DRAWN / CHECKED	MWH Walnut Creek California	CALIFORNIA AMERICAN WATER SAN CLEMENTE DAM SEISMIC RETROFIT EIR/EIS PROJECT PROFILES OF SITE ACCESS AND HAUL ROADS	Figure 3.5-4

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Upon delivery of sediment to the **sediment disposal** site, the sediment would be spread by means of bulldozers into thin, nearly horizontal lifts. Each lift would be compacted using the same bulldozers or vibratory compactors. The sediment pile would be constructed with a side slope as required for stability. **Exact slope specifications have yet to be determined.** ~~The side slope has been assumed to average 2-3/4 horizontal to 1 vertical for the purpose of performing site capacity calculations.~~ **Clean** concrete debris from dam removal would be placed on **sediment slopes** ~~selected areas of the pile~~ to provide long-term erosion protection. Such areas include the groins along the contact between the pile and the hillside abutments. A large percentage of the concrete used to construct the Dam **and fish ladder** does not have reinforcement. However, where reinforced concrete exists in the concrete debris from demolition, it will be separated out and disposed of at an offsite facility **to prevent contamination to water supplies by hazardous metals and chemicals in the reinforcing steel**. This is not anticipated to require extensive offsite disposal hauling during construction.

At the conclusion of each construction season, the portions of the excavation and disposal site above the maximum reservoir level (El. 525) would need to be winterized. This would involve (1) providing interim drainage and diversion of ravine flows, (2) stabilizing sloping sediment surfaces and other disturbed areas by installing erosion protection features such as erosion control mats or straw mulch and wattles, and (3) providing sediment collection features such as silt fences, straw bales, and sediment traps along the toe of the pile and other disturbed areas.

Once placement of sediment and concrete debris has been completed, the topsoil from the temporary topsoil stockpile developed during site stripping would be spread over the sediment pile. The graded surface would again be stabilized with erosion control measures as described above and would be revegetated with native plants and trees obtained from the site vicinity. ~~A t~~ **T**ypical **disposal site cross section** ~~section for the sediment disposal~~ ~~pile~~ ~~is~~ **are** shown on Figure 3.5-**2b**, which abuts against the diversion dike on one end.

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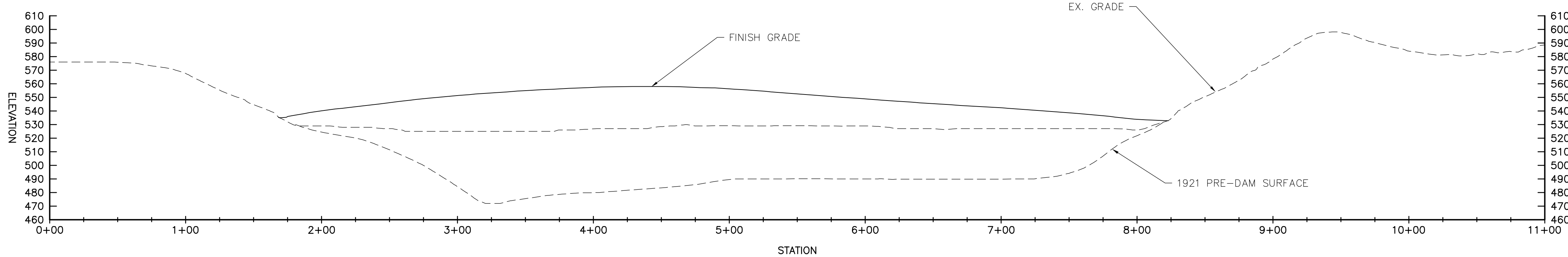

SECTION A
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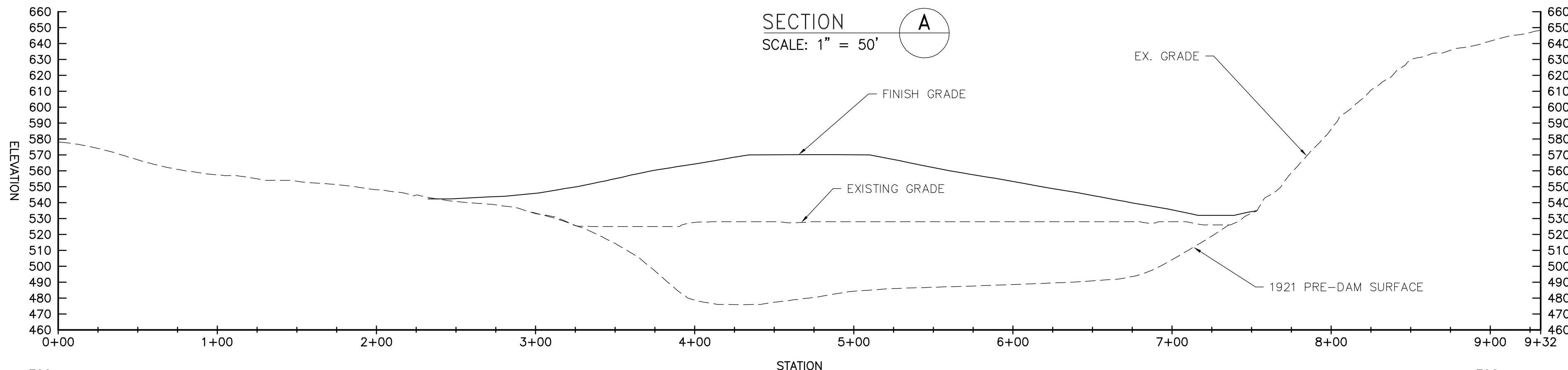

SECTION B
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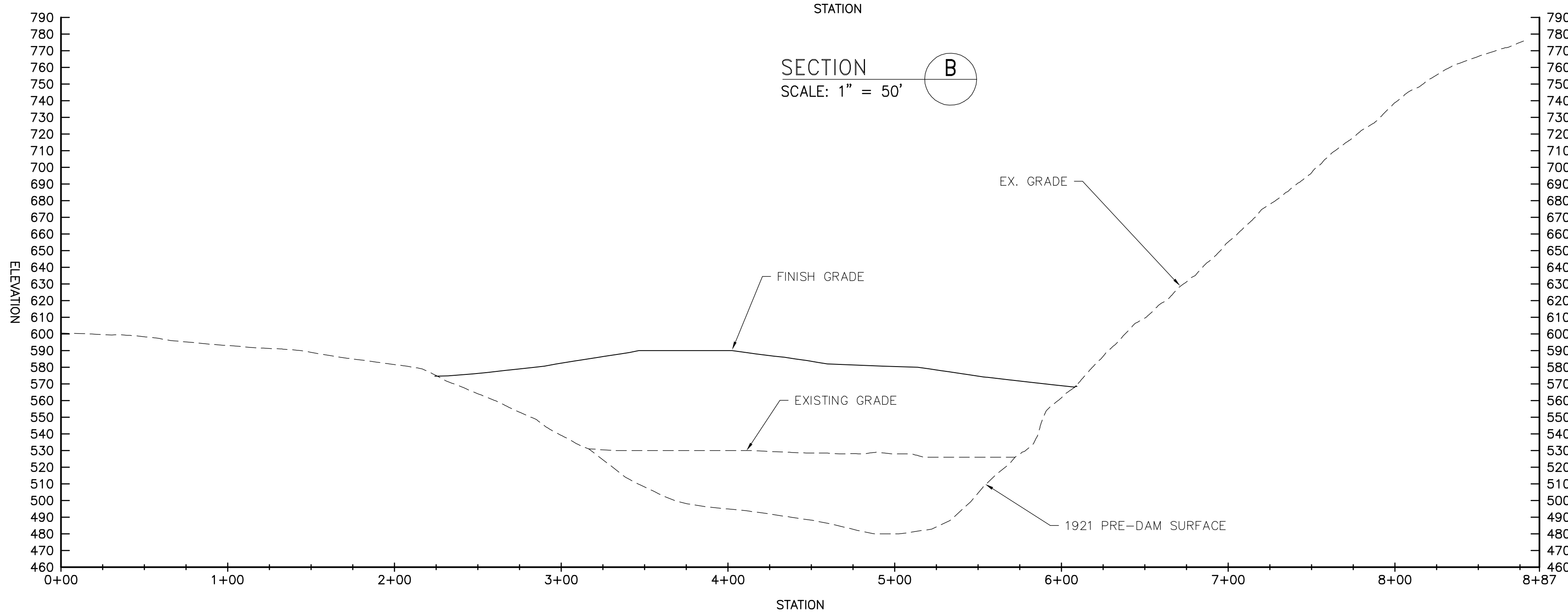

SECTION C
SCALE: 1" = 50'

50' 0 50' 100'
SCALE: 1"= 50'

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SEDIMENT DISPOSAL PILE CROSS SECTIONS

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Slope Stabilization of Sediment in the Carmel River Channel

As part of the sediment excavation and disposal activities, the bypassed sediment in the Carmel River arm, roughly 100 feet upstream of the Dam, would be excavated and graded **into** ~~to produce~~ a **stabilized sediment slope**~~. 4 horizontal to 1 vertical slope with a maximum length from crest to toe of about 330 feet. The slope would span the width of the river channel (~300 feet) with the top of slope elevation at El. 527 and the toe of slope at El. 450 at the deepest point of the river channel and the toe of slope at El. 450 at the deepest point of the river channel (Figure 3.5-5). After initial excavation of the silty "muck" soils at the base of the slope by clamshell, the 4 to 1 slope would be benched at regular intervals to allow for slope stabilization construction using large augers. The large augers would produce soil-cement columns by mixing cement with the existing soil to bedrock in a grid-like pattern along most of the slope face, starting 50 feet from the top of slope. Figure 3.5-6 shows a typical soil-cement mixing pattern and a three-dimensional isometric view of the completed columns (soil excluded for clarity). The soil-cement grid would serve the~~

~~dual purpose of increasing the soil strength, thus stabilizing the slope, and raising the phreatic surface in the stabilized sediments in order to maintain the existing wetland areas immediately upstream of the slope.~~

Sediments placed on the stabilized sediment slope in the Carmel River arm will be engineered to avoid or minimize risks associated with erosion and liquefaction during a seismic event. Stabilization of the sediment slope would be necessary to mitigate the weak strength of the sediment. Stabilization would be provided through a shallow longitudinal slope and incorporation of engineered foundation strengthening. This would be accomplished by over-excavating and constructing a buttress at the base of the slope or by strengthening the soil mass of the slope using in-situ soil treatment methods such as stone columns, deep-soil cement mix, cement-bentonite shear walls, or vibro-compaction (Figure 3.5-5a). These methods would not raise the phreatic surface in the stabilized sediment slope and stockpile. Wetlands created as part of the project design would be fed by surface water.

After **the sediment slope is stabilized,** ~~soil-cement mixing equipment demobilization,~~ minor grading would be performed on the slope face and a ~~geogrid~~ **30-foot wide channel** would be ~~installed~~ **constructed of quarry run stone with sand and gravel.** ~~on the center of slope to form a 50-foot-wide shallow channel~~ to convey runoff from the local drainage area above the slope and **to** minimize surface erosion~~. The geogrid would be placed beginning 100 feet from the top of slope, extending to the toe of slope (Figure 3.5-5).~~In addition, **clean** concrete debris from the demolished dam **and fish ladder** would be placed at the lower third of the slope to further stabilize the sediment and protect it against erosion from flood flows in the main river channel. **The finished slope would allow for the development of upland habitats. A 2-foot thick layer of organic soil will be added, and the slope will be revegetated only after slope**

stabilization has been completed to design specifications. ~~Once stabilization has been completed, a 2-foot thick layer of organic soil would be added, and the slope would be vegetated.~~

Figure 3.5-5: Stabilized Sediment Slope

Figure 3.5-6: Soil Cement Mixing Plan and Isometric View (Replaced by Figure 3.5-5a)

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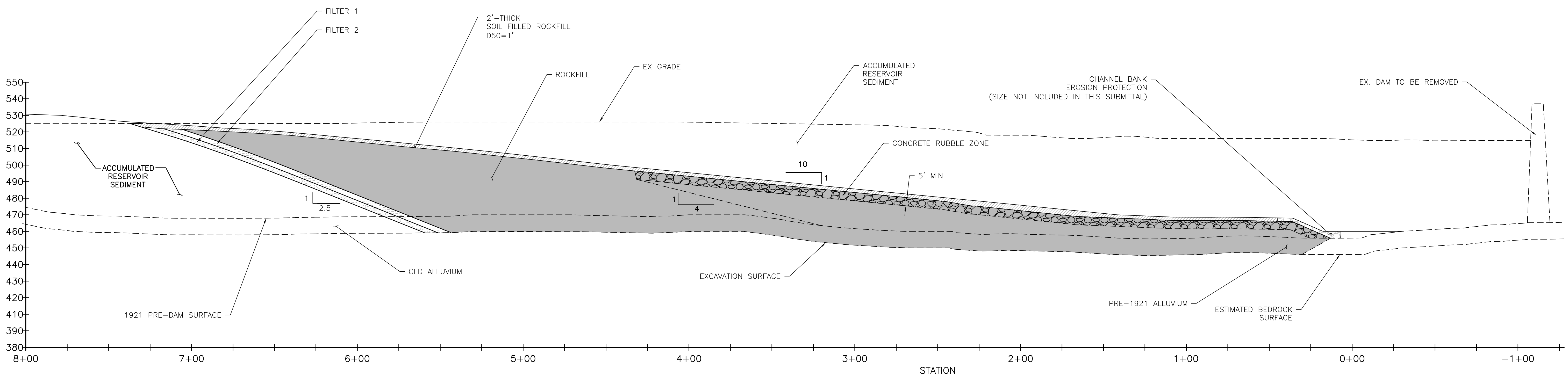
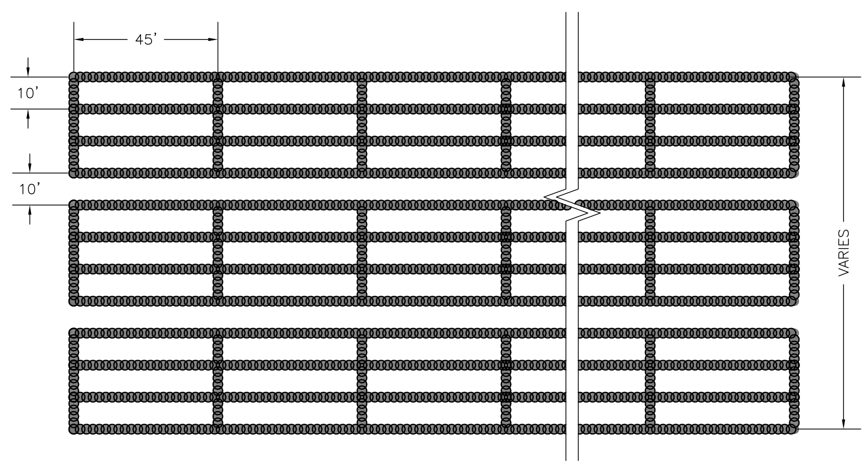
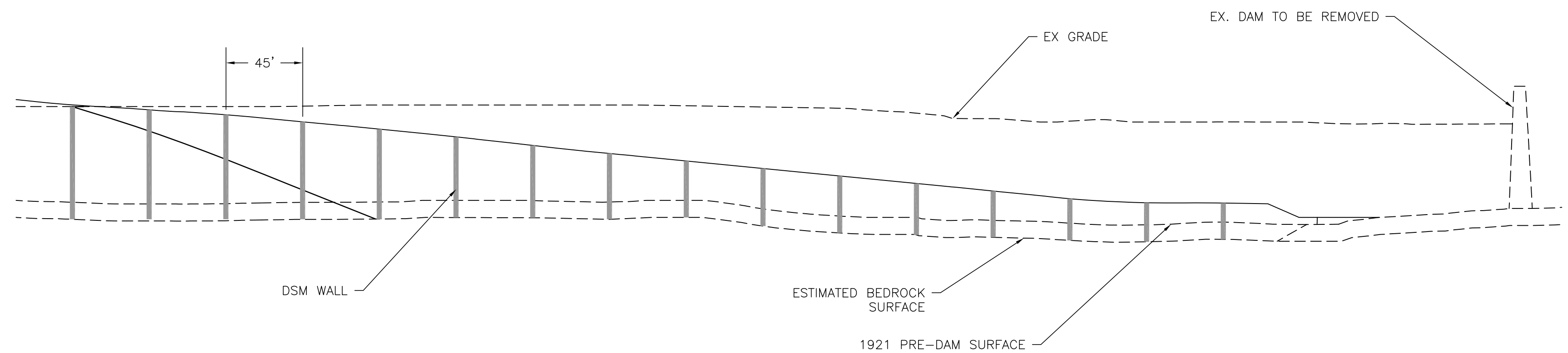


TYPICAL STABILIZED SLOPE USING ROCKFILL
SCALE: 1" = 30'

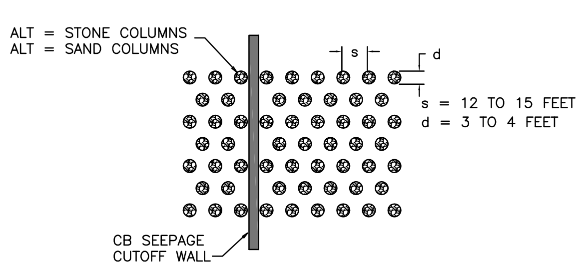


PLAN

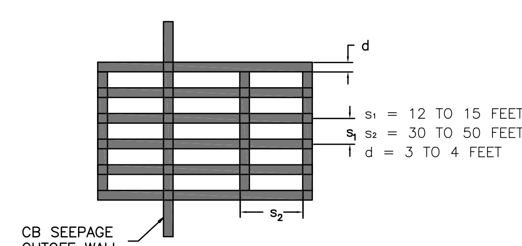


PROFILE

TYPICAL STABILIZED SLOPE USING DEEP SOIL MIXING (DSM) SHEAR WALLS ALTERNATIVE
SCALE: NONE



ALTERNATIVE
STONE/SAND COLUMNS
SCALE: NONE



ALTERNATIVE
CEMENT BENTONITE (CB) SHEAR WALLS
SCALE: NONE

REVISIONS

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR

REVISED STABILIZED SEDIMENT SLOPE ALTERNATIVES

CALIFORNIA AMERICAN WATER
MONTEREY, CALIFORNIA

URS CORPORATION
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OAKLAND, CALIFORNIA 94612

DRAWN BY C.H. HSIEH
PROJECT ENG'R J. ROADIFER
APPROVED

DATE 03/19/12
PROJECT 26818031

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USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES

3.5-5a

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Stream Diversion and Reservoir Drawdown and Dewatering

Both the Carmel River and the San Clemente Creek would be diverted around the active areas of sediment excavation during the construction seasons. The approach to diversion, reservoir drawdown and dewatering are the same as described in Section 3.3.4, **and as discussed below**.

A construction requirement for reservoir drawdown constrains the main construction activities to a period when streamflow is low enough to be passed through a bypass pipeline to an outlet structure. The target streamflow to divert the Carmel River is assumed to be approximately 98 percent of the historic flow in the Carmel River for the period from May 15 to October 31. A temporary diversion facility, consisting of an interlocking sheetpile cofferdam, would be installed in each channel to divert incoming Carmel River and San Clemente Creek flows through appropriately sized bypass pipelines. The outlet structures would be fitted with large gate valves that would be suitable to control flows through the pipelines. The cofferdams would be designed with a bulkhead section that could be removed to allow fish passage during periods when flows are not being diverted. Fish passage will be provided at the end of each construction season when flow is no longer diverted around the project. The sheetpiles would be driven down through the sediment to bedrock. The upper end of the sheetpiles would extend about five feet above the existing streambed to develop sufficient head at the bypass pipe intake. A removable section would be disassembled annually to allow stream and fish passage during non-construction periods.

Prior to commencing excavation, the reservoir would be drawn down to allow for excavation of a portion of the accumulated sediments behind the dam to speed drawdown, a supplementary water pumping and treatment system, such as settling ponds, may also be installed to reduce the turbidity and protect the quality of additional water pumped downstream of SCD.

Reservoir drawdown and sediment excavation operations would be managed to promote pre-drainage of the sediments ahead of the excavation. As the level of the sediment is lowered, drainage trenches would be excavated to drain to low points, from where water would be removed. Water originating from local precipitation, springs, and/or seepage through the stream diversion structures may seep into the construction area, bounded upstream by the diversion structures and downstream by the Dam. This excess water would also need to be drained, conveyed, collected and removed from the excavation. In addition to drainage trenches, well points may be installed within the sediment deposits, as necessary to help capture leakage water and maintain the water surface in the reservoir at the desired level, i.e., below the bottom of the excavation.

A detention pond adjacent to the Dam would be used as a settling basin during the construction season. Water from the construction area would be diverted into the settling basin to reduce turbidity caused by construction operations. If the turbidity of the reservoir water exceeds water quality standards, the water would be treated using a filtration system to reduce turbidity and excess iron compounds. The treated water would then be discharged to the river.

At the end of the first sediment excavation season, the initial storms that exceed the diversion capacity would fill the reservoir, after which time the diversion pipe would be disconnected from the sheetpile cutoff and the river flow would be re-established through the reservoir.

For the second sediment excavation season, before re-starting the sediment excavation operation, the water level in the reservoir would need to be drawn down again as described above.

Demolition and construction operations in the reservoir area will impact the diversion piping. Thus, burial or encasement of diversion piping will be necessary near the channel demolition areas, diversion dike foundation, and sediment disposal area. Figure 3.5-2**a** shows temporary diversion piping protection areas. In addition, during the final construction season when the Dam is demolished, diversion piping would be required to be routed ~~over~~ **around** the Dam (instead of through the Dam intakes) along the right abutment. The diversion piping in the vicinity of the Dam would require protection during dam demolition operations (see Figure 3.5-2**a**).

Pipelines would be trenched into the sediment at the upstream end and benched into or anchored as needed to the valley walls. Installation of the pipelines where they are trenched in the sediment may require temporarily diverting flows through smaller pipelines laid along the Carmel River and San Clemente Creek. The pipelines would also be covered or treated to minimize heating of the water that is being conveyed downstream.

Exact locations of the diversion cutoff walls and pipelines, drainage trenches and well points would be field determined during detailed design. The Carmel River diversion will be upstream of the diversion channel inlet. The diversion on the San Clemente Creek reservoir branch would be placed upstream of the diversion channel outlet during each construction season. In general, diversion piping would follow along the reservoir banks.

Diversion Channel and Dike Construction

In order to permanently bypass the sediment disposal area on the Carmel River, a diversion channel must be constructed to connect Carmel River to San Clemente Creek. The location of this diversion channel is shown on Figures 3.5-1**a** and 3.5-2**a** a typical profile and section are shown on Figure 3.5-**3a**. **A combination of ripping and blasting** operations will be required to remove the large volume of rock between the two reservoir arms.

Figure 3.5-3: Revised Channel, Dike and Disposal Site Cross-Sections (Replaced by Figure 3.5-3a)

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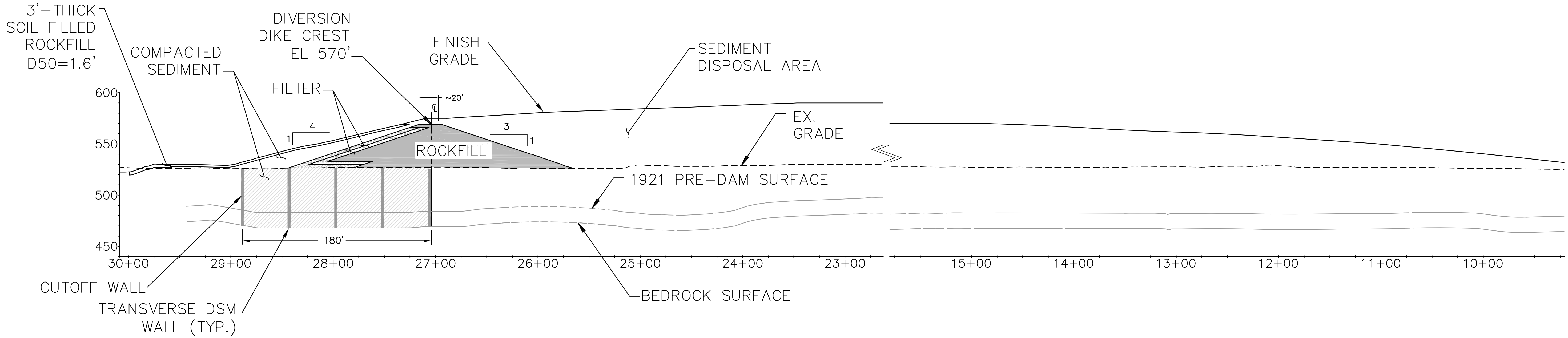
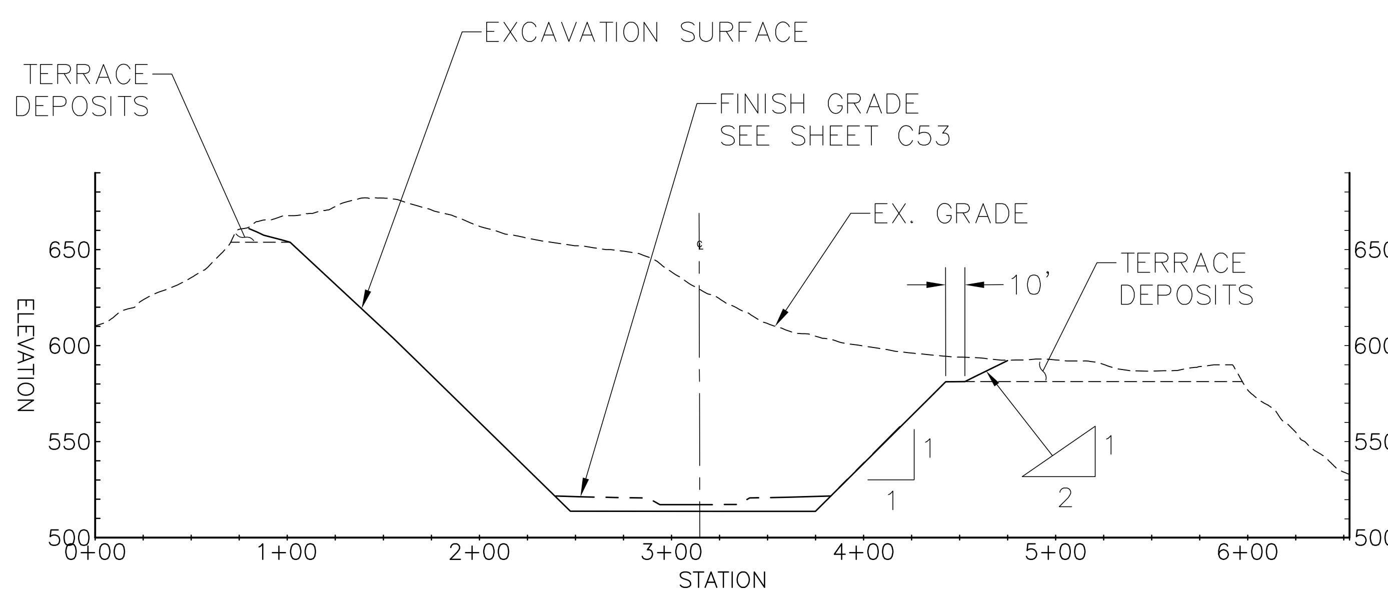
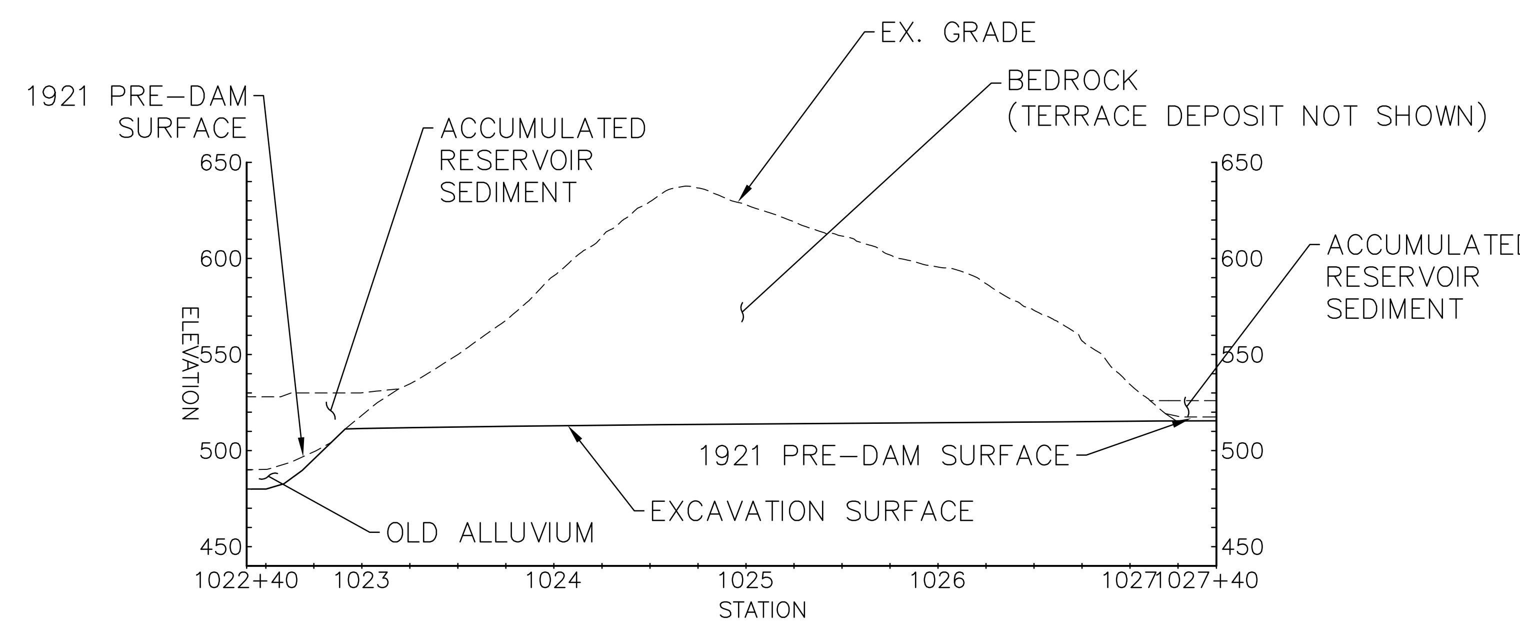


DIVERSION CHANNEL AND SEDIMENT PILE TYPICAL CROSS–SECTION
SCALE: 1" = 50'



DIVERSION CHANNEL TYPICAL CROSS–SECTION
SCALE: 1" = 50'



DIVERSION CHANNEL TYPICAL PROFILE
SCALE: 1" = 50'

50' 0 50' 100'
HORIZONTAL SCALE 1"= 50'
50' 0 50' 100'
VERTICAL SCALE 1"= 50'

REVISIONS

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT SEIR

REVISED CHANNEL, DIKE AND DISPOSAL SITE CROSS–SECTIONS

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3.5–3a

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Blasting operations will include:

- Clearing and grubbing of the blast area;
- An explosives magazine established onsite to store explosives;
- Pre-drilling of rock to place explosives; and
- Pre-splitting of rock at the channel boundaries to define the channel geometry.

The total **excavated** ~~blasted~~ volume of **soil and** rock **from the diversion channel** is estimated at about ~~145~~ **212** AF, or about ~~234~~**342**,000 cubic yards ~~(MEI 2005)~~ **(URS 2011).** Most of the blasted rock will be broken into 1-foot pieces or smaller. It is anticipated that minor operations will be required to reduce a small percentage of the blasted rock into 1-foot size and smaller with hoe-rams and similar equipment. A portion of the 1-foot and larger pieces of blasted rock will be separated for use in armoring of the diversion dike face that would be exposed to river flows.

As described in further detail below, bankfull and thalweg channels would be constructed as part of the channel excavation operations. In addition, habitat complexity would be promoted within the channel by constructing pools, runs, and riffles to provide suitable depth and velocity conditions for steelhead migration. The channel profile and section in Figure 3.5-**3a** show only the general geometry of the channel construction as used in the MEI hydraulic analyses (MEI 2005), **and modified in the preliminary design by URS** **(URS, 2011)**. **The design** ~~which~~ **includes** ~~included~~ **a channel slope of approximately 0.75 percent.** ~~a diversion sill at the channel upstream El. 530 and a slightly steeper slope than the natural channel (i.e., approximately 3 percent).~~

During and after blasting **and excavation** operations~~, blasted~~ rock material will be pushed by bulldozers and other excavation equipment a short distance from the diversion channel area to the diversion dike foundation area for use in dike construction. The diversion dike location is shown on Figure 3.5-**2a**. The excavated material is estimated to have **25** ~~30~~ percent greater volume than the in-place rock, or a total of about **430,000** ~~319,000~~ cubic yards. In order to contain ~~319,000 cubic yards of~~ **this material, the rock will be placed in the** ~~material within~~ the diversion dike**, and on the stabilized slope** (see cross section on Figure 3.5-**3a and Figure 3.5-5a**).

The inlet elevation of the diversion channel would be lower than the elevation of the existing grade in the Upper Carmel River Reach upstream of the channel (see Figure 3.5-2a). Therefore, grading would be necessary to transition the stream channel and floodplain from the diversion channel inlet to the existing grades upstream in the Carmel River. This grading would take place over less than 1,000 feet, measured along the axis of the valley.

Diversion dike design will include compacted rock within the geometry described above and will include a cutoff wall at the **upstream toe of the** diversion dike ~~toe~~ (Figure 3.5-**3a**). **The cutoff wall would span the width of the Carmel River. The wall will be** ~~The 200-foot-wide by 3-foot-thick by~~ **30**-40-foot-deep **and constructed of soil**-cement **or cement-bentonite**. **The** cutoff wall will be constructed to bedrock, **with sufficient thickness,** in order to prevent undermining and seepage of river flows below the diversion dike. As previously described, 1-foot and larger blasted rock pieces will be used to armor the diversion dike face, which will encounter **the highest** river flows during the PMF**.** ~~up to elevation 566 (MEI 2003), or approximately 39 feet below the proposed diversion dike crest.~~

3.5.5 PROJECT ACCESS AND IMPROVEMENTS

Project access for this alternative would follow existing routes to the base of the Dam (with minor improvements) and the Cachagua Route to the reservoir. Road access to San Clemente Reservoir would be established via Cachagua Grade **and Tassajara Road**. An existing Jeep Trail that extends from Cachagua **Road** ~~Grade site~~ would be improved to enable the mobilization of construction equipment to the Dam site and the reservoir, and to avoid major mobilization activities through San Clemente Drive and the Sleepy Hollow community. A new **Reservoir Access Road** ~~access road~~ between the Jeep Trail and the reservoir would need to be constructed **(see Figure 3.2-2a and 3.5-1a)**. Access to the left abutment of the Dam would be by the existing San Clemente Drive and to either the "Low Road" or "High Road" which may require minor improvements. Access to the base of the Dam would be by the existing "Low Road" and the "Plunge Pool Access Road" which would also be improved.

Access from Carmel Valley Road to San Clemente Dam

Existing vehicle access to SCD and the CVFP from Carmel Valley Road is described in Section **3.1 and** 3.2. Improvements to these existing access roads are also described in Section 3.2.

Minor improvements may be made to the "High Road" (crossing a ford over the Carmel River) or "Low Road" (using an existing bridge across the river at the OCRD). These roads may require localized grading and/or widening, cut or fill slope stabilization, and vegetation removal. However, no major improvements are contemplated since the primary access to the reservoir will be via Cachagua **Road** ~~Grade~~ as described below.

Improvements to the existing unimproved single lane road from the OCRD to the plunge pool **(often called Plunge Pool Road)** at the base of the Dam are also described in Section 3.2. This plunge pool access road would need to be improved to place the downstream cofferdams and **to potentially** stage ~~the crane and~~ other construction equipment ~~used in demolition operations at operations~~ at the base of the Dam.

Access to the Reservoir

The primary access used to access the reservoir, construct the bypass, and relocate sediment from the San Clemente Creek arm to the Carmel River arm would be via Carmel Valley Road and Cachagua **Road.** ~~Grade.~~ An existing unpaved jeep road **(the Jeep Trail)**, with entrance off Cachagua **Road** ~~Grade~~ approximately three miles from the intersection with Carmel Valley Road, would be used (see Section 3.3 for a description of this road and proposed traffic controls and improvements to it). **The Jeep Trail can also be accessed from Cachagua Road (from Tassajara Road) (see Figure 3.2-2a).** ~~The road profile is shown on Figure 3.5-4, including a new access road to the reservoir described below.~~

Cachagua Road (from Carmel Valley Road) will be used to bring construction personnel to the site and for highway-legal dump trucks and similarly sized

vehicles that would haul aggregates and other construction materials to the site. Because the road is winding and narrow, vehicles hauling construction materials would require traffic control in the form of pilot cars. Also, tree branch pruning would likely be necessary at the intersection of Carmel Valley Road and Cachagua Road to improve site distance to meet Monterey County requirements.

Larger construction traffic (primarily tractor-trailers mobilizing heavy construction equipment) would access the Jeep Trail via Carmel Valley Road to Tassajara Road to the southern arm of Cachagua Road, because this route has fewer difficult turns. Cachagua Road from Tassajara Road has five curves that would require widening to allow passage of the larger construction equipment. In addition, there is one load-restricted one-lane bridge that would be permanently improved to handle heavy construction equipment loads.

An approximately 2.3-mile portion of the Jeep Trail would need to be improved for construction access. The unimproved road, which currently has a width of approximately 12 feet, would be widened to approximately 18 feet. The sharper curves would be widened as necessary to allow passage of vehicles hauling construction materials and equipment. These activities would require removal of trees and other vegetation, as well as some ground disturbance. Drainage would be improved along the roadway by installing culverts along the alignment where required. The road would be surfaced with several inches of base rock, with isolated sections of asphalt pavement, as required by the slope and other conditions.

A new 0.**6**5-mile-long access road **(Reservoir Access Road)** would be constructed from the improved **Jeep Trail** jeep road to the reservoir. A typical cross-section of the road is shown on Figure 3.5-4 along with a composite profile that includes Cachagua Grade. The road would be excavated along the slope of the ravine and would consist of a**n** approximately **12** 15-foot-wide surface and **two** 3-foot **wide shoulders.** drainage ditch. The excavated slope above the road would be stabilized with small anchors, wire mesh and shotcrete as needed. The road surface would have 6 inches of Class II base rock installed. The road's travel surface would be sealed with a double chip seal coat. Fifteen-inch diameter or larger culverts with inlet structures would be installed at approximately 400-foot intervals for drainage.

Staging Areas

Several staging areas would be created along the Jeep Trail and the Reservoir Access Road for stockpiling materials, vehicles, and equipment during improvement and construction of the roads. Table 3.5-1 summarizes the locations and acreages of these staging areas. See Figure 3.5-1a for proposed Jeep Trail and Reservoir Access Road staging areas.

Table 3.5-1: Staging Area Locations and Sizes

Staging Area	Location	Areas (acres)
1	Jeep Trail & Cachagua Road	0.4
2	Jeep Trail	0.2
3	Jeep Trail	0.3
4	Jeep Trail	0.1
5	Jeep Trail	1.5
6	Reservoir Access Road	0.9
7	Reservoir Access Road	0.9
8	Project Site, Ridge	1.9
9	Project Site, Ridge	1.2
10	Project Site, Ridge	0.6
11	Project Site, Near left abutment	0.5
12	Old Carmel River Dam area	To Be Determined
	Total (without OCRD staging area)	8.5

3.5.6 RECONSTRUCTION OF THE RIVER CHANNEL AND REVEGETATION OF THE VALLEY FLOOR

As a result of the sediment removal efforts, the San Clemente Creek ~~stream~~ channel would be exposed and require reconstruction.

Removal of the reservoir sediment in the San Clemente Creek arm would expose the pre-1921 alluvial deposits in the river channel and floodplain through the historic reservoir inundation zone. A three-stage channel would be provided through selective contouring along San Clemente Creek. The channel is the conceptually the same as is described in Section 3.3, but will be longer and sized to convey the combined flows of San Clemente Creek and the Carmel Rivers. **This reconstructed reach is referred to as the Combined Flow Reach in the current design and is shown on Figure 3.5-2a.**

The reconstructed channel would be approximately 2,600-foot-long reach and would extend from the new confluence of the Carmel River and San Clemente Creek at the outlet of the reroute channel to just downstream of the existing SCD plunge pool. In general, the channel construction would initially consist of excavating the accumulated sediment to approximately the elevation of the pre-dam channel.

Channel restoration activities will include excavation and placement of gravel, cobble, and boulder materials salvaged during sediment removal. The excavated materials will be sorted at a screening plant located upstream of the diversion

dike (see Figure 3.5-2a). The channel floodplain in this location would be graded before installation of the screening plant. The plant would occupy approximately 0.22 acres and would include a diesel powered motor, vibrating screen, and conveyor to separate the sand, silt, gravel, cobbles, and boulders. The sorted materials would be stored in the vicinity of the screening plant until winter when the plant and materials would be moved to a higher elevation staging area located between the Carmel River and San Clemente Creek to avoid inundation (see Figure 3.5-2a).

The screening plant would be permanently removed from the Project site after construction is complete. Suitable screened material would be used for channel restoration; the remaining material would be placed in the Diversion Dike or the Sediment Disposal Area. Approximately 20,000 cubic yards of gravel, cobble, and boulder material would be salvaged from the excavated sediment. Additional boulder and other materials for channel restoration will likely have to be imported from offsite sources. Approximately 160 truck trips would be necessary to import this material.

After excavation, in coordination with the appropriate regulatory agencies, all mitigation measures will proceed as discussed in the final EIR/EIS and in this SEIR. Revegetation would complete the construction of the channel segment.

3.5.7 CONSTRUCTION AND OPERATIONS

A conceptual schedule is presented in Figure 3.5-7**a**. The schedule estimates the start dates and duration of the various project activities, but actual start and completion dates will depend on a variety of factors including weather conditions. Following the State Notice of Determination and Federal Record of Decision, final engineering studies would begin in Year 2. These include geotechnical investigations for the sediment stabilization features and access roads; design of the access roads; design of the sediment pile including stability and hydrologic analyses; design of the new water intake and conveyance pipeline extension; planning for demolition of the Dam; planning and design of stream bypass and dewatering facilities; design of the bypass channel and diversion dike construction; design of the reconstruction of the San Clemente Creek channel; and design of mitigation or habitat enhancement plans for CRLF and steelhead. A construction contract package would be developed and construction bids solicited late in CY 1, for award early in CY 2.Construction of the project is estimated to take, at minimum, four to five years. All in-channel construction would occur between May 15 and October 31 (weather permitting) of each of the anticipated construction years because of restrictions related to fish passage and flows.

Figure 3.5-7: Revised Alternative 3 Carmel River Bypass and Dam Removal Conceptual Schedule (Replaced by Figure 3.5-7a)

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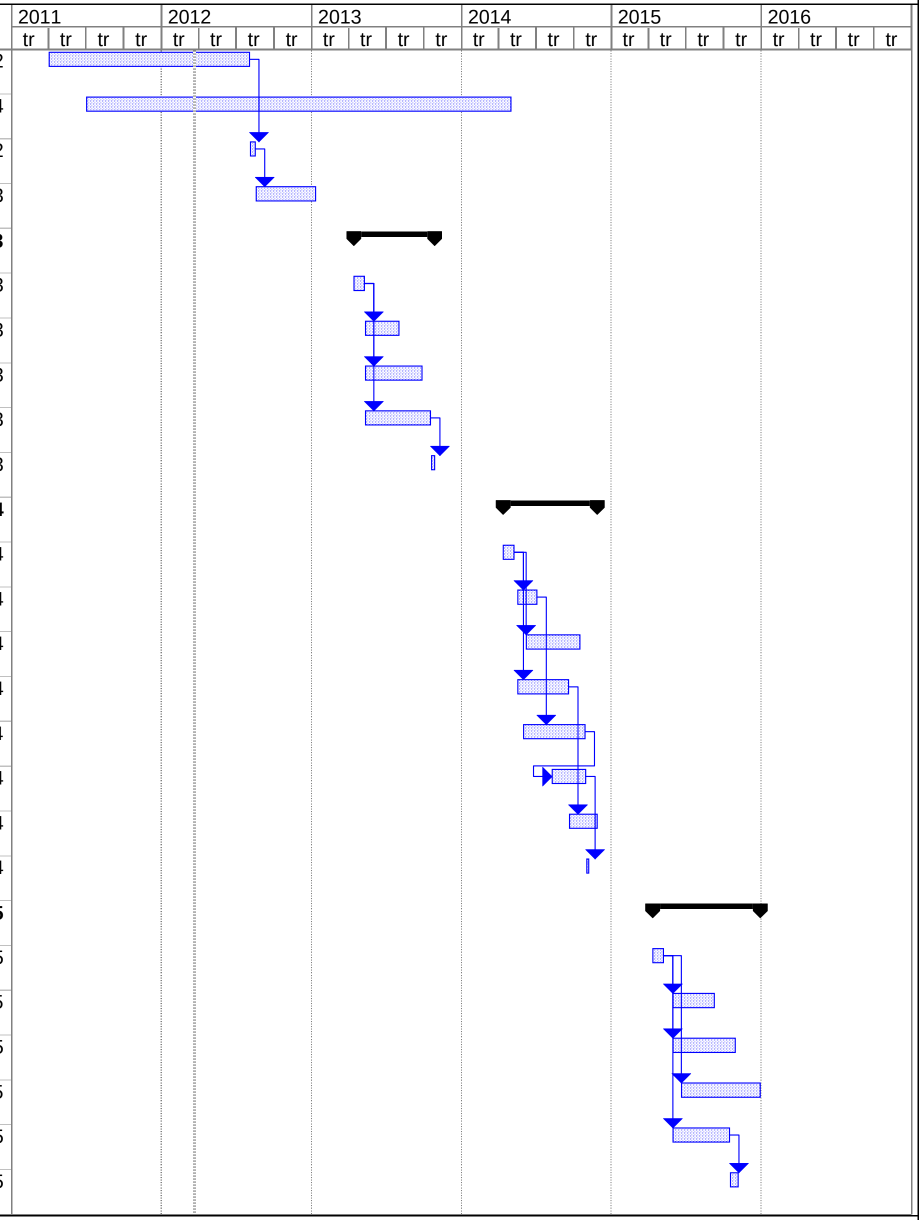
Figure 3.5-7a SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT
ALTERNATIVE 3 - CARMEL RIVER BYPASS & DAM REMOVAL
REVISED CONCEPTUAL SCHEDULE

ID	Task Name	Duration	Start	Finish
1	PERMITTING	350 days	Mon 4/4/11	Fri 8/3/12
2	ENGINEERING DESIGN	740 days	Mon 7/4/11	Fri 5/2/14
3	MOBILIZATION	10 days	Mon 8/6/12	Fri 8/17/12
4	ACCESS ROAD IMPROVEMENTS	105 days	Mon 8/20/12	Fri 1/11/13
5	**2013 CONSTRUCTION**	**141 days**	**Mon 4/15/13**	**Mon 10/28/13**
6	2013 MOBILIZATION	20 days	Mon 4/15/13	Fri 5/10/13
7	FIELD INVESTIGATION	60 days	Mon 5/13/13	Fri 8/2/13
8	INSTALL CAW WATER DIVERSION	100 days	Mon 5/13/13	Fri 9/27/13
9	TEMPORARY DIVERSION SYSTEM	115 days	Mon 5/13/13	Fri 10/18/13
10	2013 DEMOBILIZATION	6 days	Mon 10/21/13	Mon 10/28/13
11	**2014 CONSTRUCTION**	**165 days**	**Mon 4/14/14**	**Fri 11/28/14**
12	2014 MOBILIZATION	20 days	Mon 4/14/14	Fri 5/9/14
13	DEWATERING	35 days	Mon 5/19/14	Fri 7/4/14
14	DIVERSION CHANNEL CONSTRUCTION	95 days	Mon 6/9/14	Fri 10/17/14
15	DIVERSION DIKE CONSTRUCTION	90 days	Mon 5/19/14	Fri 9/19/14
16	2014 SEDIMENT REMOVAL	108 days	Mon 6/2/14	Wed 10/29/14
17	STABILIZED SEDIMENT SLOPE CONSTRUCTIO	60 days	Mon 8/11/14	Fri 10/31/14
18	2014 HABITAT RESTORATION	50 days	Mon 9/22/14	Fri 11/28/14
19	2014 DEMOBILIZATION	5 days	Mon 11/3/14	Fri 11/7/14
20	**2015 CONSTRUCTION**	**188 days**	**Mon 4/13/15**	**Wed 12/30/15**
21	2015 MOBILIZATION	20 days	Mon 4/13/15	Fri 5/8/15
22	2015 SEDIMENT REMOVAL	73 days	Mon 6/1/15	Wed 9/9/15
23	CHANNEL RESTORATION	110 days	Mon 6/1/15	Fri 10/30/15
24	HABITAT RESTORATION	138 days	Mon 6/22/15	Wed 12/30/15
25	SC DAM DEMOLITION	100 days	Mon 6/1/15	Fri 10/16/15
26	DEMOBILIZATION	15 days	Mon 10/19/15	Fri 11/6/15



Project: SAN CLEMENTE DAM REMO
Date: Tue 3/20/12

Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

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Table 3.5-2 and the subsequent discussion summarize one possible schedule for construction activities. Although the general order of activities should not vary significantly, the selected construction contractor will develop a detailed construction plan and schedule based on the final design and the means and methods it will use to meet the project performance specifications, including work windows, avoidance and minimization measures, and other environmental protections.

Table 3.5-2: Summary of Construction Activities by Season

Year	Season	Major Construction Components
1	Preparations only	Access road improvements (if permitting is complete)
2	First full construction	Access road improvements, field investigations, vegetation clearing, install temporary water diversion systems, and potentially install dewatering wells
3	Second full construction	Divert Carmel River and San Clemente Creek, install dewatering wells, excavate the Reroute Channel, build the Diversion Dike, excavate part of the sediment and place in the sediment disposal area, build the stabilized sediment slope, potentially remove a portion of SCD, install irrigation for some plantings, undertake some of the restoration plantings
4	Third full construction	Divert Carmel River and San Clemente Creek, finish sediment excavation, finish channel restoration, complete SCD removal, install remaining irrigation for plantings, complete restoration plantings

Construction would occur in two distinct phases. Phase 1 **would take one to two years and** ~~in CY 3,~~ would include **access road improvements, as necessary,** mobilization, improvement of the existing access Jeep Trail from Cachagua **Road** ~~Grade~~ and construction of a new access road to connect the Jeep Trail to the reservoir. First year work may also include ~~construction of a water diversion intake and temporary transmission line for CAW as well as some of the~~ stream diversion features. ~~It~~ **Each construction season** would conclude with demobilization for the winter.

Phase 2 **would take two to three years and** ~~CY 4 and 5,~~ would include the construction of temporary roads across the reservoir sediment surface to allow access of excavating equipment, removal of sediment, blasting and construction of the bypass channel and diversion dike, sediment slope stabilization, demolition of **SCD** ~~the Dam~~; reconstruction of stream channels, and restoration and revegetation of the sediment pile and reservoir area. It would include seasonal mobilization, stream diversion, and reservoir dewatering, and interim stabilization of the sediment pile for the winter. The permanent water transmission line will be installed at an appropriate point in the construction process.

The majority of the work in Phase 1 is planned to take approximately eight months between March and October during CY 3. Phase 2 is planned to take two years. During each of these years, mobilization would occur during the month of March. Fieldwork in the reservoir area would around April. Installation of temporary stream diversion and dewatering facilities would take about one month, with closure of the cofferdams on or about May 31. Fish rescue would continue until June 30. Drawdown of the reservoir would continue until about October. Actual channel excavation, sediment stabilization and excavation, and dam removal operations would take place during a five-month period from June through October. Removal of cofferdams and demobilization of in-stream construction operations would occur in November. Allowing for holidays and a few days of bad weather, it was assumed that each season would have approximately 100 working days of actual sediment-removal production operations. **Permitting conditions could influence project timing.**

Sediment excavation, transport and placement operations would be conducted in two10-hour shifts, five days per week. (For computation of actual production, it was assumed that each shift would have one unproductive hour, that is, the 10-hour shifts would have nine hours of actual production.) The equipment for sediment excavation and transport can sustain an average rate of 300 cubic yards per hour with a peak capacity of 500 cubic yards per hour. ~~The~~ **It will take two construction seasons to excavate and relocate the estimated 830,000 cubic yards of sediment.** ~~I~~~~**An**~~ ~~estimated~~ ~~**830,000 cubic yards of**~~ ~~sediment~~ ~~**will be removed in about five to six months.**~~ ~~removal rate is about 380,000 cubic yards of sediment from the San Clemente Creek channel in about five months.~~

During the last year of sediment removal operations, sediment removal would be completed in September. The upper portion of the Dam would be demolished while sediment removal is being completed, and dam demolition and removal activities would continue into the fall and be completed in September. Removal of cofferdams and demobilization of in-stream construction operations would occur later in November. **A second option for dam removal would be to remove the dam over two construction seasons.**

Reservoir restoration and channel reconstruction activities would take place concurrently with sediment removal activities. This work would begin at the upstream end of the reservoir and progress downstream as new areas of the historical stream terraces and channel are uncovered. Additional time would be needed at the conclusion of the sediment removal, dam demolition, and cofferdam removal operations to complete the reconstruction of the river channel and the revegetation of the reservoir and sediment areas.

Construction Crews

Labor requirements affecting the number of vehicle trips to and from the site vary from an approximate average of 15 workers per day during Phase I (road construction and improvements scheduled for one **to two construction** season**s**~~ for approximately eight~~

~~months~~), to an approximate average of 25 workers per day during Phase 2 (sediment excavation and disposal). A maximum of about 40 workers would be needed during July through October. Construction crews could be transported to work in car pools to minimize construction-related traffic.

3.6 ALTERNATIVE 4: NO PROJECT

Section 15126 of the CEQA Guidelines clarifies that the “no project” analysis must discuss the existing conditions at the time the Notice of Preparation (NOP) is published as well as what could reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. Existing conditions are discussed topically in Chapter 4 of this EIR/EIS.

NEPA regulations require each Draft EIS to include an evaluation of the no action alternative (40 Code of Federal Regulations [CFR] 1502.14c). When the proposed action is a private applicant’s project, the no action alternative describes what would occur without the federal agency’s approval. Although it generally does not satisfy the project’s purpose and need, its inclusion in the EIS is required by NEPA as a basis for comparison. For the purposes of this EIR/EIS, the “no action” and “no project” alternatives are the same, and are referred to as the “No Project” Alternative.

Under the No Project Alternative, the reinforcement of the Dam would not occur and the Dam would remain in its present condition. The fish ladder would not be improved and the OCRD would not be notched under the No Project Alternative. The rate and timing of flow releases into the Carmel River would continue to be negotiated annually with NMFS, the CDFG and MPWMD, as long as the reservoir remained operable. Retrofit construction impacts would not occur. The reservoir would fill up with sediment and sediment would eventually flow downstream naturally. The existing access road would remain unchanged under the No Project Alternative.

In light of mandate from DSOD to render the Dam compliant with current seismic and PMF standards, it is highly unlikely that the No Project Alternative would occur. For the purpose of analysis, we are assuming that there would be no change to the current structures for the No Project Alternative. This is how the No Project Alternative was described in the September 2005 NOP. However, it is recognized that, in the absence of some measures to improve fish passage, one or more regulatory agencies could compel improvements ranging from upgrades to the existing ladder to full replacement of the ladder, measures to assure fish passage through the reservoir, as well as improved fish passage at OCRD. Impacts of such actions would be essentially the same as those described in Chapter 4 for the Proponent’s Proposed Project. These actions were evaluated as part of the No Project Alternative in the Draft EIR/EIS, but have been removed from the Final EIR/EIS to allow the report to conform more closely to the intent of a No Project (No Action) alternative under NEPA and CEQA and to be consistent with the September, 2005 NOP.

The No Project Alternative would not meet the project purpose and need of increasing dam safety to meet current standards for withstanding a MCE and passing the PMF at the Dam. Interim dam safety measures would continue and seismic and flood hazard risks would continue as described in Section 4.1. Effects on fish, as sediment fills the reservoir, are described in Section 4.4.

3.6.1 PROJECT LOCATION

See discussion in Section 3.2

3.6.2 EXISTING PROJECT FEATURES

See Section 3.2 for a description of the existing dam, access roads, fish ladder, and CVFP.

In 2003, DSOD required modifications to the Dam to meet interim dam safety requirements. Six ports were drilled through the Dam to allow seasonal drawdown of 10 feet to elevation of approximately 515 feet. The drawdown is timed to allow migratory fish passage. Each port was equipped with a trashrack to prevent large debris from entering the ports.

In 2004, a downstream fish passage system was installed to allow fish to exit the reservoir. The system consists of a borehole through the Dam (at 515 feet elevation) that connects a slide gate on the reservoir side of the Dam to a 14-inch pipe on the downstream side. The 14-inch polyvinyl chloride (PVC) pipe runs parallel to the fish ladder and discharges into the eighth pool in the ladder at an elevation of 513 feet. On the upstream side of the Dam is an adjustable weir, which provides surface spill into a box that then flows into the bypass system.

In addition, an Emergency Action Plan was developed in 2003 in coordination with the Carmel Valley Fire Department and the Monterey County Office of Emergency Services. Under this program, the Dam is monitored by an instrumentation system that automatically collects information about the Dam and river conditions, and transmits it to a Carmel Valley Emergency Operations Center and to the CAW Operations Center. Audible alarms indicate situations that require immediate attention. Instrumentation to monitor seismic activity and water levels at the reservoir, downstream plunge pool, and OCRB in addition to video surveillance were installed.

Sediment Management

This alternative would allow the reservoir to continue to fill rapidly with sediment and would allow uncontrolled spill of sediment over the Dam spillway within six to ten years. Sediment spills could result in significant downstream impacts as described in Section 4.4.

Water Diversion

Under the No Project Alternative, the existing water diversion from SCD to the existing downstream filter plant would remain unchanged. Water is diverted from the existing reservoir through the Dam's low-level outlet works to a nominal 30-inch pipeline routed generally parallel to the low-access road (San Clemente Drive) to the CVFP downstream. The system depends upon a reservoir water elevation of 525 feet at the point of diversion to provide the required hydraulic head in the conveyance pipeline between the Dam and the downstream CVFP to drive the water through the existing filters to the clearwell for distribution. The clearwell, in turn, provides the hydraulic head for distributing the treated water into CAW's distribution system.

The maximum rate of diversion is 16 cfs, although summer diversions are not expected to exceed 3 to 4 cfs.

4.0 Environmental Setting, Consequences & Mitigation Measures

4.1 GEOLOGY AND SOILS

This section describes the potential impacts of the San Clemente Seismic Safety Project on geology and soils of the Project Area. Geology and soil resources include geologic, seismic, and soils characteristics influenced by the project. Additional information is provided in the Final EIR/EIS which clarifies and amplifies the information included in the Draft EIR/EIS. This environmental setting section was prepared using information developed from the documents provided by the Recirculated Draft Environmental Impact Report (Denise Duffy & Associates 2000) which information was originally developed for the New San Clemente Project (MPWMD 1984), The Mark Group (1995), Woodward Clyde Consultants (1992). Erosion control methods are outlined in the Storm Water Pollution and Prevention Plan (SWPPP) in Appendix K.

Revisions to the Geology section were made to reflect the increased amount of excavated sediment that will be deposited in the sediment disposal area. Revisions also describe stabilization of the sediment slopes in the disposal area.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.* **Only portions of the Final EIR/EIS that have been revised for the supplement are included in this section.**

4.1.1 ENVIRONMENTAL SETTING

Geologic Setting

TOPOGRAPHY

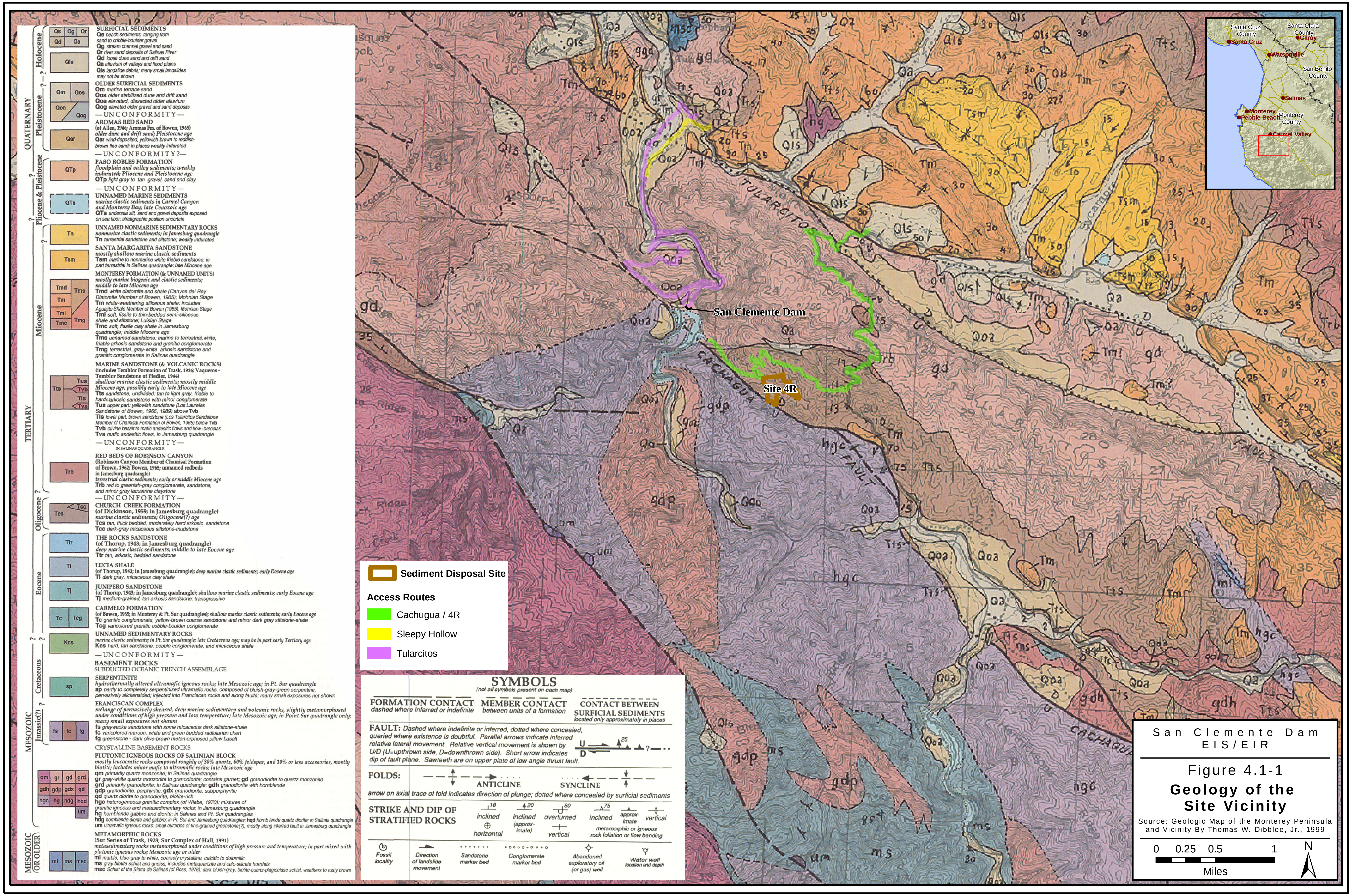
The San Clemente Dam site is located in the northern Santa Lucia Mountains, within the Southern Coast Ranges geomorphic province. The Southern Coast Ranges province is characterized by a series of northwest trending mountains and valleys. The Santa Lucia Mountains are the most westerly mountain range in the Southern Coast Ranges Province, and extend from Monterey Bay southeastward for approximately 125 miles. The range is bounded on the southwest by the Pacific Ocean and to the northeast by the Salinas Valley.

The topography of the region is characterized by high, narrow ridges, steep-sided hillsides, and incised drainages. Elevations in the northern portion of the range vary from approximately 800 feet at the confluence of the Carmel River and Cachagua Creek to nearly 4,800 feet. Slope gradients in the region are typically in the range of 45 to 90 percent (20 to 40 degrees), but vary locally from gently sloping on the surface of elevated stream terraces to near-vertical along the banks of incised canyons.

GEOLOGY

The Santa Lucia Range is the largest of several northwest-trending mountain ranges of crystalline basement complex known as the Salinian block. The Salinian basement complex underlies most of the Southern Coast Ranges geomorphic province, and is primarily composed of granitic rocks with local inclusions of metamorphic rocks. It is bounded by two major fault zones: the San Andreas Fault on the northeast, and the Sur-Nacimiento Fault zone on the southwest.

The major geologic units and structural features of the northern Santa Lucia Range in the Project Vicinity are depicted on Figure 4.1-1.



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The predominant geologic units in the vicinity of the San Clemente Dam are crystalline basement rock consisting of granodiorite, quartz monzonite, and a heterogeneous complex of mixed granitic and metasedimentary rocks. The broad belt of granitic rock is northwest-trending and extends to the Monterey Peninsula. The age of the granitic rocks in the area is considered to be middle to late Cretaceous (Compton 1966; Wiebe 1970, date not known with certainty, but approximately 100 million years old), while the metasedimentary rocks are older than the granitic rocks that engulf them.

Tertiary sedimentary rocks in the vicinity of the Dam site include three distinct formations. In order of decreasing age, these formations are referred to as: Unnamed Redbeds (Trb), Marine Sandstone (Tts), and Monterey Formation (Tm). The Marine Sandstone Formation is exposed along both the southern and northern margins of Cachagua Valley, and is in fault contact with the basement rocks along the Cachagua Fault, which strikes through the Dam site.

Quaternary (less than 2 million years old) deposits in the vicinity are unconsolidated stream terraces and alluvial fans that locally cover the crystalline basement, especially along the lower slopes and in drainages. The stream deposits, consisting of coarse gravel, sand and silt, include modern fluvial deposits located in the present river channel, as well as older, elevated terraces that were deposited as the ancestral Carmel River carved a channel through the mountains.

Seismic Setting

Tectonics and Structure

The Southern Coast Ranges geomorphic province is a region of active tectonism associated with movement of the Pacific Plate, on the southwest, relative to the North American Plate, on the northeast. The San Andreas Fault forms the boundary between these two tectonic plates, but movement occurs on additional faults over a broad region.

In a regional sense, the Salinian block generally is considered to behave as a rigid tectonic block (Dibblee 1976; Clark et al. 1974) during plate motions. However, the Salinian block can be divided into sub-regions on the basis of physiography and geologic structure and within which deformation is apparent. The Dam is situated in the northern Santa Lucia Range domain, which is the most intensely deformed sub-region of the Salinian block. In comparison to surrounding sub-regions, this sub-region is characterized by higher elevations, greater structural complexity, and an abundance of northwest-trending, "intra-Salinian" faults. Most of these faults are steeply dipping reverse faults that have disrupted the Tertiary rock record and elevated the mountain range. Quaternary activity is difficult to adequately assess for many of the intra-Salinian faults because of the relative lack of Quaternary deposits in the rugged interior of the northern Santa Lucia Range. Traditionally, geologists have considered the intra-Salinian faults incapable of generating significant earthquakes because these faults were formed under an older, compressional stress regime that has now been overshadowed by right-lateral transform movement (Dibblee 1976; Ross 1976). However, more recent analyses indicate that certain intra-Salinian faults, such as the Tularcitos Fault in the vicinity of the project, may have experienced at least some amount of Quaternary movement (Clark et al. 1974, The Mark Group 1995). The type of deformation associated with the most recent movement along these faults is probably a combination of compression and right-lateral strike-slip movement (The Mark Group 1995).

Seismogenic Potential of Nearby Faults

San Clemente Dam is susceptible to earthquake shaking from several different sources. Table 4.1-1: Distance to Faults San Clemente Dam summarizes the distance from the San Clemente Dam to these faults, as well as the fault type. Not all of these faults are active; Table 4.1-2: Seismogenic Potential of Nearby Faults summarizes characteristics of active faults. The faults forming the margins of the Salinian block, the San Andreas Fault zone and the Sur-Nacimiento Fault zone, are clearly capable of generating relatively frequent, moderate to large earthquakes. In addition, some of the intra-Salinian faults appear to have a potential to generate significant earthquakes. Intra-Salinian faults in proximity to the Dam include the Cachagua, Tularcitos, Blue Rock, Miller Creek and Chupines faults (The Mark Group 1995). Fault activity in the immediate area of the Dam site has been thoroughly investigated (Rogers E. Johnson & Associates 1984a, 1984b, 1985a, 1985b). No active faults are known to pass through the Dam site, although a small cross fault connecting the Tularcitos and Cachagua faults or a fault sliver off the Cachagua fault may exist. If this fault does exist, no movement has occurred on it in the past 125,000 years (The Mark Group 1995).

Table 4.1-1: Distance to Faults San Clemente Dam

Fault Name	Fault Type	Distance (miles) and Direction
Cachagua	Reverse-oblique	0
Blue Rock	Reverse	4 SW
Miller Creek	Reverse	8 SE
Tularcitos	Reverse/Strike-slip	1.5 NE
Palo Colorado	Reverse-oblique	8 SW
Chupines	Reverse	5 NE
Sur-Nacimento	Reverse oblique	12 SW
Rinconada-Reliz-King City	Strike-slip	12 NE
San Andreas	Strike-slip	29.0 NE

Table 4.1-2: Seismogenic Potential of Nearby Faults[1]

Fault Name	Minimum Distance to Site (mi)	Estimated Maximum Earthquake Magnitude (local)	Estimated Peak Horizontal Acceleration 50th Percentile[2]
Tularcitos	1.25[3]	6.5[3]	0.70g[3]
Chupines	5	6.5	0.30g
Rinconada-Reliz	12	7	0.25g
San Andreas (central creep)	28[3]	8.0[3]	0.19g[3]

[1] Information in this table is taken from Converse Consultants (1982) and WCC 1992. [2] Hypothetical accelerations based on predicted peak acceleration curves by Joyner and Boore (1981) except for Tularcitos and San Andreas faults, which used 5 attenuation relationships (WCC 1992) [3] Maximum magnitude, distance, and peak acceleration taken from WCC 1992.

The seismogenic potential of significant nearby faults was previously evaluated by Geomatrix (1985), Bechtel (1988) as cited in Woodward Clyde Consultants (1992), Woodward Clyde Consultants (1992) and The Mark Group (1995) in order to assess the Maximum Credible Earthquake (MCE) and ground motions for seismic design considerations. Table 4.1-2: Seismogenic Potential of Nearby Faults summarizes the potential seismic load that earthquakes on nearby faults could impart to the San Clemente Dam site. The conclusions of these reports, and other previous work, are that the Tularcitos and Cachagua faults are the most significant faults in terms of seismic design because of their earthquake potential and proximity to the San Clemente Dam. However, there is compelling geologic evidence that the Cachagua Fault has not experienced significant movement in the past several tens to several hundred thousand years (The Mark Group 1995). Therefore, the Cachagua Fault is not considered active, and the Tularcitos Fault is considered to be the most significant seismogenic source for the Dam. Descriptions of the Tularcitos and Cachagua Fault zones are presented in the following sections, summarized from data presented by The Mark Group (1995).

Tularcitos Fault Zone. Indications of late Quaternary movement along the Tularcitos Fault zone include: (1) youthful geomorphic expression along individual fault traces in the Carmel Valley area (McKittrick 1987, The Mark Group 1995), (2) offset stream terrace deposits and colluvium of probable late Quaternary age, and (3) possible connection to the Monterey Bay Fault Zone (MBFZ), which appears to have been active in the past 11,000 years (Greene et al. 1973). Recently, a sample of charcoal from colluvium displaced by the Tularcitos Fault was radiometrically dated to be approximately 7,940 to 7,620 years old (reported in The Mark Group 1995). Thus, there is increasing evidence that the Tularcitos Fault has experienced movement during Holocene time (less than 11,000 years ago). In addition, plots of earthquake epicenters suggest a micro seismicity pattern roughly aligned along the Tularcitos-Navy-MBFZ trend (Cockerham et al. 1990).

Assessment of MCE for seismic design requires an estimate of fault rupture length and rupture area, both of which are based on total fault length. The total length of the Tularcitos Fault zone is difficult to assess, not only because of the discontinuous nature of individual segments within the fault zone, but also because of the uncertainty associated with the potential that the Tularcitos Fault is connected to other faults mapped to the northwest and southeast. In general, the Navy and MBFZs, located to the northwest, have been included as part of the Tularcitos Fault zone, but the short, discontinuous fault segments located east of approximately longitude 121° 30' have not been included (The Mark Group 1995). The two primary segments of the Tularcitos Fault zone are discussed below:

<u>Navy-MBFZ</u>. Although some previous workers consider the Navy Fault to be independent of the Tularcitos Fault, there is no clear evidence that these faults are not connected beneath Carmel Valley. Published maps do not portray any geologic structures that clearly cross the MBFZ-Navy-Tularcitos Fault zone, and recent work (summarized in The Mark Group 1995) can be used to strengthen the argument that the Navy and Tularcitos faults may be connected. Thus, in the absence of data clearly demonstrating that the faults are not connected, and based on similar trend and sense of offset between the two faults, the Navy Fault and Tularcitos Fault are considered to be the same fault zone for the purpose of seismic hazard analysis. In addition, the Navy Fault has been considered to be an extension of the MBFZ for similar reasons (The Mark Group 1995).

Some workers have portrayed the Tularcitos Fault as a buried fault (concealed beneath Carmel Valley) that extends to the coastline and to Cypress Point (Bowen 1965 and 1969). To make that fault connection requires several abrupt bends in fault orientation, and supposedly includes a fault with an opposite sense of movement (Greene et al. 1973). Thus, this connection does not appear to be as likely as the Navy-MBFZ connection.

<u>Seismic Potential of the Tularcitos Fault Zone.</u> The Tularcitos Fault shows evidence of late Quaternary, and probably Holocene (less than 11,000 years old), movement. The potential connection to the Navy-MBFZ makes the resulting combined fault zone significant in terms of length, activity, and proximity to the San Clemente Dam.

Woodward-Clyde Consultants (WCC 1992) conducted an extensive study of the seismic characteristics of the Tularcitos Fault as it may affect the San Clemente Dam site. They used five different methods for estimating the magnitude of earthquake and ground motion estimates. The methods include Seed and Schnabel (1980), Joyner and Boore (1988), Campbell (1988), Sadigh (1987), and Idriss (1985, 1987) [all are referenced in WCC 1992]. The WCC (1992) study developed estimates for the median and standard deviation of peak horizontal accelerations in the free field at the Dam site from the MCE on the Tularcitos Fault (magnitude 6.5) and the San Andreas Fault (magnitude 8.0). The average of the five methods for the Tularcitos Fault was a peak horizontal acceleration of 0.69 g, and a value of 0.70 g was used for design purposes (WCC 1992). From the

San Andreas Fault, the average of the maximum peak horizontal accelerations was calculated to be 0.19 g, much less than that caused by the Tularcitos Fault (WCC 1992).

<u>Cachagua Fault</u> The Cachagua Fault is represented by a complex zone of steep, southwest dipping reverse faults that mark the southwestern edge of the Cachagua Valley. It passes through the San Clemente Dam site. Results from The Mark Group's study of the Cachagua Fault activity (1995) indicate that there is compelling geologic and geomorphic evidence that the Cachagua Fault has not experienced movement since at least the past 85,400 to 213,500 years. This conclusion is based upon the estimated age of Quaternary stream terrace deposits that cover, but are not offset by, the fault. Thus, the Cachagua Fault is inactive according to the criteria established by the California Division of the Safety of Dams.

<u>Other Faults</u> The activity and seismogenic potential of the Blue Rock and Miller Creek faults are not known; however, Buchanan-Banks et al. (1978) indicate that the Blue Rock fault has not been active in Quaternary time. The earthquake potential of both faults is overshadowed by the longer Tularcitos Fault zone.

Although unmapped faults may exist in the study area, their potential seismic impact at the site would not likely be greater than that of the Tularcitos Fault.

In addition, WCC (1992) calculated that an unlikely magnitude 8 earthquake on the San Andreas Fault would generate a peak ground acceleration of only 0.19 g, much less than the 0.70 g calculated for the Tularcitos Fault.

Reservoir-induced seismicity may occur at the site, but there are no recorded instances of this phenomenon greater than magnitude 6.4 (Koyna Reservoir, India 1967). Therefore, peak ground accelerations would be less than those calculated for the Tularcitos Fault.

Landslides

The seismically active Santa Lucia Range is prone to landslides. Relatively rapid uplift of the range leads to the deep, V-shaped canyons with sharp dividing ridges (Smith et al. 2004). Rosenberg (2001) assessed the Monterey County region for landslide susceptibility, including the Carmel River watershed. The study area includes landslide susceptibility ranging from moderate to high, particularly in the steep abutments of the Dam and downstream slopes. Landslides are also currently a significant source of sediment in the watershed (Smith et al. 2004). The largest active landslide in the Carmel subwatershed is located upstream of the San Clemente Dam (Smith et al. 2004). Rosenberg (2001) mapped and analyzed a large landslide located downstream from the San Clemente Dam near the trout-rearing facility in Sleepy Hollow.

A geological-geotechnical investigation was conducted at the site in conjunction with the design of the seismic retrofit (Woodward-Clyde Consultants 1998) and the abutments were found to be stable. Road construction must take landslide formation potential in to account in the testing and design phase (Smith et al. 2004).

Soils

The soils in the vicinity of the San Clemente Dam consist of the Cieneba series, Junipero Sur Complex, and rock outcrop. The Cieneba series is typical of soils developed on steep mountain slopes consisting of grantic and metamorphic rock. The soils have very rapid runoff characteristics, and a very high erosion potential (USDA Soil Conservation Service [SCS] 1978).

The Junipero Sur Complex is also typical of soils developed on steep slopes. Like the Cieneba series, the Junipero Sur Complex soils have very rapid runoff characteristics, and a very high erosion potential (SCS 1978). Both soil types have low shrink-swell characteristics. The Junipero Sur Complex tends to be more corrosive to both steel and concrete than the Cieneba series.

River Bank Erosion

Sediment erosion, transport, and deposition are discussed in more detail in Section 4.2, Hydrology and Water Resources. Issues relevant to the geologic characteristics of the area are summarized in the following discussion.

The existing dams on the Carmel River currently trap all of the bedload and a portion of the suspended load produced in the upper watershed. The current trap efficiency of Los Padres Dam is estimated to be 72 percent; the trap efficiency for the smaller San Clemente Dam is currently estimated to be about 85 percent, but is projected to decline to about 35 percent by 2010 to 2015.

After completion of the San Clemente Dam in 1921, the portion of the Carmel River downstream of the Dam adjusted to the loss of bedload material by deepening its channel. As the river incised between 1921 and the early 1960s, an extensive riparian forest developed, protecting the banks from erosion, except at bends. By about 1940, the river channel had adjusted to the presence of San Clemente Dam. A considerable amount of riparian vegetation was lost during the 1976-77 drought; groundwater pumping during this time lowered the water table in parts of the valley. With the banks unprotected by riparian vegetation, the river adjusted to subsequent flood flows by eroding both the channel bed and banks. As a result of this process, the middle reach of the river between the Garland Ranch Regional Park and Schulte Road changed drastically from a narrow, deep, meandering channel with well-developed riffles and pools to a wide, shallow channel with eroded banks and an unstable bed.

Since 1980, the MPWMD has monitored the health and state of the Carmel River riparian corridor closely. A ten-year program was implemented in 1983 to restore stability to portions of the river that had suffered significant erosion and had become seriously degraded in terms of wildlife habitat. Approximately $1.3 million was spent over the ten-year period for river restoration.

The sediment transport characteristics of the Carmel River and its tributaries have been studied extensively. The combination of the most severe drought on record in 1976-77 and an extremely wet period between 1978 and 1983 caused unusually high amounts of sediment to be discharged into the riverbed. Sediment measurements conducted during the wet period most likely reflect a short to medium term condition in which a large amount of sediment was moved. Many of the homes in Carmel Valley are built on a broad terrace deposited by large floods in 1911 and 1914 (Kondolf 1983). The terrace is a reminder that floods, sedimentation, and related channel stability are of serious concern seasonally to the communities downstream from San Clemente Dam. Refer to Section 4.2, Hydrology and Water Resources and its appendices for a comprehensive assessment of geomorphological conditions on the river.

Baseline 2030 Conditions

Geologic characteristics are not anticipated to change significantly between the present and the year 2030.

4.1.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

In accordance with CEQA, agency and professional standards, a project impact would normally be significant if the project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss injury or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides; or
- Result in substantial soil erosion or the loss of topsoil; or
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, or potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

Impact Assessment Methodology

Geological information from The Mark Group (1995), Woodward Clyde Consultants (1995), Denise Duffy & Associates, Inc. (2000), and other sources cited in this section was reviewed with respect to the Proponent's Proposed Project and the alternatives. Features of the Proponent's Proposed Project and the alternatives were also projected onto the geology map (Figure 4.1-1) and the soils map prepared by the USDA Soil Conservation Service (SCS 1978). These data were reviewed to identify potential issues regarding geologic hazards or potential issues associated with the soils of the area. Based on this information, an assessment of the significance of geologic hazards based on the standards of significance above was made.

4.1.3 IMPACTS AND MITIGATION

The following impact issues have been defined for geology, seismic, and soils issues:

- GS-1: Ground Shaking (risk of dam failure due to seismic activity)
- GS-2: Access Route Landslides and Slope Stability (risk of oversteepened or weakened hillsides)
- GS-3: Reservoir Landslides and Slope Stability (risk of landslides into reservoir)
- GS-4: Soil Erosion (risk of erosion along access road improvements and in sediment disposal areas; sediment and rock discharge to streams)
- GS-5: Bypass Rock Removal by Blasting (alteration of existing topography due to blasting and rock removal)
- GS-6: Erosion at Left Dam Abutment (risk of erosion due to dam overtopping)

Proponent's Proposed Project (Dam Thickening)

Issue GS-1: Ground Shaking

Risk of dam failure due to seismic activity
Determination: ***less than significant, no*** **mitigation** ***required***

IMPACT
Seismicity is a relatively widespread geologic hazard to the project and alternative areas. Because the Proponent's Proposed Project lies within a high-risk seismic area, it likely would be subject to ground shaking during construction or continued operation.

MITIGATION
No mitigation is required for this impact as the San Clemente Dam Seismic Safety Project is designed to withstand a MCE, and peak ground accelerations, a condition that cannot be met by the existing dam. The project would meet the EIR/EIS purpose and need of eliminating the potential for dam failure during the MCE.

Issue GS-2: Access Route Landslides / Slope Stability

Risk of slides due to oversteepening hillsides
Determination: ***less than significant with mitigation, short-term***

IMPACT
Landslides could be triggered during the construction or operation of the Proponent's Proposed Project by oversteepening hillsides during the improvement of access routes. These improvements may require notching into adjacent hillside slopes, which could increase susceptibility to a landslide.

MITIGATION

Prior to conducting access road improvements, a qualified geotechnical engineer or engineering geologist would survey all road rights-of-way to provide construction design specifications. To ensure slope stability, BMPs developed during design specifications will be implemented in addition to applicable ones identified in the SWPPP (Appendix K) that would avoid any potential for landslides. This would mitigate any impact to a less than significant level.

Issue GS-3: Reservoir Landslides/Slope Stability

Risk of slides due to oversteepening hillsides
Determination: **less than significant, no mitigation required**

IMPACT

Under the Proponent's Proposed Project the reservoir would operate over a very limited range of elevations (from the bottom of the sluice gates at El. 491 to the spillway crest at El. 525). It is therefore unlikely that a landslide striking the reservoir would generate a large wave or waves that would overtop the Dam because the reservoir has been largely filled with sediment. The shallow reservoir also would minimize the potential for seepage pressures to destabilize the rock mass around the reservoir rim.

MITIGATION

No mitigation would be required for this impact.

Issue GS-4: Soil Erosion

Risk of erosion along access road improvements and in sediment disposal areas; sediment and rock discharge to streams
Determination: ***less than significant with mitigation, long-term***

IMPACT

As part of the access roadway modifications and improvements, blasting of canyon walls at select locations adjacent to the low and high roads would be required to widen roadways for equipment access. Road improvements immediately upslope of the river or where vegetation may be removed to accommodate road widening or new road construction could cause localized changes in drainage patterns, and these in turn could result in erosion and introduction of sediment or bits of rock into the stream channel. Construction along steep hillslopes and banks adjacent to watercourses could affect water quality by increasing turbidity or by introducing foreign materials and construction debris. Road construction activities could alter drainage patterns, initiate slope instability, accelerate erosion, and discharge sediments to stream channels.

MITIGATION

Potential soil erosion impacts would be mitigated to a less than significant level with implementation of standard erosion control methods and BMPs on both the upslope and downslope sides of all construction zones. No fill would be placed on steep canyon slopes directly above the river. Retaining walls would be used where road widening would occur immediately upslope of the river on steep banks. Erosion controls would be adequately sized and appropriately located. Drainage facilities and slope protection methods would function throughout the construction and revegetation period. Erosion controls that prevent soil or sediment from entering the river would be monitored for effectiveness, and maintained throughout the construction operations. BMPs would be customized to address site-specific conditions encountered on the steep slopes that adjoin the river.

Erosion control measures are included in the preliminary draft of the Stormwater Pollution and Protection Plan (SWPPP) located in Appendix K. This plan may be further modified during permit consultation with the Central Coast Regional Water Quality Control Board (CCRWQCB) and other appropriate permitting agencies, including the *RMA*-Planning ~~and Building Inspection~~ Department. CAW has incorporated these mitigation measures as part of the Proponent's Proposed Project (Specifications Section 01560 Environmental Protection and Special Controls, Sections 1.02 and 1.06, Woodward-Clyde Consultants, December 9, 1998). The agency approved specifications would require the contractor to submit measures included in the SWPPP (Appendix K) that includes, as a minimum, the following erosion control methods and procedures:

- Use of filter fabrics, berms, hay bales, and other means to control surface runoff and prevent erosion;

- Monitoring erosion control methods for effectiveness and maintenance of these methods throughout the duration of construction operations;

- Constructing fills and spoil areas by selective placement to eliminate surface silts or clays which may erode;

- Controlling surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation by holding the areas of bare soil exposed at one time to a minimum, and providing temporary control measures such as berms, dikes, and drains; and

- Inspecting cut slopes periodically to detect evidence of possible future slope failures, and possible rock raveling which could be hazardous to personnel working in the excavation area below.

Where blasting is conducted near the Carmel River or other sensitive habitats, a blasting mat would be placed over the rock walls in order to capture and direct flying rock debris to fall onto the existing roadway. In addition, temporary wall structures made of wood and/or steel would be erected adjacent to the existing access road to contain blasted rock on the road.

Disturbed areas would be immediately revegetated upon completion of road improvements using permanent revegetation to replace trees, shrubs, and grasses. If there is insufficient time prior to the runoff season to permanently revegetate impacted areas, temporary erosion control and revegetation actions would be implemented for any winter season prior to completion of the project. Temporary over-winter erosion control and revegetation actions may include such methods as the use of geofabrics and hydroseeding to provide an annual ground cover until the spring growing season when more permanent revegetation methods should be implemented. Installation of any geotextile or mechanical over-wintering protection would be properly installed to prevent undermining or washout during winter rains (see also Mitigation Measures for Section 4.3 Water Quality and Section 4.5 Terrestrial Biology).

Issue GS-5: Bypass Rock Removal by Blasting

The diversion bypass would not be constructed under the Proponent's Proposed Project. This impact would not occur.

Issue GS-6: Erosion at Left Dam Abutment

This impact issue would not occur because the San Clemente Dam Seismic Safety Project is designed to avoid it. The Proponent's Proposed Project would meet the EIR/EIS purpose and need of eliminating the potential for dam failure due to erosion at the left abutment under a scenario where the Dam is overtopped by the Probable Maximum Flood (PMF).

Alternative 1 (Dam Notching)

Geology/Soils impacts and mitigation for Issues GS-1 (Ground Shaking), GS-2 (Access Route Landslides and Slope Stability), and GS-3 (Reservoir Landslides) would be the same as the Proponent's Proposed Project. Issues GS-5 (Bypass Rock Removal by Blasting) and GS-6 (Erosion at Left Dam Abutment) would not occur under Alternative 1.

Issue GS-4: Soil Erosion

Risk of erosion along access road improvements and sediment disposal areas;
sediment and rock discharge to streams
Determination: **less than significant with mitigation, long-term**

IMPACT

The impact potential would be the same as discussed for Impact GS-4 for the Proponent's Proposed Project, with the addition of the potential for erosion at the sediment disposal area if adequate soil erosion BMPs are not employed.

MITIGATION

Potential soil erosion impacts would be reduced to a less than significant level with implementation of the measures outlined for Issue GS-4 for the Proponent's Proposed Project. Additional erosion control measures would be employed at the sediment disposal area to minimize soil erosion during construction and post-construction periods to a less than significant level. Additional details are included in the SWPPP in Appendix K. These measures would include:

- Stripping and stockpiling of organic soils for use in subsequent restoration and revegetation of the site once sediment placement has been completed;
- Placing a culvert pipe along the ravine bottom the full length of the site to help manage storm waters and minimize erosion during construction operations;
- Placing the sediment in thin lifts and compacting the sediment;
- Placing the sediment with a stable side slope (average 2.75:1);
- Placing concrete debris from the Dam notching on the pile for long-term erosion protection at the toe of the pile and on the groins along the contact between the pile and the hillside abutments;
- Providing interim drainage and diversion of ravine flows (at the end of construction season);
- Stabilizing sloping sediment surfaces and other disturbed areas by installing erosion protection features such as erosion control mats, straw bales, and sediment traps along the toe of the pile and other disturbed areas (at the end of construction season);
- Providing sediment collection features such as silt fences, straw bales, and sediment traps along the toe of the pile and other disturbed areas; and
- Restabilizing the final graded surface with placement of the stockpiled topsoil, implementation of erosion control measures as described above, and revegetation with native plants and trees obtained from the site vicinity.

Alternative 2 (Dam Removal)

Geology/soils Impact Issues GS-1 (Ground Shaking), GS-3 (Reservoir Landslides), and GS-6 (Erosion at Left Dam Abutment) would not occur, since the Dam would be removed. Impacts and mitigation for Issue GS-2 (Access Route Landslides and Slope Stability) and would be the same as the Proponent's Proposed Project. Issues GS-5 (Bypass Rock Removal by Blasting) and GS-6 (Erosion at Left Dam Abutment) would not occur under Alternative 2.

Issue GS-4: Soil Erosion

Risk of erosion along access road improvements and in sediment disposal areas; sediment and rock discharge to streams
Determination: **less than significant with mitigation, long-term**

IMPACT

The impact potential would be the same as discussed for Impact GS-4 for the Proponent's Proposed Project, with the addition of the potential for erosion at the sediment disposal area if adequate soil erosion BMPs are not employed.

MITIGATION
Mitigation measures would be the same as discussed for Alternative 1.

Alternative 3 (Carmel River Reroute and Dam Removal)

Geology/soils Impact Issues GS-1 (Ground Shaking), GS-3 (Reservoir Landslides), and GS-6 (Erosion at Left Dam Abutment) would not occur, since the Dam would be removed. Impacts and mitigation for Issue GS-2 (Access Route Landslides and Slope Stability) would be the same as the Proponent's Proposed Project.

Issue GS-4: Soil Erosion

Risk of erosion along access road improvements and in sediment disposal areas; sediment and rock discharge to streams
Determination: **less than significant with mitigation, long-term**

IMPACT
The impact potential would be the same as discussed for Impact GS-4 for the Proponent's Proposed Project, with the addition of the potential for erosion at the sediment disposal area if adequate soil erosion BMPs are not employed.

As a result of better estimation methods it was determined that the amount of accumulated sediment that will be excavated and deposited in the disposal area will increase from about 380,000 cubic yard to about 830, 000 cubic yards. The disposal area has sufficient capacity to accommodate all the excess sediment.

MITIGATION
Mitigation measures would be the same as discussed for Alternative 1~~.~~ **with the following additional information:**

Placing rock excavated from the diversion channel on sediment slopes for erosion control. Construction of a 30-foot-wide channel lined with quarry run stone, sand and gravels to protect the sediment pile and slopes from erosion due to storm flows from the East Tributary of the Carmel River. Placing clean concrete debris from the Dam and fish ladder demolition on sediment slopes for long term erosion protection Stabilizing sediment slopes using in-situ soil treatment methods, such as deep-soil-mixing.

Issue GS-5: Bypass Rock Removal by Blasting

Topography alteration and safety hazards associated with blasting
Determination: **less than significant with mitigation, short-term**

IMPACT
Blasting will alter the landscape by removing approximately 145 acre-feet of rock in blasting a 450-foot-long channel between the Carmel River and San Clemente Creek, approximately 2,500 feet upstream of the Dam. The area is not accessible to the public

and has not been designated as a scenic viewshed; therefore the change to topography would be less than significant.

Blasting entails safety hazards including the potential to trigger landslides on adjacent unstable slopes.

MITIGATION

A blasting plan would be prepared as part of final design for construction that would summarize BMPs to be employed during all blasting activities in order to ensure safety and minimize potential damage from an associated landslide. Such measures would include (1) controlling of excessive vibration by limiting the size of charges and using charge delays that stagger each charge in a series of explosions, and (2) following procedures for safe storage, handling, loading, firing, and disposal of explosive materials. Preliminary blasting BMPs have been incorporated into the SWPPP (Appendix K). Implementation of additional measures in a complete blasting plan (to be required as part of final construction specifications) would reduce blasting-related impacts to a less than significant level.

The applicant will require the contractor to submit BMPs that meet measures specified in the SWPPP (Appendix K).

ALTERNATIVE 4 (NO PROJECT)

Geology/soils Impact Issues GS-2 (Access Route Landslides and Slope Stability), GS-3 (Reservoir Landslides), GS-4 (Soil Erosion), and GS-5 (Bypass Rock Removal by Blasting) would not occur under Alternative 4.

ISSUE GS-1: GROUND SHAKING

Risk of dam failure due to seismic activity

Determination: **significant, unavoidable, long-term**

IMPACT

San Clemente Dam is sited within a high-risk seismic area. Under the No Project Alternative (Alternative 4), the Dam would not be removed or retrofitted to reduce the potential of dam failure from seismic-related hazards (including ground shaking). This alternative would not address concerns regarding dam safety under a MCE and would not remove the threats to human health and safety. Under the No Project Alternative, this impact would be significant and unavoidable.

MITIGATION

Under the No Project Alternative, no mitigation would be provided for dam safety or other geological/soils hazards.

Issue GS-6 Erosion at Left Dam Abutment

Risk of erosion at the left abutment due to dam overtopping
Determination: **significant, unavoidable, long-term**

A subsurface investigation was conducted at the site in conjunction with the design of the seismic retrofit (Woodward-Clyde Consultants 1998). In general, the Dam abutments were found to be stable. However, on the downstream side of the left abutment, some potentially unstable rock blocks were mapped in an area subject to overtopping. Although some remedial measures to improve foundation rock performance were specified, none have been undertaken.

MITIGATION

Under the No Project Alternative, no mitigation would be provided for dam safety or other geological/soils hazards.

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4.3 WATER QUALITY

This section describes the potential impacts of the San Clemente Seismic Safety Project on the water quality conditions of the Project Area. Water Quality resources includes mechanisms by which water quality would be potentially affected by the Proponent's Proposed Project and alternatives from both construction and operational activities influenced by the project. Additional information is provided in the Final EIR/EIS which clarifies and amplifies the information included in the Draft EIR/EIS. This environmental setting section was prepared using information developed from the documents provided by the Recirculated Draft Environmental Impact Report (Denise Duffy & Associates 2000), ENTRIX annual San Clemente Dam Drawdown reports (ENTRIX 2002, 2003b, 2004a, 2005, and 2006), and surface water quality monitoring reports (MPWMD 2003a MPWMD 2004). Water quality data and analyses are detailed in Appendix Q of this report. In addition, Appendices K and R contain the Stormwater Pollution and Prevention Plan (SWPPP) and the Spill Prevention, Containment and Countermeasure Plan (SPCC).

<u>**Revisions to the Water Quality section were made to disclose the increase in reservoir drawdown rate, and the increase in affected instream, streambank, and stream margin habitat.**</u>

<u>**Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged.**</u> <u>*Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*</u> <u>**Only portions of the Final EIR/EIS that have been revised for the supplement are included in this section.**</u>

4.3.1 ENVIRONMENTAL SETTING

This section describes water quality conditions for each key location (upstream to downstream) at which project activities would take place. Only those parameters that would potentially be affected by the activities taking place during project construction and operations are discussed. The baseline environmental setting for purposes of impact comparison is defined through the year 2030. Water quality conditions that would be expected to change in this period are also described.

Water quality parameters are described using available data. Sources of existing water quality information in the Project Area include Monterey Peninsula Water Management District (MPWMD), surface water quality monitoring reports (MPWMD 2003a, MPWMD 2004), San Clemente Reservoir Drawdown monitoring reports (ENTRIX 2003b, ENTRIX 2004a, ENTRIX 2005a, ENTRIX 2006) and results from a surface water and porewater characterization project (ENTRIX 2002). A summary of available water quality data sources is provided in Table 4.3-1 and sampling locations for each source are depicted in Figure 4.3-1.

Carmel River and San Clemente Creek above San Clemente Reservoir

Three sources of water quality information are available for the Carmel River and San Clemente Creek above the reservoir. Water quality conditions in these reaches were measured daily for a minimum of five weeks in association with the 2004 through 2006 reservoir drawdown. The MPWMD has collected continuous surface water temperature data from both the Carmel River (since 1997) and San Clemente Creek (since 2003) above the reservoir (MPWMD 1998, MPWMD 2004). Additionally, pore water and surface water measurements were collected by ENTRIX (2002) to characterize conditions in the Carmel River and San Clemente Creek above the reservoir. The results of these studies show that for the period of monitoring, the water quality in these portions of the Carmel River and San Clemente Creek was generally good and was not affected by drawdown activities.

Table 4.3-1: Summary of Sources and Water Quality Data Collected in San Clemente Reservoir and Vicinity

Source	Location	Parameter	Water Years	Months
MPWMD	Sleepy Hollow Weir	Temperature	1992 – 1996	Oct 1 - Sept 30
	Sleepy Hollow Weir	Dissolved Oxygen	1992 – 1996	Oct 1 - Sept 30
	Sleepy Hollow Weir	pH	1992 – 1996	Oct 1 - Sept 30
	Sleepy Hollow Weir	Specific Conductance	1992 – 1996	Oct 1 - Sept 30
	Sleepy Hollow Weir	Temp - Continuous	1996	April 30 - Sept 30
	San Clemente Reservoir Outlet	Temperature	1991 – 1996	Oct 1 - Sept 30
	Sleepy Hollow Weir	Temperature	1997 – 2003	Oct 1 - Sept 30
	Sleepy Hollow Weir	Dissolved Oxygen	1997 – 2003	Oct 1 - Sept 30
	Sleepy Hollow Weir	pH	1997 – 2003	Oct 1 - Sept 30
	Sleepy Hollow Weir	Specific Conductance	1997 – 2003	Oct 1 - Sept 30
	Sleepy Hollow Weir	Visual Turbidity	1997 – 2002	Oct 1 - Sept 30
	Sleepy Hollow Weir	Turbidity (NTU)	2003	Oct 1 - Sept 30
	Sleepy Hollow Weir	Temp - Continuous	1997 – 2003	Oct 1 - Sept 30
	San Clemente Fish Ladder	Temp - Continuous	1997, 1999 - 2003	
	San Clemente Reservoir Surface	Temp - Continuous	1997 – 2002	March - September
	San Clemente Reservoir Surface	Temp - Continuous	2003	October - November
	San Clemente Reservoir Bottom	Temp - Continuous	1998 – 2003	
	San Clemente Creek	Temp - Continuous	2003	May 28 - Sept 30
	Above San Clemente Reservoir	Temp - Continuous	1997 – 2003	Oct 1 - Sept 30
CAW-Drawdown	Reservoir - profile & continuous	Temperature	2003, 2004, 2005, 2006	spring, summer
	Reservoir - profile & continuous	Dissolved Oxygen	2003, 2004, 2005, 2006	spring, summer
	Reservoir - profile & continuous	pH	2003, 2004	summer
	Reservoir - profile & continuous	Specific Conductance	2003, 2004	summer

Table 4.3-1: Summary of Sources and Water Quality Data Collected in San Clemente Reservoir and Vicinity

Source	Location	Parameter	Water Years	Months
	Reservoir - profile & continuous	Turbidity (NTU)	2003, 2004, 2005, 2006	spring, summer
	Carmel R Below Dam	Suspended Sediment	2003	summer
	Carmel R Below Dam	Temperature	2003, 2004	summer
	Carmel R Below Dam	Dissolved Oxygen	2003, 2004	summer
	Carmel R Below Dam	pH	2003, 2004	summer
	Carmel R Below Dam	Specific Conductance	2003, 2004	summer
	Carmel R Below Dam	Turbidity (NTU)	2003, 2004	summer
	Carmel R Above Reservoir	Temperature	2004	summer
	Carmel R Above Reservoir	Dissolved Oxygen	2004	summer
	Carmel R Above Reservoir	pH	2004	summer
	Carmel R Above Reservoir	Specific Conductance	2004	summer
	Carmel R Above Reservoir	Turbidity (NTU)	2004	summer
	San Clemente Ck Above Reservoir	Temperature	2004	summer
	San Clemente Ck Above Reservoir	Dissolved Oxygen	2004	summer
	San Clemente Ck Above Reservoir	pH	2004	summer
	San Clemente Ck Above Reservoir	Specific Conductance	2004	summer
	San Clemente Ck Above Reservoir	Turbidity (NTU)	2004	summer
	Carmel R longitudinal profile	Temperature	2004	summer
	Carmel R longitudinal profile	Dissolved Oxygen	2004	summer
	Carmel R longitudinal profile	pH	2004	summer
	Carmel R longitudinal profile	Specific Conductance	2004	summer
	Carmel R longitudinal profile	Turbidity (NTU)	2004	summer

Table 4.3-1: Summary of Sources and Water Quality Data Collected in San Clemente Reservoir and Vicinity, continued

Source	Location	Parameter	Water Years	Months
ENTRIX 2002	Carmel R Above Reservoir	Metals	2002	11/1/02
Surface water	Carmel R Above Reservoir	Alkalinity	2002	11/1/02
	Carmel R Above Reservoir	pH	2002	11/1/02
	Carmel R Above Reservoir	Specific Conductivity	2002	11/1/02
	Carmel R Above Reservoir	Ions	2002	11/1/02
	San Clemente Ck Above Reservoir	Metals	2002	11/1/02
	San Clemente Ck Above Reservoir	Alkalinity	2002	11/1/02
	San Clemente Ck Above Reservoir	pH	2002	11/1/02
	San Clemente Ck Above Reservoir	Specific Conductivity	2002	11/1/02
	San Clemente Ck Above Reservoir	Ions	2002	11/1/02
	Reservoir	Metals	2002	11/1/02
	Reservoir	Alkalinity	2002	11/1/02
	Reservoir	pH	2002	11/1/02
	Reservoir	Specific Conductivity	2002	11/1/02
	Reservoir	Ions	2002	11/1/02
	Carmel R Below Dam	Metals	2002	11/1/02
	Carmel R Below Dam	Alkalinity	2002	11/1/02
	Carmel R Below Dam	pH	2002	11/1/02
	Carmel R Below Dam	Specific Conductivity	2002	11/1/02
	Carmel R Below Dam	Ions	2002	11/1/02
			2002	
ENTRIX 2002	Above Reservoir adjacent to River	Metals	2002	11/1/02
Pore water	Above Reservoir adjacent to River	Alkalinity	2002	11/1/02
	Above Reservoir adjacent to River	pH	2002	11/1/02
	Above Reservoir adjacent to River	Specific Conductivity	2002	11/1/02
	Above Reservoir adjacent to River	Ions	2002	11/1/02
	Above Reservoir on sand bar	Metals	2002	11/1/02
	Above Reservoir on sand bar	Alkalinity	2002	11/1/02
	Above Reservoir on sand bar	pH	2002	11/1/02
	Above Reservoir on sand bar	Specific Conductivity	2002	11/1/02
	Above Reservoir on sand bar	Ions	2002	11/1/02
	San Clemente Ck near Reservoir	Metals	2002	11/1/02
	San Clemente Ck near Reservoir	Alkalinity	2002	11/1/02
	San Clemente Ck near Reservoir	pH	2002	11/1/02
	San Clemente Ck near Reservoir	Specific Conductivity	2002	11/1/02
	San Clemente Ck near Reservoir	Ions	2002	11/1/02
	San Clemente Ck above Reservoir	Metals	2002	11/1/02

Table 4.3-1: Summary of Sources and Water Quality Data Collected in San Clemente Reservoir and Vicinity, continued

Source	Location	Parameter	Water Years	Months
	San Clemente Ck above Reservoir	Alkalinity	2002	11/1/02
	San Clemente Ck above Reservoir	pH	2002	11/1/02
	San Clemente Ck above Reservoir	Specific Conductivity	2002	11/1/02
	San Clemente Ck above Reservoir	Ions	2002	11/1/02

Source: Monterey Peninsula Water Management District
ENTRIX 2002
ENTRIX 2003a
ENTRIX 2004a
ENTRIX 2005a
ENTRIX 2006

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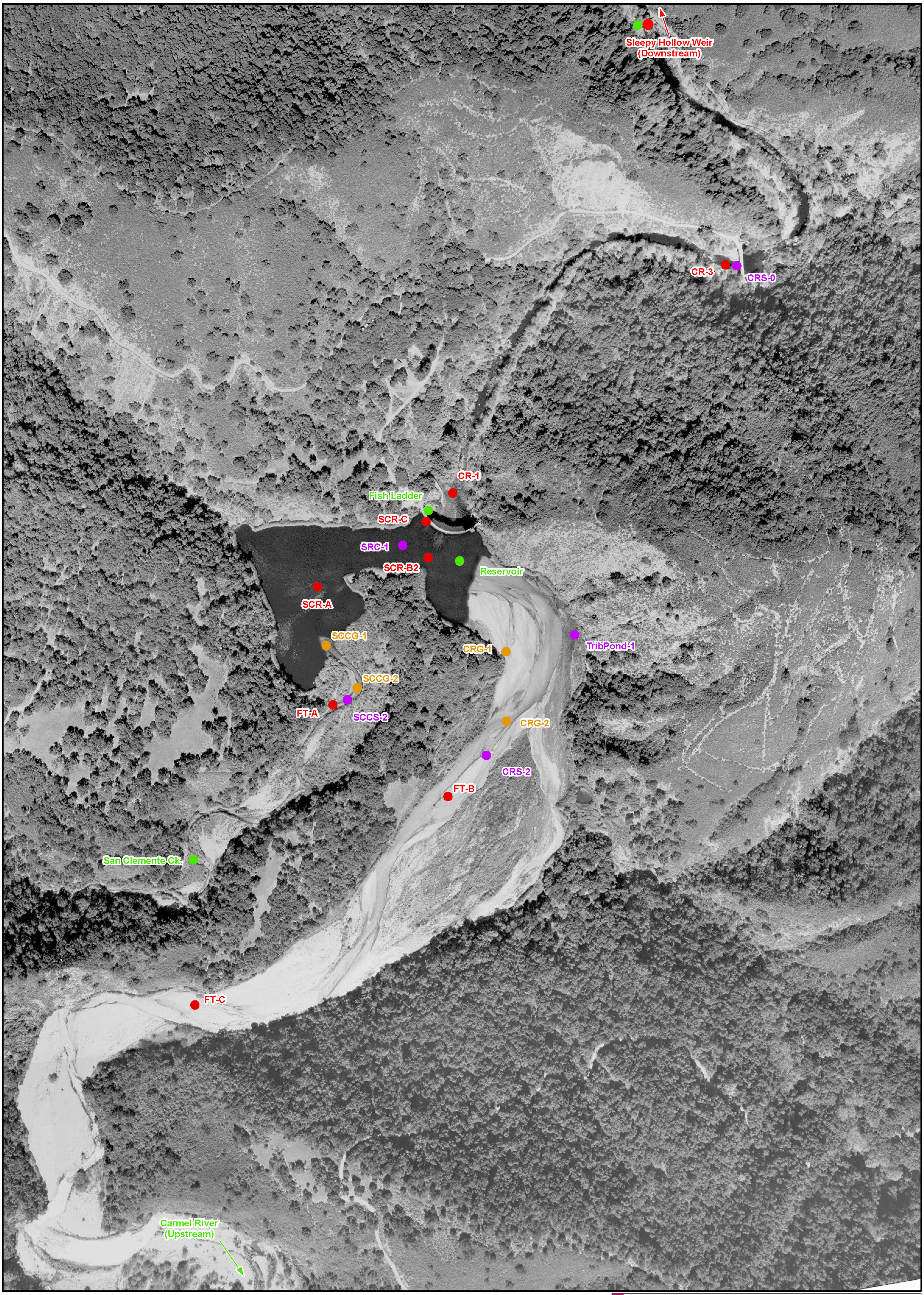

Monitoring Station Type

- CAW Drawdown Monitoring Stations
- MPWMD Surface Monitoring Stations
- Surface Stations (2002 Surface and porewater Study)
- Porewater Stations (2002 Surface and porewater Study)

ENTRIX

2005 San Clemente EIR/EIS
California American Water Co.

Figure 4.3-1

Water Quality Monitoring Stations

0 100 200
Feet

9/6/05
Projection: CA State Plane, Zone 4
Datum: NAD 83

E:\GIS\Entrix\3018603\map\Drawdown_WaterQualityMonitoring_03.mxd

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During the 2003 to 2006 reservoir drawdowns, water quality data was collected from the reservoir and the Carmel River. The purpose of monitoring was to characterize water quality conditions for one week prior to drawdown, during drawdown, and one week post-drawdown. Conditions would vary seasonally and annually, depending on climate and rainfall. In 2003, baseline data (including dissolved oxygen [DO], turbidity, temperature, pH and conductivity) was collected for five days prior to drawdown. Monitoring continued throughout the drawdown operations and for about one week after the 515 feet reservoir elevation was reached. Water quality parameters were reduced during 2004 through 2006 because pH and conductivity did not provide any useful information to manage the drawdown. Turbidity, DO and temperature were collected in the reservoir in each year five days prior to the drawdown and were collected occasionally in the river downstream of the SCD.

Overall, pH measurements ranged from 7.1 to 8.1 throughout the monitoring period, thus demonstrating that pH was well within the established criteria of 5.8 to 9.0 (ENTRIX 2003b). Conductivity values ranged from 0.231 to 0.301 mS/cm, with a slight increasing trend observed during the monitoring period. The conductivity values observed are not uncommonly high or low (ENTRIX 2003a).

DO, turbidity and temperature were the water quality parameters of greatest concern in the reservoir and river during the summer drawdowns. A summary of the 2003 to 2006 DO, turbidity, and temperature data is provided below in Tables 4.3-2 to 4.3-4.

Table 4.3-2: Water Quality Summary at Station SCR-A during 2003-2006 Drawdowns

	2003	2004	2005	2006
DISSOLVED OXYGEN (mg/l)				
Baseline	6.3-8.3	7.8-9.0	2.8-8.5	6.0-8.4
Drawdown	2.4-8.0	3.5-9.4	2.4-8.4	1.7-8.8
Post-Drawdown	3.8-7.8	3.6-6.8	4.1-8.3	2.9-7.9
TURBIDITY (NTUs)				
Baseline	1.9-4.0	0.0-2.3	0.0-3.7	NA
Drawdown	1.7-35.7	0.0-15.8	0.0-7.5	5.7-14.0
Post-Drawdown	12.7-28.4	9.6-17.7	5.2-11.0	8.5-16.0
TEMPERATURE (°C)				
Baseline	16.3-17.5	16.1-18.2	18.4-22.7	18.1-20.2
Drawdown	16.2-24.9	16.2-22.2	19.4-24.1	17.9-26.6
Post-Drawdown	16.3-24.9	18.0-21.3	18.5-22.3	19.4-24.4

Table 4.3-3: Water Quality Summary at Station SCR-B during 2003-2006 Drawdowns

	2003	2004	2005	2006
DISSOLVED OXYGEN (mg/l)				
Baseline	7.2-7.9	8.2-8.8	4.8-8.2	6.6-8.2
Drawdown	4.7-8.0	3.0-9.8	4.3-10.8	3.1-8.5
Post-Drawdown	5.8-7.0	5.0-7.3	4.0-7.2	5.2-6.8
TURBIDITY (NTUs)				
Baseline	2.1-2.6	0.0-0.8	0.1-3.7	NA
Drawdown	2.3-25.9	0.0-16.8	0.0-6.6	5.6-11.4
Post-Drawdown	15.0-25.3	9.3-12.9	5.4-11.7	8.1-14.1
TEMPERATURE (°C)				
Baseline	16.5-17.9	16.2-18.2	18.4-21.6	18.1-20.4
Drawdown	16.2-21.8	16.1-20.0	19.2-23.6	17.8-25.3
Post-Drawdown	20.1-21.9	17.5-21.0	17.9-20.3	18.7-22.9

Table 4.3-4: Water Quality Summary at Station SCR-C during 2003-2006 Drawdowns

	2003	2004	2005	2006
DISSOLVED OXYGEN (mg/l)				
Baseline	6.8-8.5	7.1-8.3	5.6-8.4	5.4-7.8
Drawdown	4.4-8.0	4.8-8.7	5.0-8.4	2.7-7.8
Post-Drawdown	5.7-6.5	4.2-6.4	5.0-5.6	4.1-6.1
TURBIDITY (NTUs)				
Baseline	0-2	0-2	0-1	1-10
Drawdown	0-38	0-14	0-18	2-19
Post-Drawdown	13-38	8-19	5-16	16-39
TEMPERATURE (°C)				
Baseline	16.2-17.4	15.6-16.8	18.5-20.0	17.9-19.1
Drawdown	16.1-21.0	15.4-19.8	18.8-21.7	17.5-24.7
Post-Drawdown	20.1-22.0	18.1-20.8	18.2-20.6	18.8-22.9

In the Carmel River, dissolved oxygen concentrations ranged from approximately 8.0 mg/L to 10.0 mg/L. (Figure 4.3-2). Turbidity was very low, ranging from 0 to 3.5 Nephelometric Turbidity Units (NTUs). Water temperatures ranged from 13 ºC to 18 ºC in the morning and 17 ºC to 22 ºC in the afternoon.

In San Clemente Creek, dissolved oxygen concentrations ranged from 7.0 mg/L to 10.0 mg/L (Figure 4.3-3). Generally, turbidity was low, averaging 0 to 3 NTUs, with two brief spikes of 4.3 and 8.7 NTUs. Water temperatures ranged from 11 ºC to 16 ºC in the morning and 14 °C to 18 ºC in the afternoon.

The MPWMD has recorded instream water temperature in the Carmel River since water year (WY) 1997 and in San Clemente Creek during summer and fall of 2003 (MPWMD 2004). The MPWMD deploys continuous monitoring probes in April or May, depending on runoff conditions, and retrieves the probes in November. Average temperatures recorded for the Carmel River were about 14 ºC in April, with a diurnal variation of 4 ºC to 6 ºC). Daily temperatures increased until early August, when average temperatures were about 21 ºC and maximum temperature was about 25 ºC. Temperatures then begin decreasing until November when the minimum temperature reaches about 10 ºC.

The period of record for water temperature in San Clemente Creek is too short to determine general patterns and temperature ranges. Appendix Q shows the data collected on San Clemente Creek from May 28 to September 30, 2003. During this period the daily average water temperature ranged from 14 °C to 18 ºC, with a diurnal variation of 4 ºC to 6 ºC.

A characterization of surface and pore water chemistry in the Carmel River and San Clemente Creek) was conducted by ENTRIX in 2002 to evaluate potential water quality effects associated with water level drawdown in San Clemente Reservoir. Sampling locations are shown in Figure 4.3-1. Chemical analyses included metals, hardness, total dissolved solids, pH, specific conductivity, and ionic chemistry.

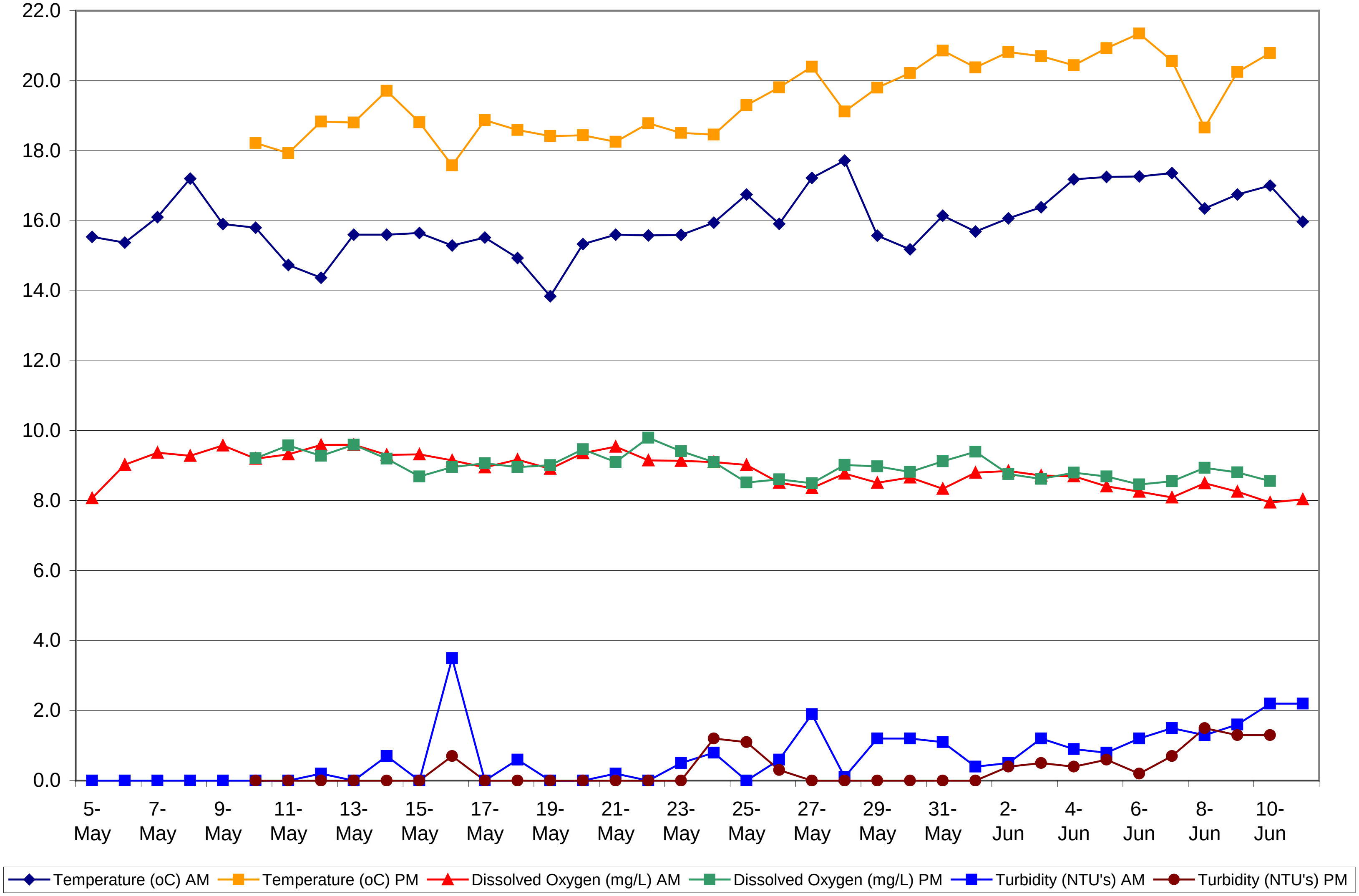
The majority of results for metals were non-detected at the laboratory's reporting limits. All detected metals results were well below the established water quality criteria for both aquatic life and human health protection. The hardness results (96 to150 mg/L) indicate a good buffering capacity against changes in both pH and metals concentrations.

The results of the ionic chemistry analyses were below established water quality criteria for surface waters, with the exception of sodium (Na) concentrations (20 mg/L maximum from Central Coast Basin Plan) in San Clemente Creek (25 mg/L), and the tributary pond (99 mg/L). Most porewater analysis results were also below the criteria, except for iron (1.0 mg/L, EPA), which ranged from 4.4 mg/L to 12 mg/L.

San Clemente Reservoir

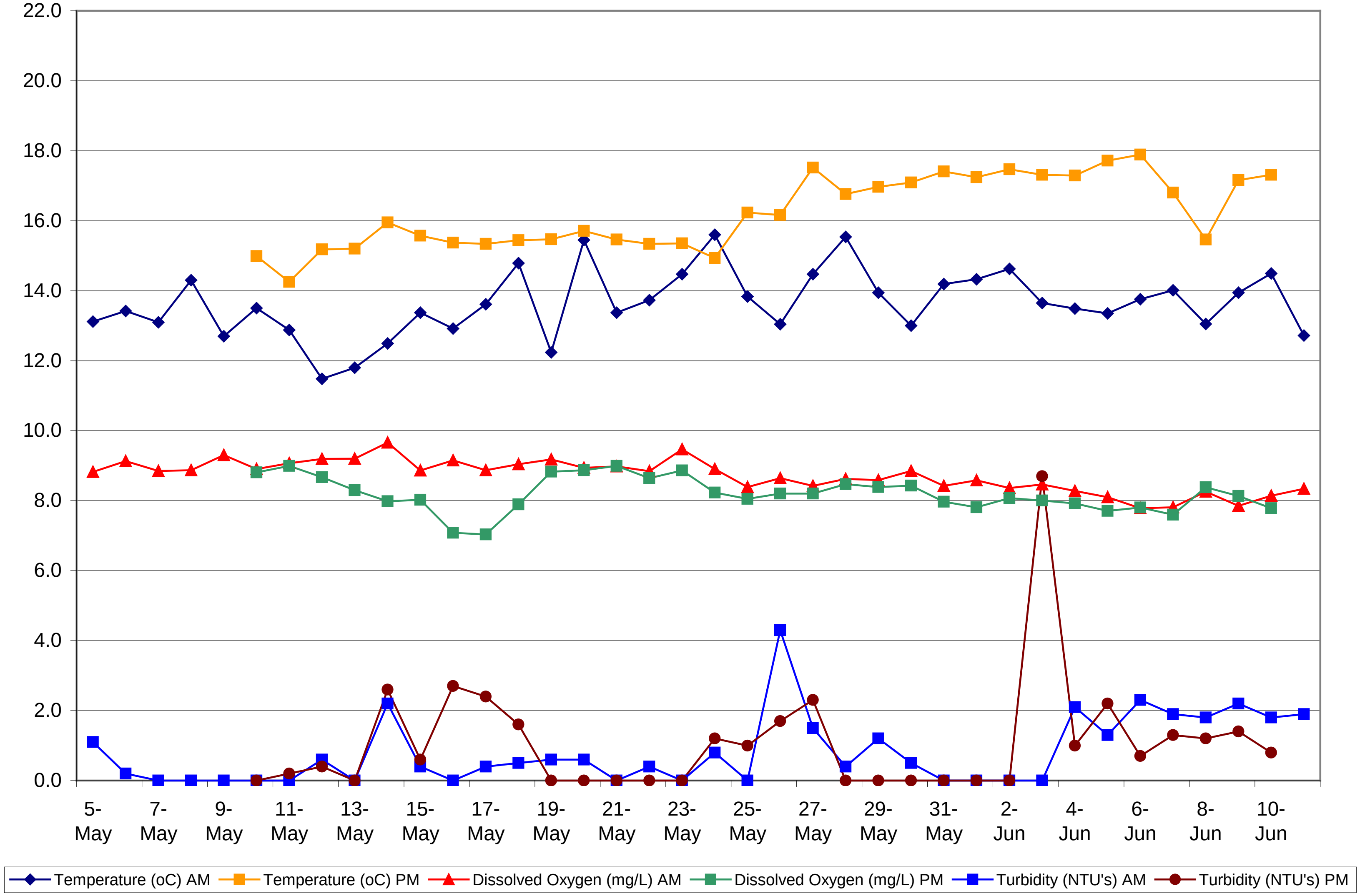
Three sources of water quality data are available for San Clemente Reservoir, which are derived from both long-term and short-term monitoring programs (Table 4.3-1). Fixed station measurements of dissolved oxygen, turbidity, temperature, pH and specific conductivity were monitored during the 2003 drawdown. During the 2004 through 2006 drawdowns, dissolved oxygen, turbidity and temperature were monitored. Additional reservoir monitoring during the 2003 drawdown included hydrogen sulfide. The MPWMD has also monitored reservoir surface water temperatures from 1997 through 2003 and bottom water temperatures from 1998 through 2003. A water chemistry analysis of reservoir water was performed by ENTRIX in 2002 to establish baseline conditions.

Figure 4.3-2: 2004 Carmel River Water Quality above San Clemente Reservoir



Source: ENTRIX 2004a

Figure 4.3-3: 2004 San Clemente Creek Water Quality above San Clemente Reservoir



Source: ENTRIX 2004a

A summary of the water quality information from these sources relevant to potential project activities and actions is presented below.

DISSOLVED OXYGEN

Diurnal dissolved oxygen concentrations were available for San Clemente Reservoir during the 2003 drawdown (June 23 to July 26) (Figure 4.3-4) (See also Appendix Q-4). Daily minimum and maximum dissolved oxygen concentrations were available for the 2004 drawdown (May 10 to June 3), the 2005 drawdown (July 25 to August 15) (Appendix Q, Figures 4.3-5 and 4.3-6), and the 2006 drawdown (July 3 to July 27) (Figure 4.3-7). Note that the drawdown rate during 2004 to 2006 was much slower (about 0.5 ft/day) than during the first part of the 2003 drawdown (about 2 ft/day). This would be one of the main factors that accounts for the difference between water quality conditions during 2003 compared to the other drawdown events.

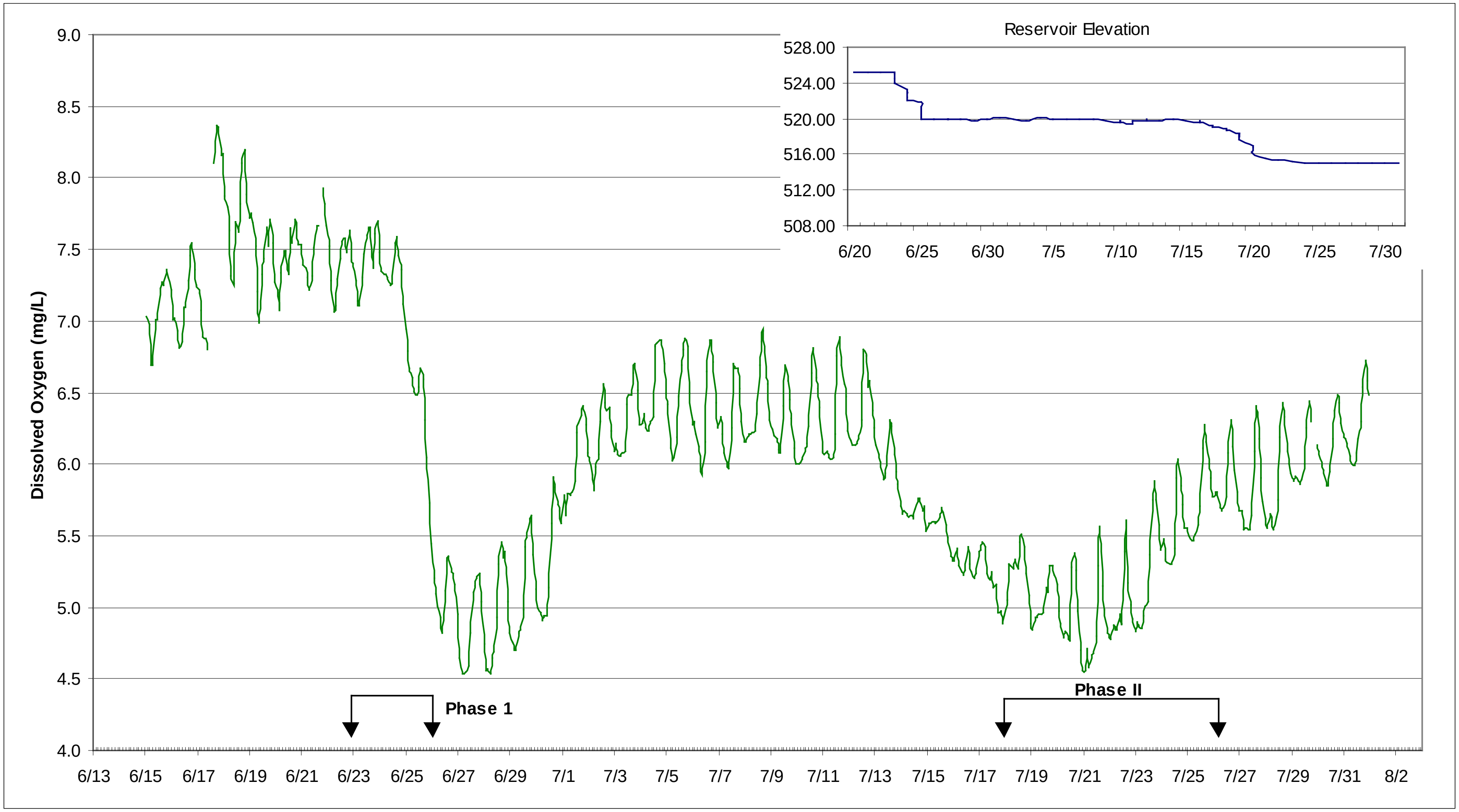
During the six days prior to the 2003 drawdown (baseline condition) dissolved oxygen concentration ranged from 6.6 mg/L to 8.4 mg/L and averaged 7.1 mg/L. During the periods when drawdown occurred, dissolved oxygen values ranged from 4.5 mg/L to 6.3 mg/L and averaged about 5.3 mg/L). Following the drawdown, dissolved oxygen partially recovered over a 3-5 day period with values ranging from 5.5 mg/L to 7.0 mg/L and averaging 6.3 mg/L.

During the five days prior to the 2004 drawdown (baseline condition) dissolved oxygen values ranged from 7.0 mg/L to 8.3 mg/L and averaged 7.6 mg/L. During the drawdown, dissolved oxygen values ranged from 4.8 mg/L to 8.7 mg/L and averaged 6.5 mg/L. For seven days following the drawdown, dissolved oxygen continued to decline for the first 2 days and then appeared to start increasing, with values ranging from 4.5 mg/L to 6.5 mg/L and averaging about 5.2 mg/L.

During the week prior to the 2005 drawdown (baseline condition) dissolved oxygen values ranged from 5.6 mg/L to 8.4 mg/L and averaged 7.0 mg/L. During the drawdown, DO values ranged from 5.0 mg/L to 7.9 mg/L and averaged 6.0 mg/L. Similar values were observed for about two weeks following the drawdown. Dissolved oxygen concentrations then began to increase with values averaging 7.5 mg/L by mid-September.

In 2006, DO concentrations were higher prior to the drawdown with a decreasing trend following the start of the drawdown and then increasing towards the end of the drawdown operations (Figure 4.3-7). Throughout the drawdown period (July 3 to August 8), morning concentrations ranged from 3.3 to 8.4 mg/L at the surface and 4.6 to 9.3 mg/L at the 10-foot depth. Afternoon concentrations ranged from 4.0 to 8.8 mg/L at the surface and 2.6 to 7.9 mg/L at the 10-foot depth. Supersaturated DO concentrations (values > 8.6 mg/L) were recorded at the surface in the afternoon (July 3 and July 6). These supersaturated concentrations are attributed to the photosynthetic activity of algae in the late afternoon.

Figure 4.3-4: 2003 Reservoir Dissolved Oxygen Concentration during Drawdown

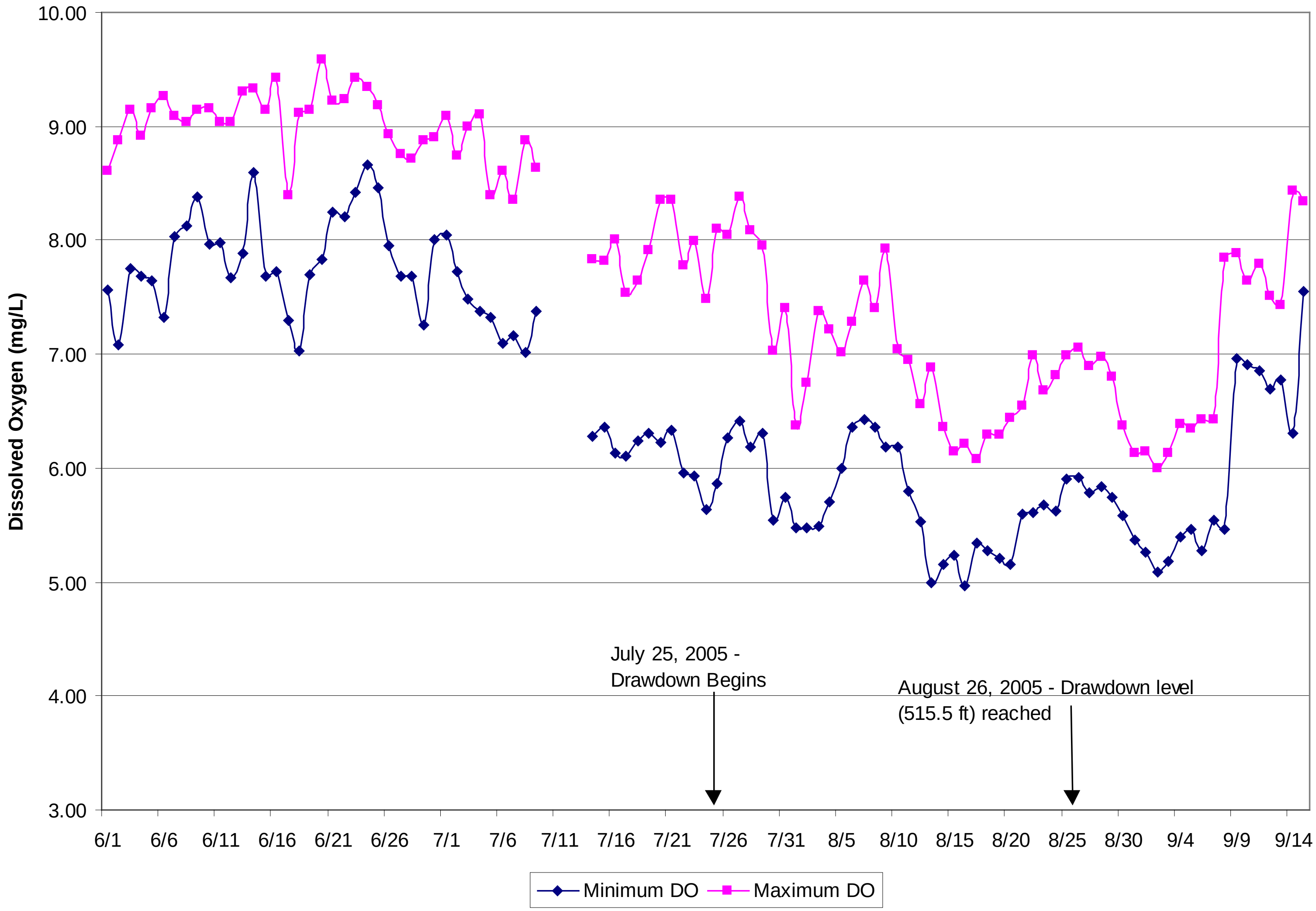


Source: Entrix 2003a

Figure 4.3-5: 2004 Reservoir Dissolved Oxygen Concentration during Drawdown

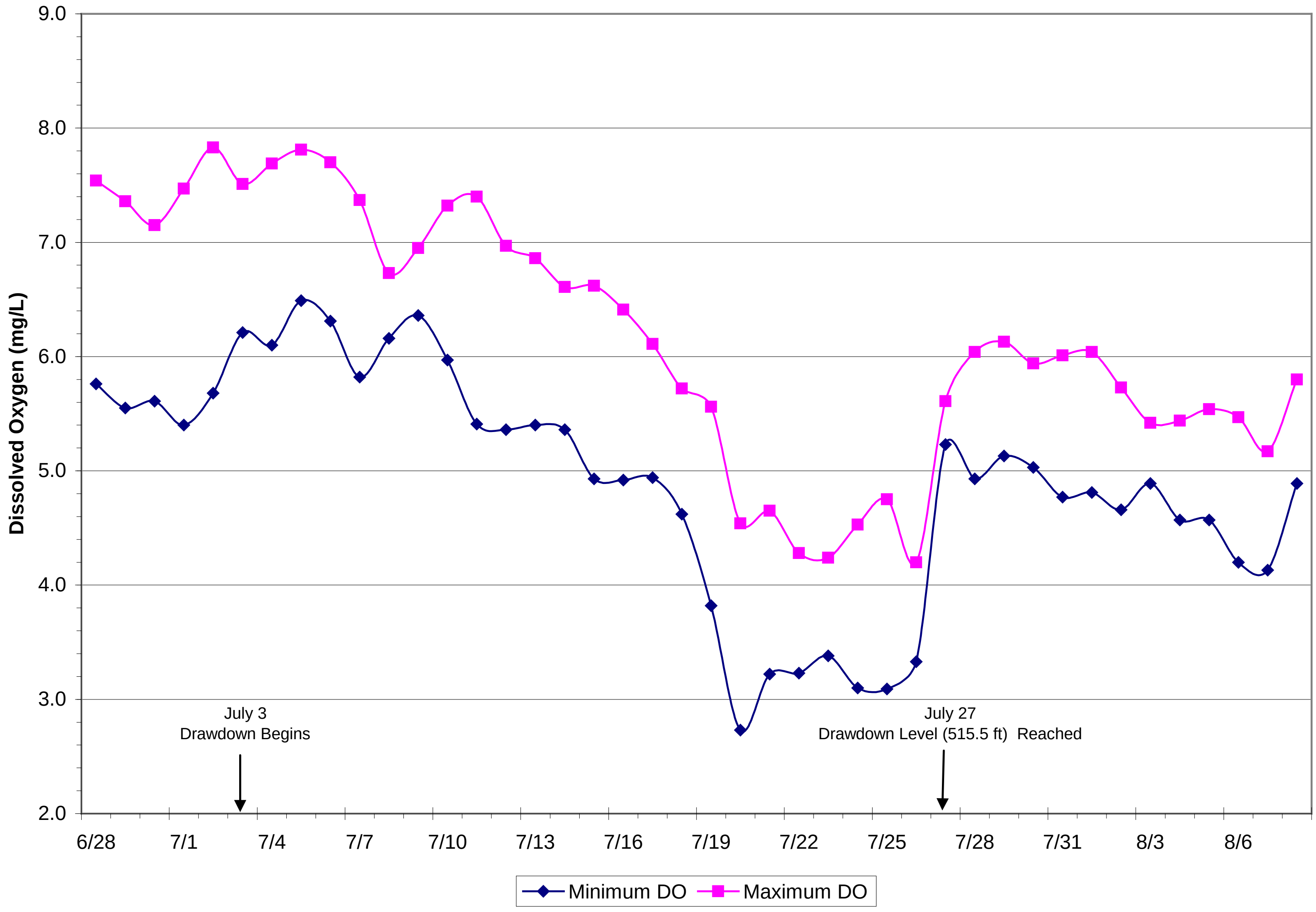
Source: ENTRIX 2004a

Figure 4.3-6: 2005 Reservoir Dissolved Oxygen during Drawdown



Source: Entrix 2005a

Figure 4.3-7: 2006 Reservoir Dissolved Oxygen during Drawdown



Source: Entrix 2006

TURBIDITY

Diurnal turbidity was available for the 2003 drawdown and daily minimum and maximum values were available for the 2004 through 2006 drawdowns (Appendix Q). For six days prior to the 2003 drawdown (baseline condition), turbidity ranged from 0 to 1 NTUs. During the drawdown, turbidity rapidly increased, with a range of 8 to 34 NTUs. For six days following the drawdown, turbidity ranged from 14 to 19 NTUs and appeared to be gradually decreasing (Figure 4.3-8). Monitoring conducted beyond the 2003 drawdown during winter 2003/2004 showed that turbidity gradually declined after the drawdown period and reached a range of 0 to 1 NTUs in the second week of January 2004. Note that turbidity levels during 2003 were much higher than during 2004 or 2005. Turbidity remained around 0 to 1 NTUs during winter, except for very brief periods (two to four days) following large rainstorms. During storm runoff events turbidity was observed to increase and decrease very abruptly. During the winter 2003/2004 monitoring period there were five storm-related turbidity peaks ranging from 68 NTUs to 578 NTUs that were associated with flows ranging from 462 cfs to 2,060 cfs. Between storm events turbidity was generally less than 1 NTU.

For five days prior to the 2004 drawdown (baseline condition), turbidity in the reservoir was 0 NTU, except for one very brief spike of 2 NTUs. Turbidity generally increased during the drawdown period, with a range of 0 to 14 NTUs (Figure 4.3-9). For seven days following the drawdown, turbidity continued to increase, with values ranging from 8 to 19 NTUs.

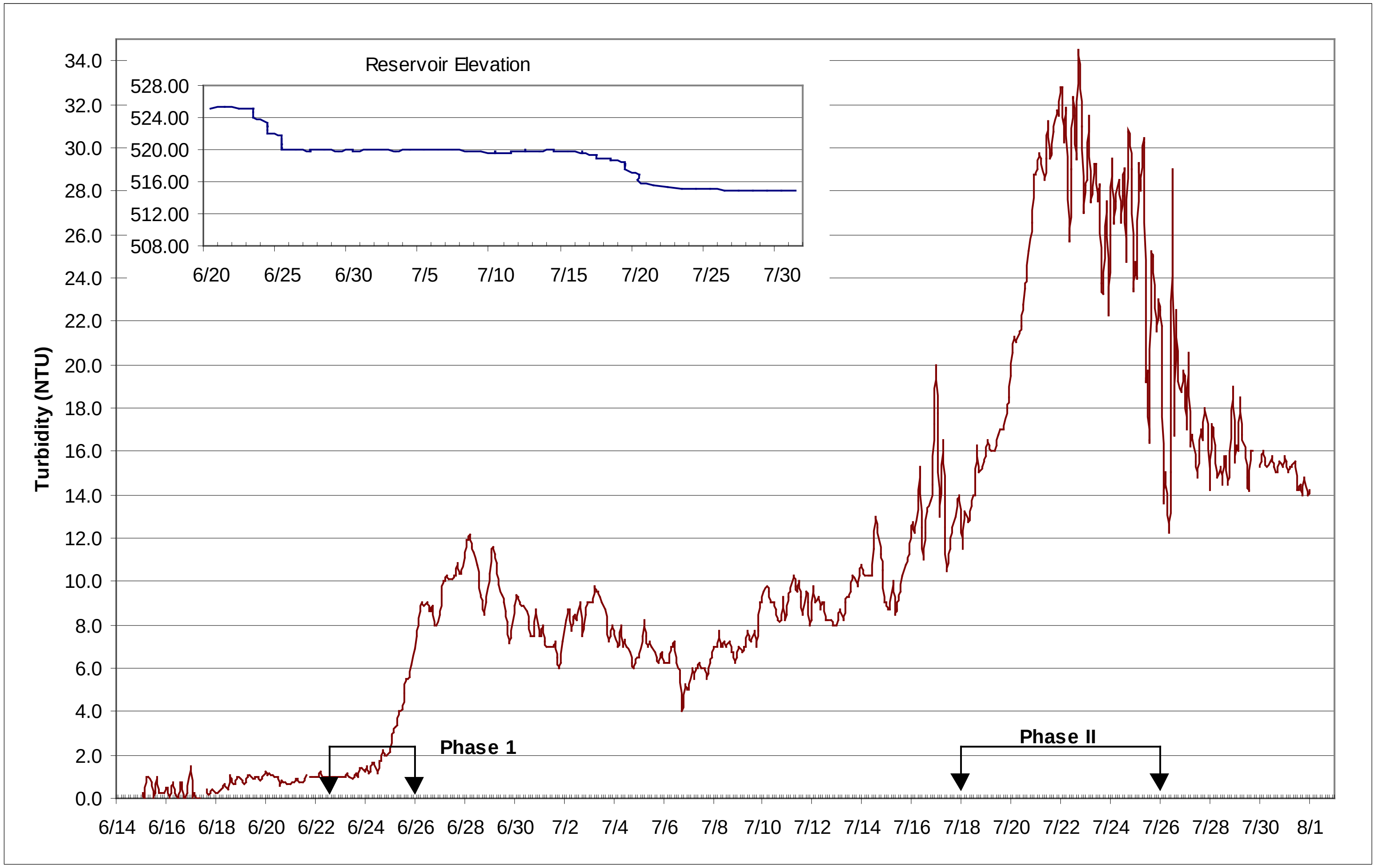
During the week prior to the 2005 drawdown, turbidity in the reservoir was 0 NTU. Turbidity quickly increased during the drawdown period, with a range of 1 to 19 NTUs (Figure 4.3-10). Following the drawdown, turbidity varied widely between 4 to 18 NTUs and did not show any overall trends.

In 2006 there was a gradual increase in turbidity as the drawdown progressed (1 to 19 NTUs) (Figure 4.3-11), followed by a large spike (18 NTUs) two weeks prior to reaching the target elevation of 515.5 feet. Turbidity values one week prior to the drawdown (June 28 to July 3) were the lowest. Turbidity values at SCR-C were higher towards the conclusion of the drawdown due to organic debris building up in this section of the reservoir (no inflow influence from Carmel River); therefore, turbidity values were much higher (> 20 NTUs) than the 2005 drawdown event.

TEMPERATURE

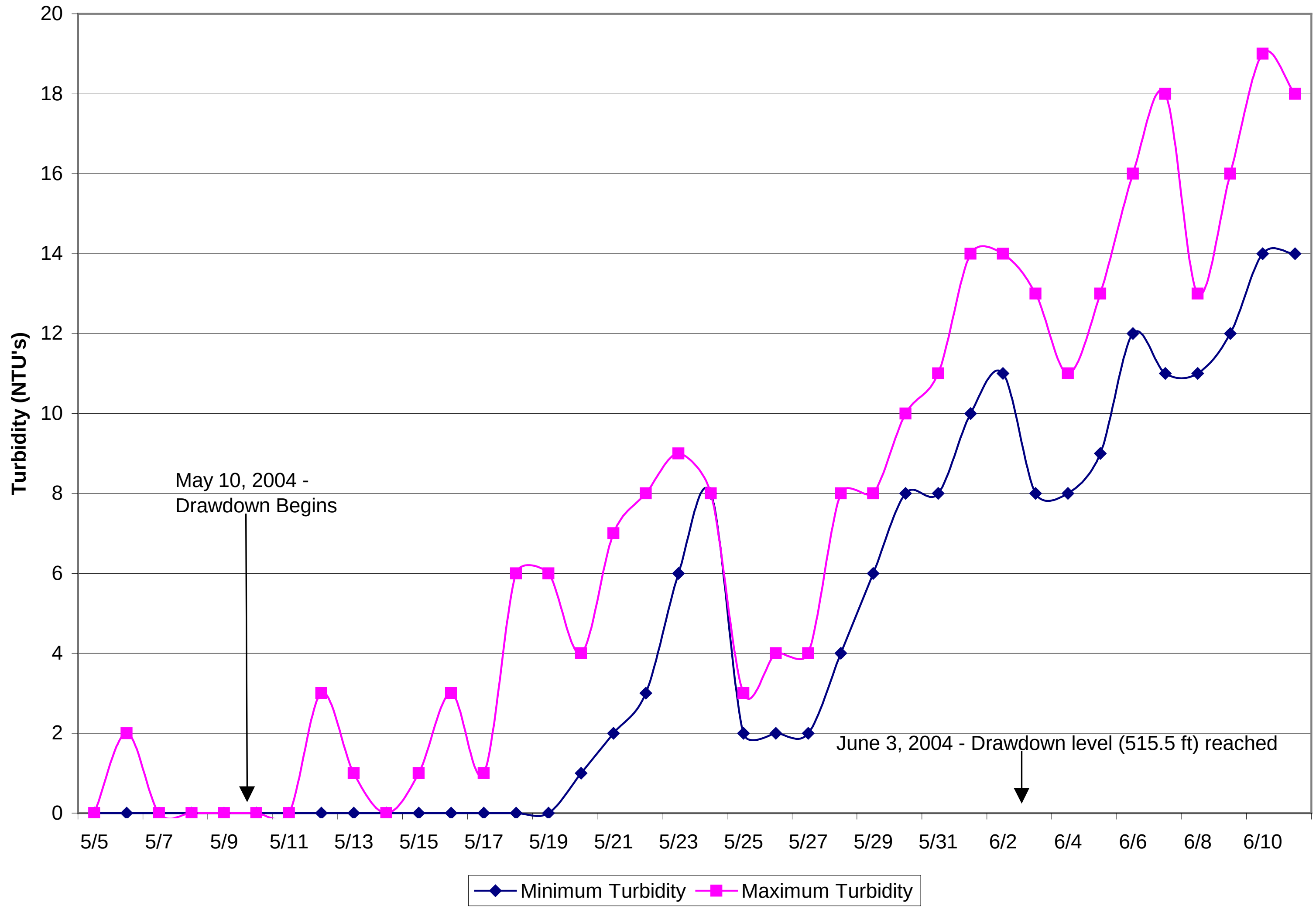
Water temperatures in San Clemente Reservoir were available for the 2003, 2004, 2005, and 2006 drawdowns as well as from the MPWMD's long-term data set and are summarized below (Figures 4.3-12 to 4.3-15) and in Appendix Q.

Figure 4.3-8: 2003 Reservoir Turbidity during Drawdown



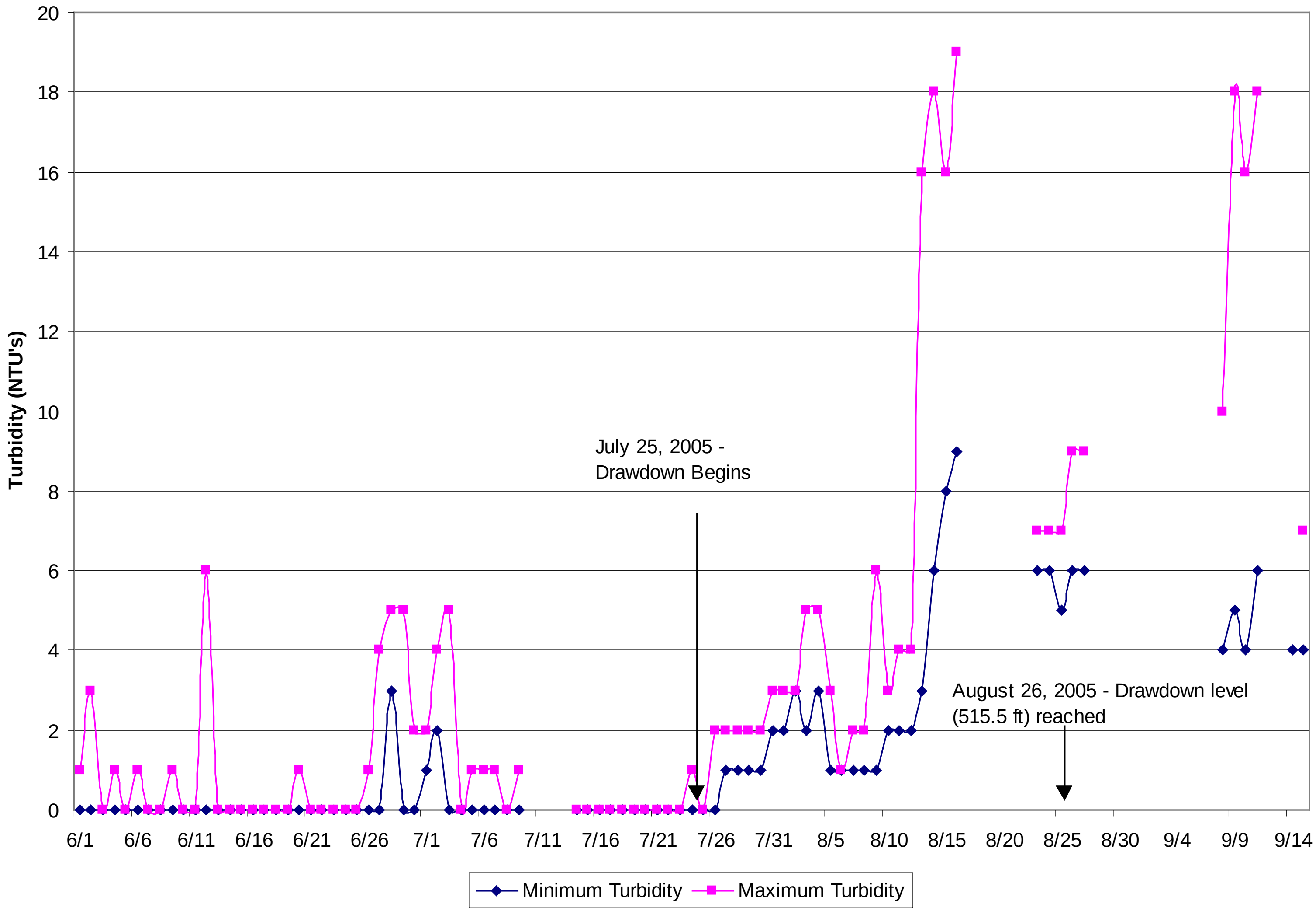
Source: Entrix 2003a

Figure 4.3-9: 2004 Reservoir Turbidity during Drawdown



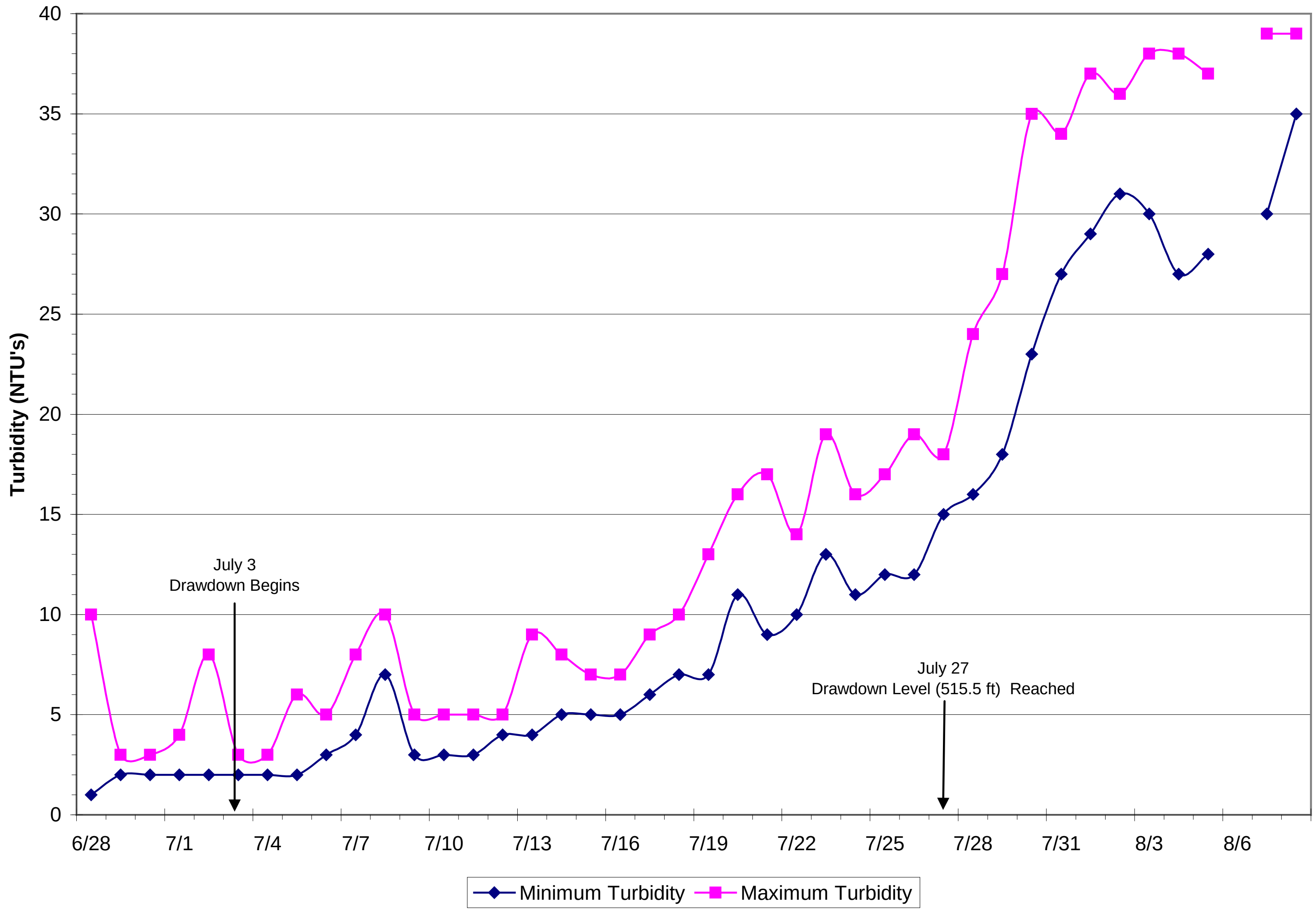
Source: ENTRIX 2004a

Figure 4.3-10: 2005 Reservoir Turbidity during Drawdown



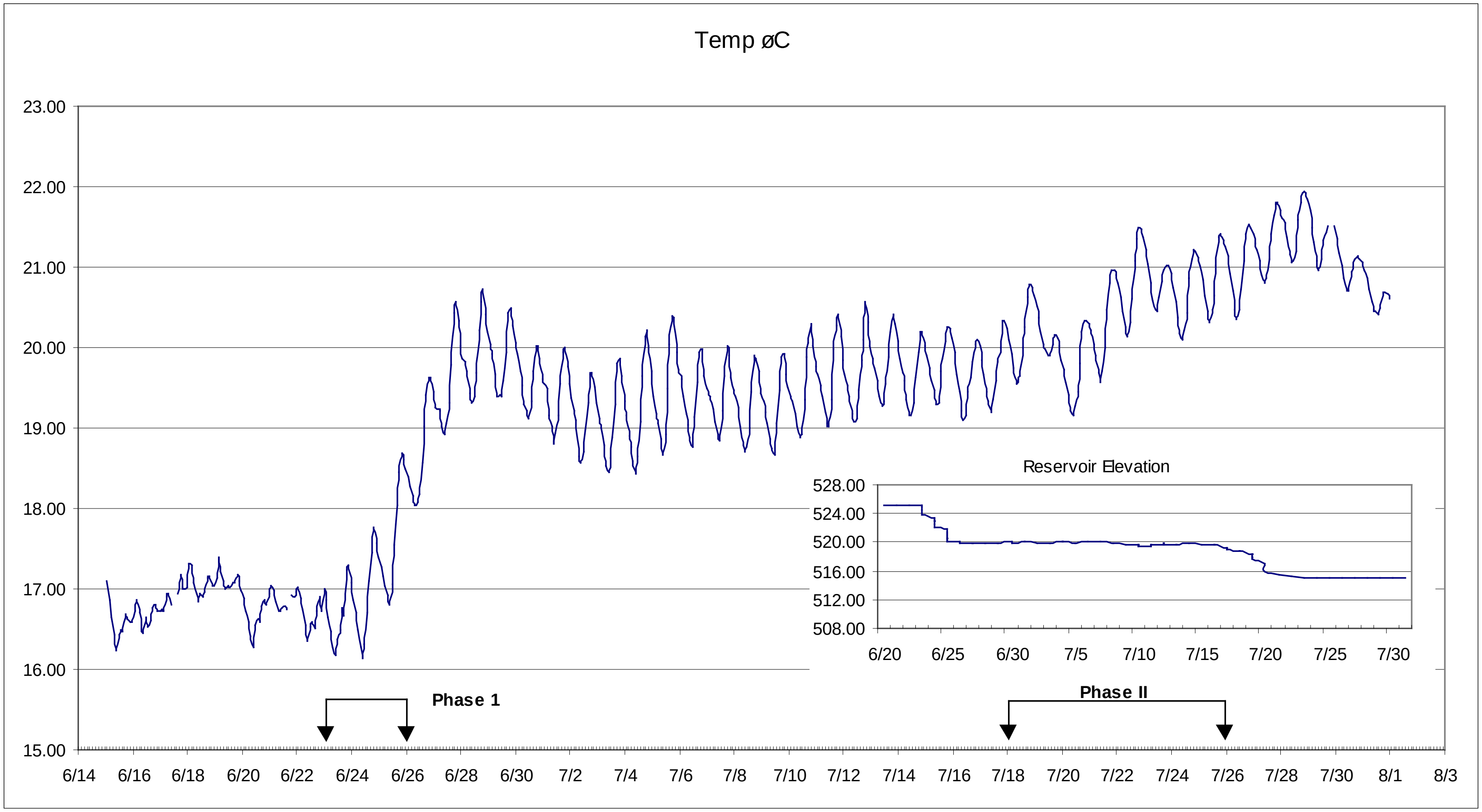
Source: Entrix 2005a

Figure 4.3-11: 2006 Reservoir Turbidity during Drawdown



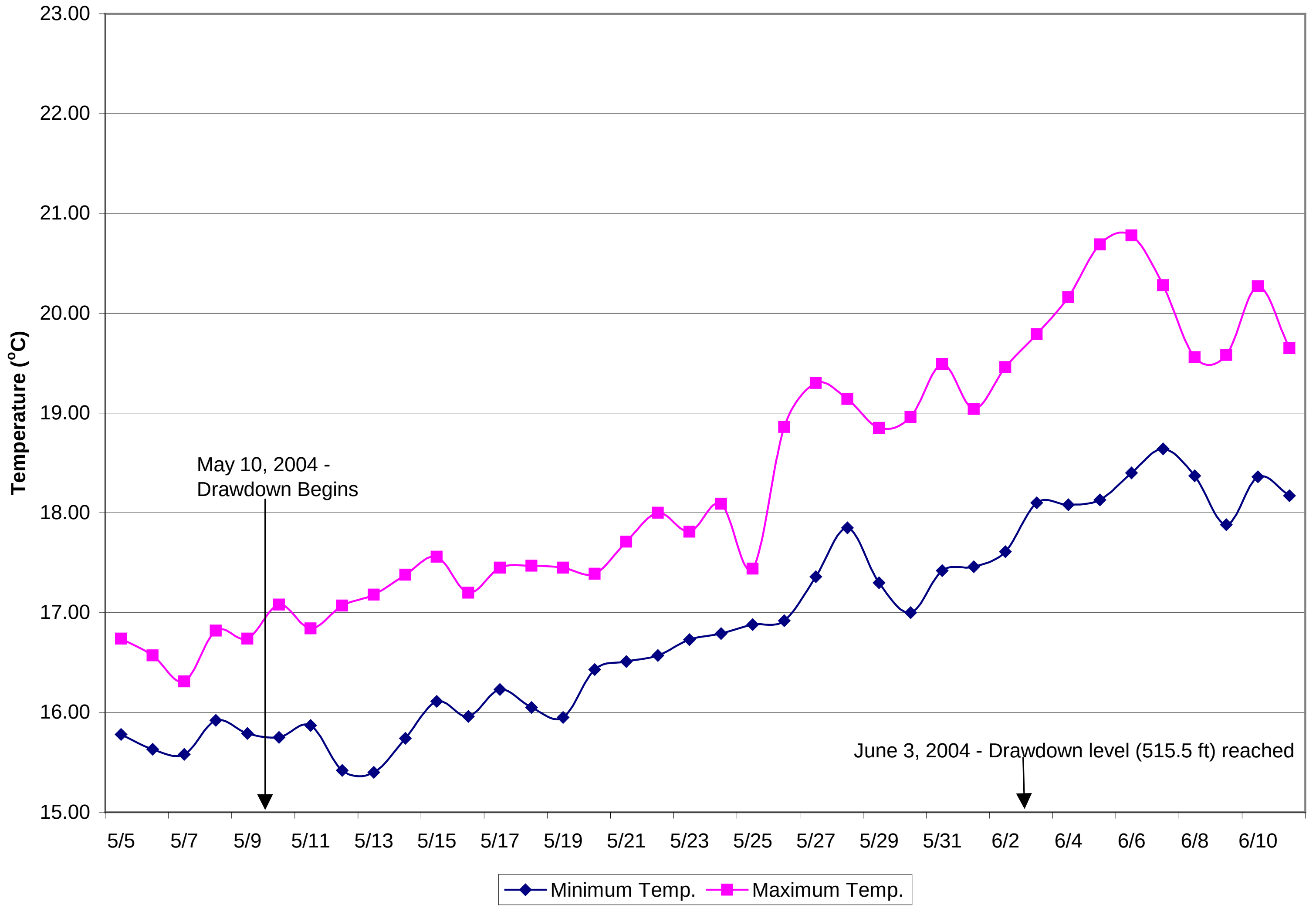
Source: Entrix 2006

Figure 4.3-12: 2003 Reservoir Temperature during Drawdown



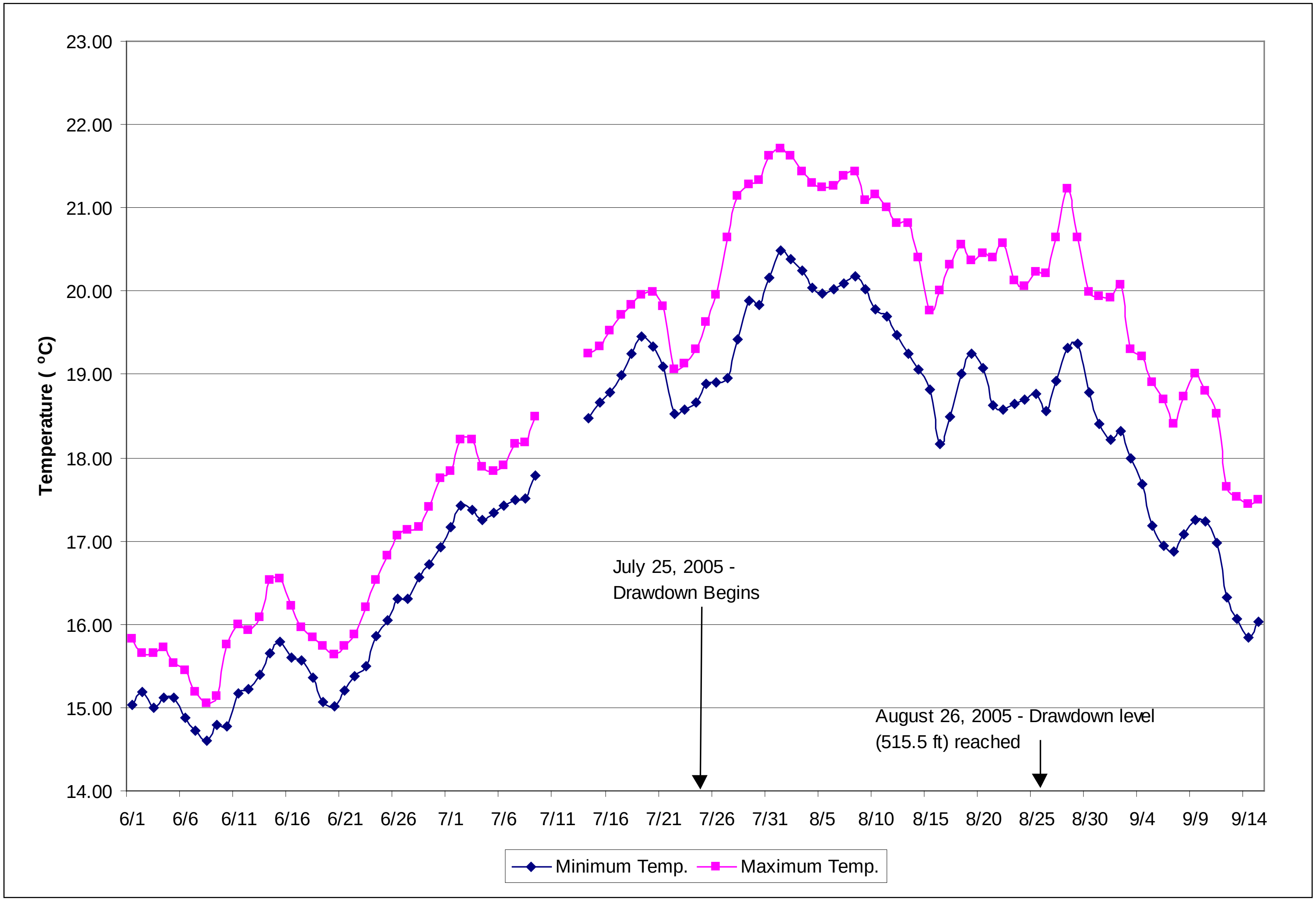
Source: Entrix 2003b

Figure 4.3-13: 2004 Reservoir Temperature during Drawdown



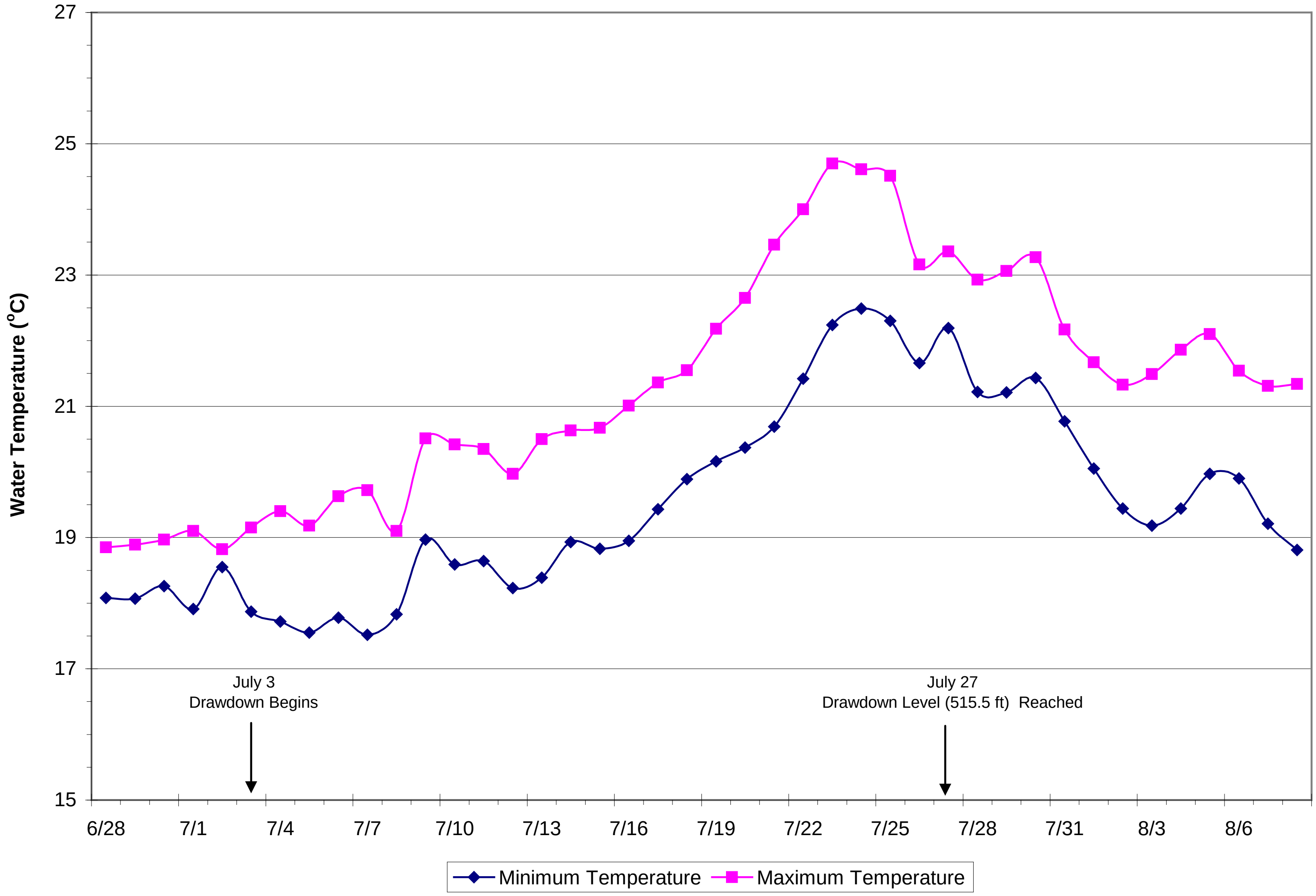
Source: ENTRIX 2004a

Figure 4.3-14: 2005 Reservoir Temperature during Drawdown



Source: Entrix 2005a

Figure 4.3-15: 2006 Reservoir Temperature during Drawdown



Source: Entrix 2006

- During the six days prior to the 2003 drawdown, water temperatures ranged from 16.3 ºC to 17.4 ºC. Water temperatures increased rapidly during the two days immediately following the first phase of the drawdown, coinciding with sharp increases in ambient air temperature, with a range of 18.5 ºC to 20.7 ºC (Figure 4.3-12). Water temperature continued to increase during and after the second phase of the drawdown, with values ranging from 19.2 ºC to 22.0 ºC.

During the five days prior to the 2004 drawdown, water temperatures ranged from 15.5 ºC to 16.8 ºC. Water temperatures gradually increased during and after the drawdown period, with values ranging from 15.5 ºC to 20.8 ºC (Figure 4.3-13). It is likely that differences between the 2003 and 2004 water temperatures are largely due to differences in ambient air temperatures.

During the week prior to the 2005 drawdown, water temperatures in the reservoir ranged from 18.5 ºC to 20 ºC. Figure 4.3-14 shows that reservoir temperatures appear to reflect a naturally increasing trend during summer. During the drawdown, water temperatures increased to a maximum of about 21.5 ºC, and then began to gradually decrease, with minimum temperatures reaching 16 ºC by mid September.

The temperature trend observed during the 2006 drawdown indicated a gradual increase in temperature followed by a gradual decrease for the last two weeks of the monitoring period. Prior to the drawdown, temperature ranged from 17.9 °C to 20.4°C. During the drawdown process (including prior to the drawdown commencing) temperatures gradually increased and then began to decrease, with minimum temperatures ranging from 17.5 °C to 22.5°C and maximum temperatures ranging from 19.1 °C to 26.6°C (Figure 4.3-15).

Since WY 1997, the MPWMD has recorded surface water temperature in San Clemente Reservoir during spring, summer, and fall (MPWMD 2004). A continuous recording temperature probe is deployed starting in April or May (depending on runoff conditions) and retrieved in about mid to late November in most years. Minimum, maximum and average water temperatures are graphed by water year for the recorded data set. A consistent seasonal pattern of increasing and decreasing water temperature occurs in the reservoir (Appendix Q). From spring (April to May) through summer (early August), surface water temperature steadily increases from about 13 ºC to 22 ºC. A relatively gradual decrease in surface water temperature to about 18 ºC in August and September is followed by a more rapid decrease to about 10 ºC by late November/early December.

Since WY 1998, the MPWMD has also recorded bottom water temperature in the San Clemente Reservoir during spring, summer and fall. A continuous recording temperature probe is deployed on the bottom on the same schedule as the surface probe. The same seasonal pattern of increasing and decreasing water temperatures observed at the reservoir surface also occurs at the bottom. However, there is generally less daily variation in temperature and maximum values are slightly lower. From spring (April to May) through summer (early August) bottom water temperature steadily increases from about 11 ºC to 20 ºC. A gradual decrease to about 17 ºC occurs in August, followed by a rapid decrease to about 10 ºC in late November.

HYDROGEN SULFIDE

The potential occurrence of hydrogen sulfide accumulation in the reservoir was a concern for the 2003 drawdown of the San Clemente Reservoir. Prior chemical analysis of porewater from the Carmel River and San Clemente Creek stream channels indicated the presence of sulfate. Sulfate is reduced to hydrogen sulfide under anaerobic conditions such as occur in the porewater. Under drawdown conditions, porewater from the streambeds is released into the reservoir as the water level is lowered.

During the 2003 drawdown, hydrogen sulfide tests were conducted at several stations within the reservoir to determine if hydrogen sulfide levels would pose a risk to fish survival in the reservoir. Hydrogen sulfide tests on water samples collected from the middle water column at stations about 50 to 200 feet from the two stream mouths did not detect any hydrogen sulfide (ENTRIX 2003b). Hydrogen sulfide was detected in about 21 percent of samples collected from stations located on each side of the Carmel River and San Clemente Creek and from the bottom of the water column near the sediment fronts. The hydrogen sulfide concentrations were barely detectable, ranging from <0.1 to 0.2 mg/L, well below the project threshold of 0.5 mg/L.

OTHER PARAMETERS

Specific conductance and pH were monitored and reported during the 2003 drawdown period (ENTRIX 2003b). Specific conductance values ranged from 0.231 to 0.301 mS/cm, with a fairly constant, but minor increase during the monitoring period. The pH levels ranged from 7.1 to 8.1 throughout the monitoring period, well within the aquatic life criterion of 5.8 to 9.0. An evaluation of the drawdown results indicated that the response of specific conductance and pH during the drawdown was negligible and consequently it was decided that they would not be reported during the 2004 drawdown. No further evaluation of specific conductance or pH is made in this report.

2002 WATER CHEMISTRY ANALYSIS

A surface water sample was collected by ENTRIX from San Clemente Reservoir in 2002 and analyzed by a certified laboratory for metals, alkalinity, hardness, total dissolved solids, and general ionic chemistry, Except for barium, all metals results were below laboratory detection limits. The barium concentration (41 ug/L) was well below all maximum criteria for the protection of aquatic and human health. All other measured parameters were well within normal concentrations. (Appendix Q).

Fish Ladder

Since WY 1997, the MPWMD has recorded water temperature in the San Clemente Fish Ladder (MPWMD 2004). A continuous recording temperature probe is deployed starting in early to mid-November and retrieved in early June in most years. Minimum, maximum and average water temperatures are graphed by water year for the recorded data set (Appendix Q). Average water temperature is about 12 ºC to 17 ºC in November, decreases to about 7 ºC to 13 ºC for the period of December through March and then steadily increases to about 20 ºC in June. Diurnal variation was 0 ºC to 3 ºC throughout the monitoring period.

Carmel River below San Clemente Reservoir

Water quality information is available for the Carmel River at three locations below San Clemente Reservoir. These locations are at the first riffle below the plunge pool, the Old Carmel River Dam (OCRD) Bridge, and the Sleepy Hollow Weir. The water quality information available from each location is summarized below. Water temperature measurements are summarized in Appendix Q.

FIRST RIFFLE BELOW THE PLUNGE POOL

Water quality measurements were taken in the first riffle below the plunge pool at the base of San Clemente Dam during the 2003 and 2004 drawdown events. Measured parameters included dissolved oxygen, turbidity, temperature, and hydrogen sulfide (2003 only).

Daily average dissolved oxygen concentrations recorded during 2003 and 2004 are based on measurements taken once in the morning and again in the late afternoon. Average dissolved oxygen values ranged from 8.5 mg/L to 9.4 mg/L in 2003 and from 8.5 mg/L to 9.6 mg/L in 2004. Average turbidity ranged from 1.3 to 26.2 NTU in 2003 and 0.5 to 12.3 NTU in 2004. Water temperature ranged from 16.0 ºC to 21.0 ºC in 2003 and from 15.7 ºC to 18.9 ºC in 2004.

Hydrogen sulfide measurements were taken daily during the 2003 drawdown. No hydrogen sulfide was detected in any of the test results.

THE OCRD BRIDGE

Dissolved oxygen, turbidity and temperature measurements were taken at the OCRD Bridge bi-weekly on average during the 2004 drawdown. Dissolved oxygen concentration ranged from 8.3 to 9.5 mg/L, turbidity ranged from 0.5 to 11.9 NTU, and temperature ranged from 16.1 5 ºC to 19.5 ºC (Appendix Q).

SLEEPY HOLLOW WEIR

Dissolved oxygen, turbidity and temperature measurements were taken near the Sleepy Hollow Weir (SHW) bi-weekly on average during the 2004 drawdown. Dissolved oxygen concentration ranged from 8.5 mg/L to 9.3 mg/L, turbidity ranged from 1.1 NTU to 8.6 NTU, and water temperature ranged from 15.7 ºC to 20.4 ºC.

Long-term water quality monitoring has also been conducted by the MPWMD at the SHW (MPWMD 2004, MPWMD 1998). Semi-monthly measurements of temperature, dissolved oxygen, pH, and specific conductance have been collected since WY 1992, and turbidity measurements have been collected since WY 2003. Results for water temperature and dissolved oxygen for the period from WY 1992 to WY 2003 at the SHW monitoring station are as follows:

- Minimum water temperature ranged from 7 ºC to 8 ºC and typically occurred in December and/or January. Maximum water temperature ranged from 21 ºC to 24 ºC and typically occurred in July and/or August.
- Minimum dissolved oxygen concentration ranged from 8 to 10 mg/L and typically occurred in June, July, August, and September. Maximum dissolved oxygen concentration ranged from 12 to 14 mg/L and typically occurred in January, February and March.

Turbidity measurements collected in WY 2003 at the SHW station ranged from 0 NTU (February) to 19 NTU (September) and averaged 4.1 NTU.

Since water year (WY) 1996, the MPWMD has recorded water temperature at the SHW monitoring station (MPWMD 2004, MPWMD 1998). A continuous recording temperature probe is typically deployed year-round. Minimum, maximum and average water temperatures are graphed by water year for the recorded data set. Minimum water temperatures of about 10 ºC typically occur in December and/or January. Maximum water temperatures of about 24 ºC typically occur in July and/or August.

2030 Baseline Conditions

It is expected that the reservoir would eventually fill with sediment (within 6 to 10 years) and uncontrolled sediment discharge would occur over the Dam spillway. This could result in elevated turbidity for short periods of time, primarily occurring during and shortly after storm runoff events. However, since turbidity already increases significantly during and after storm events, turbidity increases occurring during storm events after the reservoir has filled with sediment may not be measurably different than sediment discharge occurring during storm events under baseline conditions.

It is expected that interim drawdown would not be required after the reservoir fills with sediment (once reservoir capacity is less than 50-AF). Therefore, the water quality effects associated with drawdown would not occur. However, if shallow water levels exist in the reservoir, there may be associated temperature increases and dissolved oxygen decreases. Water discharged from the reservoir may increase in temperature relative to upstream conditions. The descent of water from the spillway or ports to the plunge pool would serve to aerate the water, thus increasing dissolved oxygen levels between the reservoir and downstream reaches.

4.3.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

The significance criteria for evaluating water quality impacts resulting from the Proponent's Proposed Project are based on the following considerations. In accordance with the CEQA, CEQA Mandatory Findings of Significance, and agency and professional standards, a project impact would be significant if the project:

- Substantially affects a rare or endangered species of animal or plant or the habitat of the species;
- Substantially diminishes habitat for fish, wildlife or plants;
- Contaminates a public water supply;
- Violates any water quality standards or waste discharge requirements;
- Substantially alters the existing drainage pattern in a manner which would result in substantial erosion or siltation;
- Creates a potential public health hazard or involves the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected;
- Creates or contributes runoff water which would provide substantial additional sources of polluted runoff; or
- Otherwise substantially degrades water quality.

4.3.3 IMPACTS AND MITIGATION

Impact Assessment Methodology

This assessment evaluates and identifies impacts over a range of temporal scales. Time frames for project impacts are based on Carmel River fisheries resources using the steelhead life-cycle. The three temporal impact categories are:

- Short-term impacts that occur within the construction period (concurrent with the number of construction seasons, which vary from one alternative to another);
- Long-term impacts that persist beyond the construction period.

Analysis of potential water quality impacts was based on a review of the proposed construction activities described for the Proponent's Proposed Project and each alternative, including staging, equipment, supplies, and techniques. Post-project operations were also reviewed to assess their potential for water quality impacts, where applicable. Those activities that would involve substantial levels of disturbance physically, temporally or geographically were also included in the water quality impact assessment.

Potential water quality impact mechanisms were identified based on the types of proposed construction activities. These include erosion and/or disturbance of soils, sediment and streambed materials; accidental spills or discharge of toxic substances;

rerouting of streamflows; and discharge from sources of degraded water. The detailed Stormwater Pollution Prevention Plan (SWPPP) and the Spill Prevention, Containment, and Countermeasure Plan (SPCC) are included in Appendices K and R. These plans may be further modified during permit consultation with the Central Coast Regional Water Quality Control Board (CCRWQCB) and other appropriate permitting agencies. These plans provide the detailed mitigation procedures outlined in this section. The associated potential impacts could include elevated water turbidity, elevated water temperature, decreased dissolved oxygen concentration, and/or adverse levels of toxic substances in the water. Increases in river and/or reservoir water turbidity and temperature, decreases in dissolved oxygen concentration, and elevated levels of toxic substances could have an adverse impact on aquatic habitat and organisms or violate water quality standards.

The discussion of impact assessments and proposed mitigation measures are organized by activities that have a common potential impact mechanism and types of impacts. Potential impact mechanisms related to construction activities include:

- The presence of workers, equipment, machinery, and supplies within and along the active channel of Carmel River, San Clemente Creek and Tularcitos Creek and along portions of the access roads;
- Dewatering and/or rerouting portions of the live channel and reservoir during construction;
- Release of drawdown water and bypassed water;
- Excavation and relocation of sediment in the reservoir; and
- Destruction or construction of concrete structures.

Potential impact mechanisms related to operational activities include sediment sluicing and/or dredging and discharges and access/repairs for the CAW surface water diversion.

The following impact issues have been defined for water quality:

- WQ-1: Road Construction and Improvement Activities (Sediment Discharge to Watercourses)
- WQ-2: Instream, Streambank and/or Stream Margin Construction Activities (Disturbance of Streambeds, Increased Turbidity)
- WQ-3: Accidental Leaks and Spills of Toxic Substances (Discharge of Toxic Substances)
- WQ-4: Stream Diversions Sheetpile Cutoff Walls and Cofferdams (Increased Suspended Sediment and Turbidity)

- WQ-5: Stream Diversions Ponded Areas (Increased Turbidity and Temperature, Decreased Dissolved Oxygen)
- WQ-6: Stream Diversions Return of Bypassed Flows (Localized Scour, Sedimentation and Turbidity)
- WQ-7: Rewatering after Stream Diversions (Fine Sediment and Toxics In Return Flow)
- WQ-8: Discharge From Settling Basins (Increased Temperature and Turbidity, Decreased Dissolved Oxygen)
- WQ-9: Reservoir Drawdown (Increased Turbidity, Decreased Dissolved Oxygen)
- WQ-10: Reservoir Sediment Excavation (Increased Turbidity)
- WQ-11: SCD Fish Ladder (Increased Turbidity, Release of Toxic Substances)
- WQ-12: OCRD Notching (Increased Turbidity, Release of Toxic Substances)
- WQ-13: Sluice Gates (Increased Turbidity)
- WQ-14: Dam-Related Construction or Demolition (Increased Turbidity, Release of Toxic Substances)
- WQ-15: Operations/Post-Project Conditions (Improved Post-Project Water Quality in Reservoir and Restored Streams)
- WQ-16: Sediment Disposal (Stormwater Sediment Discharge)
- WQ-17: Construction of Diversion Channel and Diversion Dike (Increased Turbidity)

Issues WQ-16 and WQ-17 do not apply to the Proponent's Proposed Project but are relevant to the effects of actions that would be undertaken under other alternatives. Impacts and Mitigation

Proponent's Proposed Project (Dam Thickening)

Issue WQ-1: Road Construction and Improvement Activities

Sediment discharge to watercourses, increased turbidity
Determination: **less than significant with mitigation, short-term**

IMPACT

Access road construction and improvement activities for the Proponent's Proposed Project include the Tularcitos Route, the OCRD Bridge, and the Plunge Pool access road. Road improvements immediately upslope of the river, or where vegetation may be removed to accommodate road widening or new road construction could cause temporary to long-term localized changes in drainage patterns. These in turn could initiate slope instability, accelerate erosion, and introduce excess sediments to the stream channel. Road construction and improvements along the steep hillslopes and banks adjacent to the river could affect water quality by increasing turbidity.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level with implementation of the standard erosion control methods, BMPs, and associated water quality monitoring measures developed and included in the Storm Water Pollution Prevention Plan (SWPPP) (Appendix K) to ensure adequate protection of surface water quality in the Project Area. The SWPPP includes the project activities that will require the submittal of and implementation of BMPs, the associated monitoring of the BMPs, and provisions to halt construction/deconstruction activities if the BMPs are not effective, corrective measures should there be any problems with the BMPs, and provisions to re-initiate the construction/deconstruction activities. Compliance with measures identified in the SWPPP will ensure compliance with regulatory policies to minimize the potential for water quality impacts from construction activities. Specific BMPs may include construction of sediment barriers, straw bales, silt fences, sandbags and waterbars to control sediment from entering any water course. See Section 3 of the SWPPP (Appendix K).

The SWPPP may be modified during consultation with the CCRWQCB and other permitting agencies to include additional provisions to prevent impacts due to erosion and sediment input to project streams from construction/deconstruction activities. CAW has incorporated some of these mitigation measures as part of the Proponent's Proposed Project (Specifications Section 01560 Environmental Protection and Special Controls, Sections 1.02 and 1.06, [Woodward Clyde, December 9, 1998]). The specifications will be amended to require the contractor to submit BMPs that meet the measures specified in the SWPPP (Appendix K).

Issue WQ-2: Instream, Streambank, and/or Stream Margin Construction Activities

Disturbance of streambeds, increased turbidity
Determination: **less than significant with mitigation, short-term**

IMPACT

The Proponent's Proposed Project would involve construction activities that require the use of machinery, equipment and workers in the streambed or vicinity of a stream and/or the removal of vegetation in the vicinity of a stream. These activities include installation of the Tularcitos Creek Bridge, improvement of the OCRD Bridge, modification of the OCRD, project staging in the plunge pool at the base of San Clemente Dam, dam foundation and face preparation, replacement of the San Clemente Dam fish ladder, and installation of sheetpile barriers in the Carmel River.

Instream and near-stream construction activities and/or vegetation removal may cause disturbance of streambed substrate, erosion of the streambank and soils of the stream margins, and/or the deposition of rock debris in and near the stream, resulting in increased stream turbidity at and downstream of the construction site.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level through implementation of measures identified in the SWPPP (Appendix K).

The SWPPP may be modified during consultation with the CCRWQCB and other permitting agencies to include additional provisions to prevent impacts due to erosion and sediment input to project streams from construction/deconstruction activities. CAW has incorporated some of these mitigation measures as part of the Proponent's Proposed Project (Specifications Section 01560 Environmental Protection and Special Controls, Sections 1.02 and 1.06, Woodward Clyde, December 9, 1998. The specifications will be amended to require the contractor to submit BMPs that meet the measures specified in the SWPPP and the BMPs will also include requirements of CDFG's 1601 and 1602 permits. The measures identified by the applicant will include, as a minimum, the following erosion control methods and procedures:

Erosion control measures such as small catch basins, filter fabrics, tarps, or straw bale barriers that prevent sediment from entering the Carmel River or Tularcitos Creek are installed, monitored for effectiveness, and maintained throughout the construction operations period. The detailed measures are described in Section 3, of the SWPPP (Appendix K),

Issue WQ-3: Accidental Leaks and Spills of Toxic Substances

Discharge of toxic substances
Determination: **less than significant with mitigation, short-term**

IMPACT

Accidental leaks and spills of chemicals or fluids (including petroleum-based products) from equipment and machinery, wet concrete, concrete leachate or particulates, or demolition debris in the construction area could release potentially toxic substances directly to surface water, or to soil areas within the margins of the active channel. This would potentially violate water quality standards or impact aquatic resources.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level through implementation of BMPs identified in the SWPPP (Appendix K) and the SPCC Plan (Appendix R).

The SWPPP may be modified during consultation with the CCRWQCB and other permitting agencies to comply with additional regulatory requirements. The SWPPP requires contractors to submit a Spill Prevention, Containment, and Countermeasure

(SPCC) Plan. The preliminary SPCC Plan (Appendix R) includes, at minimum, the following measures to protect water quality:

- Refueling of construction equipment and vehicles in the staging area would only occur within a designated, paved, and bermed area where possible spills can be contained. Fuel storage would be in double contained areas, capable of holding 125 percent of the volume of fuel being stored.

- Truck and cement equipment wash-down would not occur in the ordinary high water area of the channel.

- Equipment and vehicles operated within the ordinary high water would be checked and maintained daily to prevent leaks of fuels, lubricants, or other fluids to the stream.

- Litter and construction debris would be removed from below the ordinary high water line daily and disposed of at an appropriate site. All litter, debris, and unused materials, equipment or supplies would be removed from the construction staging areas above ordinary high water at the end of the construction season.

- At the end of each workday, all construction equipment will be moved to the staging area to protect against accidental spills.

- All vehicles carrying over 150 gallons of fuel will have a fuel spill prevention plan and all materials required to clean up a spill if it were to occur in transit. In some cases, a vehicle following the fuel truck would carry the clean-up equipment.

Issue WQ-4: Stream Diversions, Sheetpile Cutoff Walls, and Cofferdams

Increased suspended sediment and turbidity
Determination: **less than significant, no mitigation required**

IMPACT

To implement the Proponent's Proposed Project, stream diversions would be required the following areas: Tularcitos Creek, partial stream diversion at the OCRD (Old Carmel River Dam) Bridge for construction, the Carmel River at the plunge pool, and the Carmel River above the reservoir. Stream diversions would be constructed by installing either coffer dams or sheetpile barriers in the stream, directing water around the construction area and downstream through a pipeline, and discharging water into the stream below the work area.

Installation of a sheetpile cutoff wall or coffer dam in the stream would cause increased suspended sediment near and immediately downstream. This could result in a temporary turbidity increase that would likely extend less than one mile downstream and persist for less than one day.

MITIGATION

The duration and extent of turbidity caused by installation of sheetpiles or check dams would not cause significant water quality effects. No mitigation would be required. A water quality monitoring program will be finalized and implemented as part of the SWPPP (Appendix K) to ensure no adverse effects to water quality will occur due to the construction activities. The monitoring program will be reviewed and approved by the CCRWQCB and other appropriate permitting agencies.

Issue WQ-5: Stream Diversions Ponded Areas

Increased turbidity and temperature, decreased dissolved oxygen
Determination: **less than significant with mitigation, short-term**

IMPACT

Installation of sheetpile barriers or a check dam would create a ponded area with an increase of water temperature and turbidity. As water flows through the diversion pipeline, water temperature could undergo further increases, with associated decreases of dissolved oxygen concentration. Water discharged downstream of the construction area could have increased temperature and turbidity and decreased dissolved oxygen levels.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level with implementation of the following measures contained in the SWPPP. The SWPPP will be reviewed and finalized during consultation with the CCRWQCB and other appropriate permitting agencies.

- The bypass pipeline would be appropriately sized and designed to minimize heating and provide rapid transport of water around the construction site, to the release point downstream of the construction site. CAW would use white or reflective color for the pipeline to reduce solar heating.

Stream temperatures, dissolved oxygen and turbidity downstream of the Dam would be monitored during the construction period. CAW would establish criteria for maximum water temperatures, minimum dissolved oxygen, and maximum turbidity based on steelhead requirements and approved by CDFG and NMFS. Guidelines for these requirements have been established in the Biological Opinion provided by NMFS for the interim dam drawdown project (NMFS 2007). As part of the onsite biological monitoring, bypass water temperatures, dissolved oxygen, and turbidity would be monitored daily. If water temperatures exceed the criteria, the bypass flow would be mixed with cooler water from the upstream well point field to reduce temperatures in the Carmel River to an acceptable level.

Issue WQ-6: Stream Diversions Return of Bypassed Flows

Localized scour, sedimentation and turbidity
Determination: **less than significant with mitigation, short-term**

IMPACT

Bypassed stream flows would be discharged back into the stream below the active construction area and could cause localized scour, sedimentation and turbidity effects.

MITIGATION

The project includes the installation of energy dissipation structures in the areas where bypassed project waters would be discharged. This would mitigate potential scouring, sedimentation and turbidity effects to a less than significant level. No further mitigation measures are needed.

Issue WQ-7: Rewatering After Stream Diversions

Fine sediment and toxins in return flow
Determination: **less than significant with mitigation, short-term**

IMPACT

Following completion of construction activities, streamflow would be returned to the previously dewatered area. Water quality standards could be violated if fine sediments and/or toxic materials settled in the dewatered area during construction.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level through implementation of appropriate BMPs identified in the SWPPP (Appendix K). During permit consultation, the SWPPP may be further revised by the CCRWQCB and other appropriate agencies to comply with regulatory conditions.

Appropriate BMPs that could mitigate these impacts include use of a filter cloth or other fabric barrier placed on the ground surface of the active construction area to catch fine sediments, cement dust or other materials that are used or spilled during construction activities. All sand-size and finer construction fill and any angular crushed rock would be removed from the construction area and disposed of at an appropriate off-site location.

Issue WQ-8: Discharge from Settling Basins

Increased temperature and turbidity, decreased dissolved oxygen
Determination: **less than significant with mitigation, short-term**

IMPACT

Temporary settling basins would be constructed below the plunge pool, at the OCRD Bridge, and in the reservoir near the 494-foot elevation intake. Water that is ponded in settling basins would experience increased temperature, decreased dissolved oxygen concentration and increased turbidity. This water may be discharged or leak around the bottom or edges of the settling basin into downstream waters, resulting in degradation of water quality.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level through implementation of BMPs identified in the SWPPP (Appendix K). The SWPPP and BMPs may be further revised during permit consultation with the CCRWQCB and other appropriate regulatory agencies. The BMPs selected to mitigate these impacts will include the following:

- Water would be pumped from the temporary settling basins to a sedimentation tank/holding facility located above the ordinary high water zone that allows only clear water to be returned to the stream. Settled solids would be disposed of at an appropriate off-site location.

- Routine monitoring and reporting of the discharge water and the receiving water conditions would be conducted. If effluent water quality does not meet water quality criteria, discharge would be discontinued until acceptable conditions are met. If necessary, additional water filtration would be implemented.

Issue WQ-9: Reservoir Drawdown

Increased turbidity, decreased dissolved oxygen
Determination: **significant, unavoidable, short-term**

IMPACT

The lowering of water levels in the reservoir would cause increased turbidity and decreased dissolved oxygen levels. Although reservoir water temperatures naturally increase during the summer season, temperature stratification is unlikely and water temperature increases at depth in the reservoir could be greater than normal due to the shallow reservoir water level. Installation of a sheetpile barrier in the reservoir and removal of sediments near the intake gate would cause additional turbidity increases.

In addition to fine suspended solids, the release of stream channel porewater from the Carmel River and San Clemente Creek into the reservoir would cause iron oxidation to occur, further increasing turbidity and decreasing dissolved oxygen levels. During and following drawdown, movement of sediments previously deposited near the mouths of the Carmel River and San Clemente Creek could slump and shift into the reservoir. This sediment movement could cause further release of anaerobic porewater, resulting in lowered dissolved oxygen.

Because water quality degradation could not be mitigated to a less-than-significant level in the reservoir, this would be a short-term, significant and unavoidable impact.

MITIGATION

Water quality degradation resulting from drawdown of reservoir water level would not be mitigable to a less than significant level. The reservoir water level would be drawn down at a relatively slow rate (about 0.5 feet or less per day), similar to that currently being used for the annual drawdown (an interim dam safety measure). However, this measure would be employed to minimize impacts to the extent possible.

Issue WQ-10: Reservoir Sediment Excavation

Increased turbidity
Determination: **less than significant with mitigation, short-term**

IMPACT
Some sediment would be excavated from the area around the 494-foot elevation intake in the reservoir. A temporary settling basin would be constructed around the intake gate. Installation of the settling basin and sediment excavation could result in elevated turbidity within the reservoir and in waters being discharged downstream.

MITIGATION
The excavation and construction work in the reservoir to clear sediment from behind the 494-foot intake gate would cause temporary increases in turbidity. Potential water quality effects would be mitigated to less than significant by implementing the BMPs identified in the SWPPP (Appendix K). The SWPPP and BMPs may be modified during permit consultation with the CCRWQCB and other appropriate regulatory agencies.

Erosion control measures such as use of small catch basins, filter fabrics, tarps, or straw bale barriers that prevent sediment from entering the Carmel River would be installed, monitored for effectiveness, and maintained throughout the duration of construction operations. Detailed measures are described in the SWPPP (Appendix K).

Issue WQ-11: SCD Fish Ladder

Increased turbidity, release of toxic substances
Determination: **less than significant with mitigation, short-term**

IMPACT
Replacement of the San Clemente Dam fish ladder would involve the removal of hillslope vegetation, displacement of soil on the hillslope, destruction and removal of the current concrete fish ladder, and construction of the new fish ladder. The activities associated with removal and replacement of the San Clemente Dam fish ladder could cause hillslope erosion and delivery of fine sediments or concrete debris to the Carmel River, resulting in increased turbidity or release of toxic materials. These effects could potentially violate water quality standards or impact aquatic resources.

MITIGATION
Potential water quality effects associated with hillslope construction activities during replacement of the San Clemente Dam fish ladder would be mitigated to a less than significant level through implementation of BMPs identified in the project SWPPP and the SPCC Plan (Appendices K and R). These plans may be further modified during permit consultation with the CCRWQCB and other appropriate regulatory agencies. All applicable components of mitigation measures for Issues WQ-1 (Road Construction and

Improvement Activities), WQ-2 (Instream, Streambank and/or Stream Margin Construction Activities), WQ-3 (Accidental Leaks and Spills of Toxic Substances) and WQ-7 (Rewatering after Stream Diversions) described above would be implemented.

Issue WQ-12: OCRD Notching

Increased turbidity, release of toxic substances
Determination: **less than significant with mitigation, short-term**

IMPACT
Modification of the OCRD would involve notching one side of the concrete dam about 9-feet deep and 19-feet wide. Notching the OCRD would require cutting and removal of concrete within the streambed and stream margins. The release or deposition of concrete particles in surface waters could violate water quality standards or impact aquatic resources. This would be a potentially significant, mitigable effect.

MITIGATION
Potential water quality impacts would be mitigated to a less than significant level with implementation of appropriate BMPs and associated water quality monitoring identified as part of the project SWPPP (Appendix K). Mitigation measures for Issues WQ-2 (Instream, Streambank and/or Stream Margin Construction Activities), WQ-3 (Accidental Leaks and Spills of Toxic Substances) and WQ-7 (Rewatering After Stream Diversions) described above would be implemented.

Issue WQ-13: Sluice Gates

Increased turbidity
Determination: **significant, unavoidable, long-term**

IMPACT
Installation and operation of sluice gates in the Dam would cause suspended sediment increases in the reservoir and in the Carmel River downstream of the Dam, resulting in elevated turbidity levels. Operation of sluice gates would likely occur once or twice a year over the life of the Dam. During the sluicing operation, as much as 2.4 acre-feet of sediment could be discharged downstream of the Dam over a 2-hour time period. Since this would occur on the rising limb of the hydrograph when flows are expected to continue increasing, a large proportion of the sediment would be carried downstream as suspended sediment. This would cause increased turbidity levels that would likely extend more than one mile downstream. The duration of elevated turbidity would depend on the actual length of time that sluicing was conducted as well as the actual flows that occurred. It is estimated that elevated turbidity would last from 12 to 36 hours.

MITIGATION
Operation of the sluice gates would occur during periods of high runoff, a time when natural high turbidity flows typically go over the spillway of San Clemente Dam. To initiate operation of the sluice gate, flows would be at a minimum of 300 cfs, occurring during a flow regime when any increase in turbidity would result in the least impact

compared to baseline conditions. The detailed sluice plan is included in Sediment Management and Operations Plan (SOMP, Appendix J). While the turbidity increase is a small increase over the baseline occurring only for a short duration, it is not possible to conclude that water quality degradation resulting from sediment sluicing will be less than significant.. However, any potential impacts will be minimized to the extent possible by cooperating with the CCRWQCB, NMFS, CDFG and the USACE to establish appropriate turbidity standards and zones of dilution. In consultation with the regulatory agencies and Project Engineer, appropriate BMPs and water quality monitoring would be implemented to ensure adequate protection of aquatic resources during sluice gate operation. Measures to reduce construction-related turbidity impacts are identified in the SWPPP (Appendix K).

Issue WQ-14: Dam-Related Construction or Demolition

Increased turbidity, release of toxic substances and fine-grained sediment
Determination: **less than significant with mitigation, short-term**

IMPACT

Storage of stockpiled raw materials, transfer of materials to concrete mixer trucks, transport of concrete in mixer trucks, and equipment storage presents the risk of particulate materials or chemicals washing onto the ground surface or accidentally spilling. Preparation activities on the Dam surface and adjacent bedrock surfaces present the risk of releasing fine-grained particles in the Carmel River channel. The application of wet concrete during dam thickening presents the risk of wet or dry concrete being released into the Carmel River channel. These materials could drain into surface or groundwater sources, resulting in unsafe levels of toxic substances and/or elevated turbidity.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level with implementation of the following measures that are included as part of the project SWPPP and SPCC Plan (Appendices K and R). Appropriate BMPs such as containment features would be identified and utilized for storage of stockpiled raw materials. The SPCC Plan identifies preventative measures to avoid spills of raw materials or wet concrete and includes a spill response and clean-up plan in the case of accidental spills.

Potential water quality impacts related to dam surface preparation and concrete application would be mitigated to a less than significant level by placing a fabric barrier on the ground surface below and near the work area to catch sediment and cement particles. These materials would be disposed of at an appropriate off-site location. A water quality monitoring program will be implemented as specified in the SWPPP to ensure the effectiveness of the installed BMPs.

The SWPPP and SPCC Plan will be reviewed and finalized during consultation with the CCRWQCB and other appropriate permitting agencies

Issue WQ-15: Operations/Post-Project Conditions

Improved post-project water quality in reservoir and restored streams
Determination: **beneficial**

IMPACT
Under the Proponent's Proposed Project, upon project completion, annual drawdown of the reservoir will be discontinued. Consequently, water quality conditions that normally degrade due to the current annual drawdowns would be expected to return to normal summer conditions that existed without drawdown. This is a beneficial impact.

MITIGATION
No mitigation would be required.

Alternative 1 (Dam Notching)

Water Quality impacts and mitigation for Issue WQ-1 would be the same as described for the Proponent's Proposed Project, including the same road improvement activities, with the addition of road improvement activities for the Cachagua Route, but not for the Tularcitos Route. Water Quality impacts and mitigation for Issue WQ-2 (Instream, Streambank, and/or Stream Margin Construction Activities) would be the same as the Proponent's Proposed Project but the impacted area would be greater at 7.7 acres. Water Quality impacts and mitigation for Issues WQ-3 (Accidental Leaks and Spills of Toxic Substances), WQ-4 (Stream Diversion Sheetpile Cutoff Walls and Check dams), WQ-5 (Stream Diversions Ponded Areas), WQ-6 (Stream Diversions Return of Bypassed Flows), WQ-7 (Rewatering after Stream Diversions), WQ-8 (Discharge from Settling Basins), WQ-11 (SCD Fish Ladder), WQ-12 (OCRD Notching), and WQ-15 (Operations/Post-Project Conditions) would be the same as those described for the Proponent's Proposed Project except that Tularcitos Creek would not be affected. An additional construction stream diversion would occur on San Clemente Creek, which would require the same mitigation measures as described for other construction diversions. WQ-13 (Sluice Gates) would be the same as the Proponent's Proposed Project although the impact would be greater with more sediment moving downstream but the mitigation would be the same.

Issue WQ-17 (Construction of Diversion Channel and Diversion Dike) is specific to Alternative 3 (Carmel River Reroute and Dam Removal), and does not apply.

Issue WQ-9: Reservoir Drawdown

Increased turbidity, decreased dissolved oxygen
Determination: **significant, unavoidable, short-term**

Impacts and mitigation would be similar to that described for the Proponent's Proposed Project (significant and unavoidable impact). However, the extent of the impact would likely be greater due to the need to conduct a faster drawdown to reduce the reservoir level below previous drawdown levels. Drawdown impacts would occur over three construction seasons.

Issue WQ-10: Reservoir Sediment Excavation

Increased turbidity, decreased dissolved oxygen
Determination: **significant, unavoidable, short-term**

IMPACT

About 1.5 million cubic yards of sediment would be excavated using self-loading scrapers and transported to a central stockpile area within the reservoir area, where the material would be allowed to drain further. The stockpile area would be located at the mouth of the ravine where the sediment disposal site 4R is located. The reservoir level would be drawn down and a settling basin would be adjacent to the Dam. Fresh water inflow would be minimal due to the diversion of the Carmel River and San Clemente Creek around the reservoir. These activities would occur over a period of two summer seasons. Excavation of sediments above the reservoir could cause further turbidity increases and dissolved oxygen decreases within the reservoir through disturbance of sediments and subsurface flows. Very fine suspended sediments and iron oxides would be expected to remain in suspension in the reservoir, resulting in elevated turbidity and decreased dissolved oxygen levels during the two periods of excavation activity and for about two months following excavation.

MITIGATION

The effects of sediment excavation on turbidity and dissolved oxygen in the reservoir would be significant and unavoidable. No mitigation measures would reduce the impact to less than significant.

Issue WQ-14: Dam-related Construction or Demolition

Increased turbidity, release of toxic substances and fine-grained sediments
Determination: **less than significant with mitigation, short-term**

IMPACT

Dam notching would involve the removal of about 700 cubic yards of concrete from the Dam by saw-cutting the concrete and reducing the size of concrete blocks using light blasting or hydraulic hammers. The release or deposition of concrete particles in surface waters could violate water quality standards or impact aquatic resources.

MITIGATION

Mitigation for Issues WQ-2 (Instream, Streambank and/or Stream Margin Construction Activities), WQ-3 (Accidental Leaks and Spills of Toxic Substances) and WQ-7 (Rewatering after Stream Diversions) as described for the Proponent’s Proposed Project would be implemented.

Potential water quality impacts related to demolition activities would be mitigated to a less than significant level by implementing appropriate BMPs identified in the project SWPPP (Appendix K). Appropriate BMPs include placing blasting mats over the concrete blocks to prevent flying concrete debris. In addition, a fabric barrier would be placed on the ground surface in the active construction/demolition area to catch sediment and cement debris. A water quality monitoring program would be implemented as specified in the SWPPP, with oversight by the CCRWQCB, to ensure the effectiveness of the BMPs.

Issue WQ-16: Sediment Disposal

Stormwater sediment discharge at sediment disposal site
Determination: **less than significant with mitigation, long term**

IMPACT
Sediment disposal would cover about 16 acres at the sediment disposal site 4R. Although erosion protection measures have been incorporated into Alternative 1 (described in Section 4.1.3, Alternative 1, Issue GS-4), sediment could potentially be entrained in the sediment disposal area during large and/or prolonged stormwater runoff events and discharged to the Carmel River, where it could cause sedimentation and increase turbidity. This would be a long-term, potentially significant and mitigable impact.

MITIGATION
Potential water quality impacts would be mitigated to a less than significant level by implementing appropriate BMPs identified in the SWPPP (Appendix K). The BMPs will be adopted in consultation with the CCRWQCB and will be adopted by the contractor and submitted to the Project Engineer for approval. The BMPs will include the following:

- The sloping sediment surface and other disturbed areas will be stabilized by sediment barriers, straw mulch, and silt fences.
- Provide sediment collection features such as silt bales and sandbags.
- Provide sediment traps along the toe of the pile and other disturbed areas.
- Monitor erosion control methods for effectiveness and maintain these methods throughout the duration of construction operations.
- Place two-foot-layer of organic soil on the sediment slope at the end of construction and seed

The effectiveness of erosion protection measures at Site 4R (as described in Section 4.1.3) would be monitored annually, as described in the SWPPP, for a period of 10 years at the end of each rainy season with additional monitoring conducted periodically during the rainy season to identify any imminent erosion problems from stormwater runoff providing an opportunity for the erosion to be mitigated with the incorporation of additional appropriate BMPs. Any observed erosion problems would be repaired or improved prior to the following rainy season. These adaptive measures may include further reinforcement of the sediment pile with rock and/or additional revegetation with native plants and trees.

Alternative 2 (Dam Removal)

Water Quality impacts and mitigation for Issue WQ-1 (Road Construction and Improvement Activities) would be the same as described for the Proponent's Proposed Project plus road improvement activities for the Cachagua Route, but not for the Tularcitos Route. Water Quality impacts and mitigation measures for Issues WQ-3 (Accidental Leaks and Spills of Toxic Substances), WQ-4 (Stream Diversion Sheetpile Cutoff Walls and Check dams), WQ-5 (Stream Diversions Ponded Areas), WQ-6 (Stream Diversions Return of Bypassed Flows), WQ-7 (Rewatering after Stream Diversions), WQ-8 (Discharge from Settling Basins), and WQ-12 (OCRD Notching) would be the same as described for the Proponent's Proposed Project, except that Tularcitos Creek would not be affected. There would be an additional construction stream diversion on San Clemente Creek which would require the same mitigation measures as described for other construction diversions. The sediment management methods for reservoir excavation would be the same as in Alternative 1. Therefore the impacts and mitigation for WQ-10 (Reservoir Sediment Excavation) are the same in kind as described in Alternative 1, but greater in scope because 2.5 million cubic yards of sediment would be excavated.

The San Clemente Dam fish ladder would be removed and Issue WQ-11 (SCD Fish Ladder) also would not apply. Since the Dam would be removed, Issue WQ-13 (Sluice Gates) would not apply.

Issue WQ-17 (Construction of Diversion Channel and Diversion Dike) is specific to Alternative 3, and does not apply.

Issue WQ-2: Instream, Streambank, and/or Stream Margin Construction Activities

Disturbance of streambeds, increased turbidity
Determination: ***less*** **than significant with mitigation, short-term**

IMPACT

Impacts would be the same as described for the Proponent's Proposed Project, except that Tularcitos Creek would not be affected and San Clemente Dam would be completely removed under Alternative 2. The removal of San Clemente Dam would affect a larger area (approximately 8.9 acres) of instream, streambank and stream margin habitat.

MITIGATION

Mitigation measures would be the same as described for the Proponent's Proposed Project, except that the extent of required mitigation would be greater.

Issue WQ-9: Reservoir Drawdown

Increased turbidity, decreased dissolved oxygen
Determination: **significant, unavoidable, short-term**

Under Alternative 2, the reservoir would be completely dewatered during project implementation. Therefore the drawdown of the reservoir would occur once during this Alternative. The impacts would be similar to the Proponents Proposed Project.

MITIGATION

Mitigation measures would be the same as described for the Proponent's Proposed Project.

Issue WQ-14: Dam-Related Construction or Demolition

Increased turbidity, release of toxic substances and fine-grained sediment
Determination: **less than significant with mitigation, short-term**

IMPACT

Dam removal would involve the removal of about 7,000–8,000 cubic yards of concrete from the Dam by explosives or saw-cutting the concrete and reducing the size of concrete blocks using light blasting or hydraulic hammers. The release or deposition of concrete particles in surface waters could violate water quality standards or impact aquatic resources.

MITIGATION

Potential water quality impacts related to demolition activities would be mitigated to a less than significant level by implementing appropriate BMPs incorporated in the SWPPP (Appendix K). BMPs to mitigate these impacts include placing blasting mats over the Dam and concrete blocks to prevent flying concrete debris and placement of a fabric barrier on the ground surface in the active construction/demolition area to catch sediment and cement debris.

Issue WQ-15: Operations / Post-Project Conditions

Improved post-project water quality in reservoir and restored streams
Determination: **beneficial**

IMPACT

Under Alternative 2, water quality conditions would not be affected by the presence of the reservoir and would be expected to be similar to conditions that currently exist upstream of the reservoir. This is would be a beneficial impact.

MITIGATION

No mitigation would be required.

Issue WQ-16: Sediment Disposal

Stormwater sediment discharge
Determination: **less than significant with mitigation, long-term**

IMPACT

Impacts would be similar to those described for Alternative 1. Sediment disposal would cover about 23 acres at the sediment disposal site. Although erosion protection measures have been incorporated into Alternative 2 (described in Section 4.1.3, Alternative 1, Issue GS-4), sediment could be entrained in the sediment disposal area during large and/or prolonged stormwater runoff events and discharged to the Carmel River, where it could cause sedimentation and increase turbidity. This would be a long-term, potentially significant and mitigable impact.

MITIGATION

Mitigation would be the same as Alternative 1 WQ-16 (Sediment Disposal).

Alternative 3 (Carmel River Reroute and Dam Removal)

*Water Quality impacts and mitigation for Issue WQ-1 (Road Construction and Improvement Activities) would be the same as described for the Proponent's Proposed Project, plus road improvement activities for the Cachagua route****, including Tassajara Road, the Jeep Trail, and the Reservoir Access Road,*** *but excluding the Tularcitos route. Impacts and mitigation for Water Quality Issues WQ-3 (Accidental Leaks and Spills of Toxic Substances), WQ-4 (Stream Diversion Sheetpile Cutoff Walls and Check dams), WQ-5 (Stream Diversions Ponded Areas), WQ-6 (Stream Diversions Return of Bypassed Flows), WQ-7 (Rewatering after Stream Diversions), WQ-8 (Discharge from Settling Basins), and WQ-12 (OCRD Notching) also would be the same as described for the Proponent's Proposed Project, except that Tularcitos Creek would not be affected. There would be an additional construction diversion on San Clemente Creek which would require the same mitigation measures as described for other construction diversions.*

Water Quality Impacts and mitigation for ***~~Issues WQ-9 (Reservoir Drawdown) and~~ Issue*** *WQ-15 (Operations/Post-Project Conditions) would be the same as described for Alternative 2.*

The sediment management methods for reservoir excavation would be the same as in Alternative 1. Therefore the impacts and mitigation for WQ-10 (Reservoir Sediment Excavation) are the similar to those described in Alternative 1 but would be less because ~~less than~~ ***approximately 830,000*** *~~500,000~~ cubic yards of sediment would be excavated.*

The San Clemente Dam fish ladder would be removed and Issue WQ-11 (SCD Fish Ladder) also would not apply. Since the Dam would be removed, Issue WQ-13 (Sluice Gates) would not apply.

Issue WQ-2: Instream, Streambank, and/or Stream Margin Construction Activities

Disturbance of streambeds, increased turbidity
Determination: **less than significant with mitigation, short-term**

IMPACT

~~Impacts would be the same as described for the Proponent's Proposed Project, except that Tularcitos Creek would not be affected and San Clemente Dam would be completely removed under Alternative 3. The removal of San Clemente Dam would affect a larger area (approximately 8.6 acres) of instream, streambank and stream margin habitat.~~

MITIGATION

~~Mitigation measures would be the same as described for the Proponent's Proposed Project, except that the extent of mitigations applied would be greater.~~

IMPACT

Implementation of Alternative 3 would involve construction activities that require the use of machinery, equipment and workers in the streambed or vicinity of a stream and/or the removal of vegetation in the vicinity of a stream. These activities include improvement of the Jeep Trail, Reservoir Access Road, notching of the OCRD, installation of sheetpile barriers in the Carmel River, construction of the Diversion Dike and Bypass Channel, project staging in the plunge pool at the base of San Clemente Dam, and removal of the San Clemente Dam and associated fish ladder.

Under revisions to Alternative 3, heavy equipment and some material delivery will be via Tassajara Road and the southern portion of Cachagua Road to the Jeep Trail. Improvements to Bridge 529 across Cachagua Creek would be needed to support construction equipment. Work in this area would disturb the creek and its banks and margins through clearing of riparian vegetation, installation of cofferdams, partial dewatering, and the installation of up to three footings (buried approximately 2 feet below the streambed) to support 9, 3-foot diameter columns.

Instream and near-stream construction activities and vegetation removal could cause disturbance of streambed substrate, erosion of the streambank and soils of the stream margins, deposition of rock, or other construction debris, in and near the stream, increase stream turbidity at and downstream of the construction site, and cause habitat loss.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level through implementation of measures identified in the SWPPP (Appendix K). CAW has incorporated some of these mitigation measures as part of the *Specifications Section 01560 Environmental Protection and Special Controls, Sections 1.02 and 1.06* (Woodward Clyde, December 1998). The specifications will be amended to require the contractor to submit BMPs that meet the measures specified in the SWPPP and the BMPs will also include requirements of CDFG's 1601 and 1602 permits.

The measures will include, as a minimum, the following erosion control methods and procedures; installation of small catch basins, filter fabrics, tarps, or straw bale barriers to prevent sediment from entering Cachagua Creek. The erosion control measures will be monitored for effectiveness, and will be maintained throughout the construction period. The detailed measures are described in Section 3, of the SWPPP (Appendix K).

The SWPPP may be modified during consultation with the CCRWQCB, the CDFG, and other permitting agencies to include additional provisions to prevent impacts due to erosion and sediment input to project streams from construction activities.

Stream margins would be revegetated with native species as designated in the Botanical Resources Management Plan (Appendix U) when construction is completed.

Issue WQ-9: Reservoir Drawdown

Increased turbidity, decreased dissolved oxygen
***Determination:* significant, unavoidable, short-term**

IMPACT

The reservoir surface and ground water levels must be drawn down each construction season for Project construction at the dam site. During the first construction season, reservoir surface and water levels would be drawn down at about 0.5 feet or less per day, which is similar to the rate currently used for the annual drawdown. However, during the subsequent construction seasons, the contactor will need to draw down the surface and ground water in the reservoir more quickly so construction equipment can excavate the sediment behind the dam and transport it to the sediment disposal area. Drawdown will be accelerated to a rate great enough to ensure that the water level in the reservoir remains 2 feet or more below the excavated sediment surface to prevent equipment from sinking into the sediment. The estimated drawdown rate could exceed 4 feet per day, and would be achieved by pumping the reservoir water from well points installed in the sediment or from the reservoir water surface. The pumped water will be discharged into a settling pond constructed downstream of the dam before the water is pumped into the Carmel River (see WQ-8, above and section 3.3.4). Reservoir surface and ground water drawdown and pumping would be required each construction season until construction is complete. Each drawdown would last 2-3 weeks.

The EIR/EIS identified that the impacts of reservoir drawdown under Alternative 3 would be the same as impacts described under Alternative 2 and the Proponent's Proposed Project. However, due to the need to conduct a faster drawdown to reduce the reservoir water surface elevation to levels lower than those previously described, the resultant turbidity levels in the pool below the dam could temporarily exceed 400 NTUs, and dissolved oxygen levels would decrease.

Water Quality Objectives for turbidity cited in the Water Quality Control Plan for the Central Coastal Basin June 2011 are as follows:

Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits:

1. *Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent.*
2. *Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU.*
3. *Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.*

Allowable zones of dilution within which higher concentrations will be tolerated will be defined for each discharge in discharge permits.

Jackson Turbidity Units are roughly equivalent to a Nephelometric Turbidity Unit (NTU).

The highest turbidity levels would likely occur during the final stages of drawdown when surface and ground water depths behind the dam are minimal and bottom sediments are more vulnerable to disturbance. The potential water quality effects of on fisheries and aquatic habitats are discussed in section 4.4.

MITIGATION

Water quality degradation resulting from drawdown of reservoir water level would not be mitigable to a less than significant level. To minimize the impact, the ground and surface water pumped from behind the dam will be discharged into a settling pond constructed downstream of the dam before the water is pumped into the Carmel River (see WQ-8, above, and section 3.3.4). ~~*However, the impact would remain significant and unavoidable.*~~

While it is anticipated that implementation of Mitigation Measure WQ-9 would lessen the impact on water quality created by reservoir drawdown, turbidity thresholds may still be exceeded. In the event that it becomes necessary to discharge water that exceeds the turbidity threshold in order to ensure project safety, the resulting discharge of turbid water would be unavoidable. Therefore, the potential to degrade water quality during reservoir drawdown would be significant and unavoidable.

Issue WQ-14: Dam-Related Construction or Demolition

Increased turbidity, release of toxic substances
Determination: **less than significant with mitigation, short-term**

Water Quality Impacts and mitigation for Issue WQ-14 (Dam-Related Construction or Demolition) would be similar to that described for Alternative 2.

MITIGATION

Potential water quality impacts related to demolition activities would be mitigated to a less than significant level by implementing appropriate BMPs incorporated in the SWPPP (Appendix K). BMPs to mitigate these impacts include placing blasting mats over the Dam and concrete blocks to prevent flying concrete debris and placement of a fabric barrier on the ground surface in the active construction/demolition area to catch sediment and cement debris.

Issue WQ-16: Sediment Disposal

Stormwater sediment discharge
Determination: **less than significant with mitigation, long-term**

IMPACT

Impacts would be similar to those described for Alternative 1 except that sediment disposal would cover about 13 acres in the bypassed arm of the Carmel River. Although erosion protection measures have been incorporated into Alternative 3 (Section 3.5.4 and Section 4.1.3, Alternative 1, Issue GS-4), sediment could be entrained in the sediment disposal area during large and/or prolonged stormwater runoff events and discharged to the Carmel River, where it could cause sedimentation and increase turbidity. This would be a long-term, potentially significant and mitigable impact.

MITIGATION

Potential water quality impacts would be mitigated to a less than significant level by implementing the measure described below. Appropriate BMPs incorporated in the SWPPP (Appendix K) will be implemented by contractor with approval by the Project Engineer and the RWQCB and other appropriate regulatory agencies. The BMPs will include the following:

- The sloping sediment surface and other disturbed areas will be stabilized by sediment barriers, straw mulch, and silt fences.
- Provide sediment collection features such as silt bales and sandbags.
- Provide sediment traps along the toe of the pile and other disturbed areas.
- Monitor erosion control methods for effectiveness and maintain these methods throughout the duration of construction operations.
- Place two-foot-layer of organic soil on the sediment slope at the end of construction and seed.

The effectiveness of erosion protection measures in the bypassed arm of the Carmel River (described in Sections 3.5.4 and 4.1.3) would be monitored annually by CAW for a period of 10 years at the end of each rainy season. Any observed erosion problems would be repaired or improved prior to the following rainy season. These adaptive measures may include further reinforcement of the sediment pile with rock and/or additional revegetation with native plants and trees.

Issue WQ-17: Construction of Diversion Channel and Diversion Dike

Increased turbidity
Determination: **less than significant mitigation, short-term**

IMPACT
Diversion channel construction would involve blasting and removal of about 234,000 cubic yards of rock between the two reservoir arms, reducing the rock into 1-foot or smaller pieces using hoe rams, and relocating the rock to build a diversion dike. Channel excavation activities would include construction of bankfull and thalweg channels in the diversion channel. These activities could cause the discharge of rock debris and the mobilization of fine sediments into San Clemente Creek and the Carmel River, resulting in elevated turbidity levels. Impacts related to construction activities would be short-term, whereas impacts related to erosion of the diversion channel or diversion dike following the project would be long-term.

MITIGATION
Potential water quality impacts would be mitigated to a less than significant level through implementation of BMPs incorporated in the SWPPP (Appendix K). Mitigation applying to Issues WQ-2 (Instream, Streambank and/or Stream Margin Construction Activities), WQ-3 (Accidental Leaks and Spills of Toxic Substances) and WQ-7 (Rewatering after Stream Diversions) described for the Proponent's Proposed Project would be implemented. In addition, a blasting mat would be used to catch and direct flying rock debris to an area where it can be readily removed. This material would be disposed of at an appropriate on-site location in the Carmel arm of the reservoir.

Alternative 4 (No Project)

Impacts and mitigation for Water Quality Issues WQ-1 (Road Construction and Improvement Activities), WQ-2 (Instream, Streambank, and/or Stream Margin Construction Activities) and WQ-3 (Accidental Leaks and Spills of Toxic Substances), applied to improvement activities at the OCRD Bridge and ongoing reservoir and dam maintenance, WQ-4 (Stream Diversions Sheetpile Cutoff Walls and Check dams), WQ-5 (Stream Diversions Ponded Areas), WQ-6 (Stream Diversions Return of Bypassed Flows), WQ-7 (Rewatering After Stream Diversions), and WQ-8 (Discharge from Settling Basins), WQ-10: (Reservoir Sediment Excavation), WQ-11 (SCD Fish Ladder), WQ-12 (OCRD Notching), and WQ-13 (Sluice Gates) WQ-14 (Dam-Related Construction or Demolition), WQ-16 (Sediment Disposal), and WQ-17 (Construction of Diversion Channel and Diversion Dike) address activities that would not be undertaken under the No Project Alternative, and would not apply.

Issue WQ-9: Reservoir Drawdown

Increased turbidity, decreased dissolved oxygen
*Determination**: significant, unavoidable, long-term***

IMPACT
Annual reservoir drawdowns would continue under the No Project Alternative until sediment has reduced the reservoir capacity to less than 50 AF (6 to 10 years). The lowering of water level in the reservoir would cause increased turbidity and decreased DO levels. Although reservoir water temperatures naturally increase during the summer season, water temperature increases at depth in the reservoir could be greater than normal due to the shallow reservoir water level.

In addition to fine suspended solids, the release of stream channel porewater from the Carmel River and San Clemente Creek into the reservoir would cause iron oxidation to occur, further increasing turbidity and decreasing DO levels. During and following drawdown, movement of sediments previously deposited near the mouths of the Carmel River and San Clemente Creek could slump and shift into the reservoir. This sediment movement could cause further release of anaerobic porewater, resulting in lowered DO.

MITIGATION
Mitigation for impacts from Issue WQ-9 would not occur under the No Project Alternative.

Issue WQ-15: Operations / Post-Project Conditions

Increased turbidity, decreased dissolved oxygen
*Determination: **significant, unavoidable, long-term***

IMPACT
Existing operations would continue under the No Project Alternative. Potential impacts are the same as described for Issues WQ-9 (Reservoir Drawdown).

MITIGATION
Mitigation for impacts from Issue WQ-15 would not occur under the No Project Alternative.

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4.4 FISHERIES

This section describes existing conditions for aquatic habitat and fishery resources in the Carmel River and the Project Vicinity. It also provides an assessment of potential environmental impacts that would occur as a result of the implementation of the Proponent's Proposed Project or project alternatives. Fisheries and aquatic habitat information was taken from the 2000 RDEIR (Denise Duffy & Associates 2000), which is incorporated here by reference. Materials also reviewed included the Carmel River Dam and Reservoir Project Draft Supplemental EIR (MPWMD 1998), the Carmel Valley Watershed Conservancy assessments and the 2003, 2004 and 2005 to 2007 Biological Assessments for the San Clemente Dam Drawdown, the 2003, 2004 and 2005 Drawdown Reports, the Monterey Peninsula Water Supply Project EIR (MPWMD 1994) and information available on the web from MPWMD, the Carmel Valley Watershed Conservancy and the Carmel River Steelhead Association. Additional materials that were used in the completion of this section are referenced in the following text and included in the reference section. Expanded sediment transport modeling has been incorporated in the revised Sections 4.2 and 4.4 as a response to comments on the Draft EIR/EIS. In addition, some of the fisheries impacts were modified based on comments received on the Draft EIR/EIS.

Revisions to the Fisheries section were made to disclose impacts to fisheries associated with the additional access route, and impacts related to the increased reservoir drawdown rate.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.4.1 ENVIRONMENTAL SETTING

The Carmel River currently supports native populations of Pacific lamprey *(Lampetra tridentata),* river lamprey *(Lampetra ayresi),* Sacramento hitch *(Lavinia exilicauda),* Sacramento blackfish (*Orthodon microlepidotus*), steelhead *(Oncorhynchus mykiss),* threespine stickleback *(Gasterosteus aculeatus),* prickly sculpin *(Cottus asper) and* coast range sculpin *(Cottus aleuticus).* Starry flounder *(Platichthys stellatus),* shiner perch *(Cymatogaster aggregata)* and Pacific staghorn sculpin *(Lepotocottus armatus)* can be found in the Carmel River lagoon (MPWMD 1994). Introduced fishes found in the Carmel River include goldfish *(Carassius auratus)*, carp *(Cyprinus carpio),* black bullhead *(Ictalurus melas),* brown trout *(Salmo trutta),* mosquitofish *(Gambusia affinis),* green sunfish *(Lepomis cyanellus),* and bluegill *(L. macrochirus)* (MPWMD 1994). Hitch, blackfish, steelhead, brown trout, threespine stickleback, mosquitofish and green sunfish are known to occur in the Project Area (ENTRIX 2003, 2004c, and 2005a).

There are two non-native crayfish found in the Carmel River, the signal crayfish (*Pacifasticus leniusculus*) and red swamp crayfish (*Procambarus clarkii*). The signal crayfish is commonly found in all habitats in the Carmel River mainstem. The red swamp crayfish is found in the river infrequently.

Of the fish species present in the river, steelhead are considered the most important management species. Most fisheries work in the river has been undertaken to add to knowledge of steelhead, their habitats and their use of that habitat. The Carmel River historically supported what the CDFG described in a 1983 report as the State's largest self-sustaining steelhead run (and the second largest fishery for this species) south of San Francisco Bay (Snider 1983). Most of the habitat needs of other native fish species in the river would be met by maintaining steelhead habitat.

Steelhead Terminology

Steelhead is the anadromous form of coastal rainbow trout or *O. mykiss*, although steelhead may also exhibit a life history type that spends its entire lifecycle in freshwater. Anadromy is a life history pattern in which growth and maturity occur in saltwater, but spawning, incubation and a portion of the juvenile rearing occur in freshwater.

Steelhead spawn in locations in the streambed that have good intergravel flow through a gravel substrate to a small cobble substrate. These locations are often at the top of riffle or the very downstream end of a pool, also called a pool tail. The female steelhead will excavate a depression in the streambed by pumping her tail over the stream bottom. Eggs are released into the depression and fertilized by one or more males. This activity is repeated when the female moves upstream. The zygotes (fertilized eggs) are then covered in gravel as the female continues spawning. Spawning continues until the spawning fish have moved out of suitable spawning habitat or the female runs out of eggs. The area where steelhead have spawned is called a redd and may consist of a single or several nests of fertilized eggs covered with gravel.

Embryos incubate in the gravel for three to eight weeks (longer incubations are associated with lower temperatures). Alevins (also called sac fry or yolk-sac fry) are young steelhead that have recently hatched and remain in the gravel for another two to three weeks while they absorb their yolk sacks. When the yolk-sac has been absorbed, the fish emerge from the gravel and enter the water column as fry at a length of about an inch. These fish are called fry until they reach a size of about two and half inches. Larger steelhead are generally referred to as juveniles (two and a half inches to 8 inches or larger). Steelhead that are in their first year of life are called young-of-the-year (YOY) and are referenced as 0+ or YOY in this document. YOY includes fish that range from one-inch up to four to six inches in size by the end of their first year. Steelhead in their second year of life are called yearlings and are referenced as 1+ or yearlings in this document. These fish range in size from four to six inches early in the year to up to eight inches or larger in the fall. Growth rates vary depending on stream conditions, particularly temperature and food availability.

The Carmel River supports at least two year-classes of juvenile steelhead (0+ and 1+) in an ongoing cycle of spawning, growth and outmigration. As Age 1+ fish grow, become smolts and migrate to the ocean, a new crop of YOY steelhead populate the river from spawning that occurred during the previous winter and spring. Last year's YOY fish develop into yearlings.

When steelhead reach about eight inches long, most will become smolts. Smolting is a physiological change that prepares steelhead for life in the ocean. The physiological change is accompanied by changes in appearance and behavior. Smolts actively move downstream toward the ocean as their residency time in freshwater comes to an end.

Unlike salmon, adult steelhead do not always die after spawning. Spawned out steelhead, called kelts, can migrate back to ocean and return as repeat spawners in a subsequent year (Barnhart 1986).

Carmel River Habitat

In this section, fish habitat is discussed in the context of its suitability for steelhead trout and includes spawning, incubation, rearing and migration habitats which are described below.

Spawning and incubation habitat is typically gravel-cobble substrate at the downstream end of pools or upstream end of riffles. Good quality spawning habitat includes sufficient depth of flow and water velocity over suitable substrate.

Rearing habitat supports the growth and development of juvenile steelhead from fry to Age 2+ juvenile. Good quality juvenile rearing habitat is characterized by sufficient streamflow, water quality (cool, clear, oxygenated water), sufficient water depth, and cover. Cover can be provided by rocky substrates, closely overhanging branches from trees or other riparian vegetation, instream woody debris, surface turbulence, depth greater than 3 feet, or other cover elements. Good quality rearing habitat also has sufficient aquatic and terrestrial invertebrates, key food resources used by developing steelhead. Fry grow rapidly through the spring, and as they grow they move from shallow (< 2 inches) river edge habitats, where water velocities are low, into deeper water in riffles, runs, and pools. Age 1+ steelhead use deeper habitats; some of the juveniles move downstream and use the lagoon as rearing habitat.

Rearing habitat has been assessed, modeled and compared for reaches upstream, downstream and between the two dams on the Carmel River because the dams are sites where migration may be impaired. To place the locations of the dams in context for the reader, San Clemente Dam (SCD) is located at River Mile (RM) 19.1 and Los Padres Dam (LPD) is located at RM 25.3 (Table 4.4-1). There are about five river miles between LPD and the historic inundation zone of SCD. There are ten river miles of mainstem Carmel River habitat upstream of Los Padres Reservoir.

Migration habitat is the access corridor through the river — the route used by upstream migrating adults and downstream migrating kelts and smolts. Upstream migration can be impaired or blocked at the mouth of the river, at shallow riffles, road crossings, dams or waterfalls. Downstream passage can be impaired by passage down or over spillways. Minimum depth of flow for upstream adult salmonid passage through culverts is one foot (NMFS 2002) and in an open channel is eight-tenths of a foot of water over a contiguous twenty five percent of the channel width (Thompson 1976). The depth of flow criteria for passage for juvenile steelhead is six-tenths of foot of water.

Table 4.4-1: Comparison of Fishery and Geomorphic Reaches

Geomorphology reach no.	Length (mi)	Fisheries reach no.	Length (mi)	Reach description**	Upstream station (River Mile)	Downstream station (River Mile)
		1	1.3	Los Padres Dam to Cachagua Creek	25.3	24
		2	4	Cachagua Creek to San Clemente Dam	24	20
		3	0.9	San Clemente Dam	20	19.1
4.3	1.7	4	3	San Clemente Dam to Sleepy Hollow	19.1	17.4
4.7	1.3			Sleepy Hollow to Tularcitos Creek	17.4	16.1
5	1.3	5	1.3	Tularcitios Creek to Hitchcock Canyon	16.1	14.8
6.3	2.2	6a, b, c*	4.6	Hitchcock Canyon** to Las Garzas Creek	14.8	12.6
6.7	2.4			Las Garzas Creek to Randazzo Bridge	12.6	10.2
7.3	2.1	7	3.5	Randazzo Bridge to Robinson Canyon	10.2	8.1
7.7	1.4			Robinson Canyon to Schulte Road	8.1	6.7
8.3	1.9	8	5.6	Schulte Road to Valley Green Bridge	6.7	4.8
8.7	3.7			Valley Green Bridge to Highway 1	4.8	1.1
9	1.1	9	1.1	Highway 1 to mouth	1.1	0
Total length	**19.1**	**Total length**	**25.3**			

NOTES:

*Fisheries reach no. 6 consists of three subreaches:

6a 1.5 Robles del Rio** to DeDampiere

6b 1.5 DeDampiere to Borondo Road

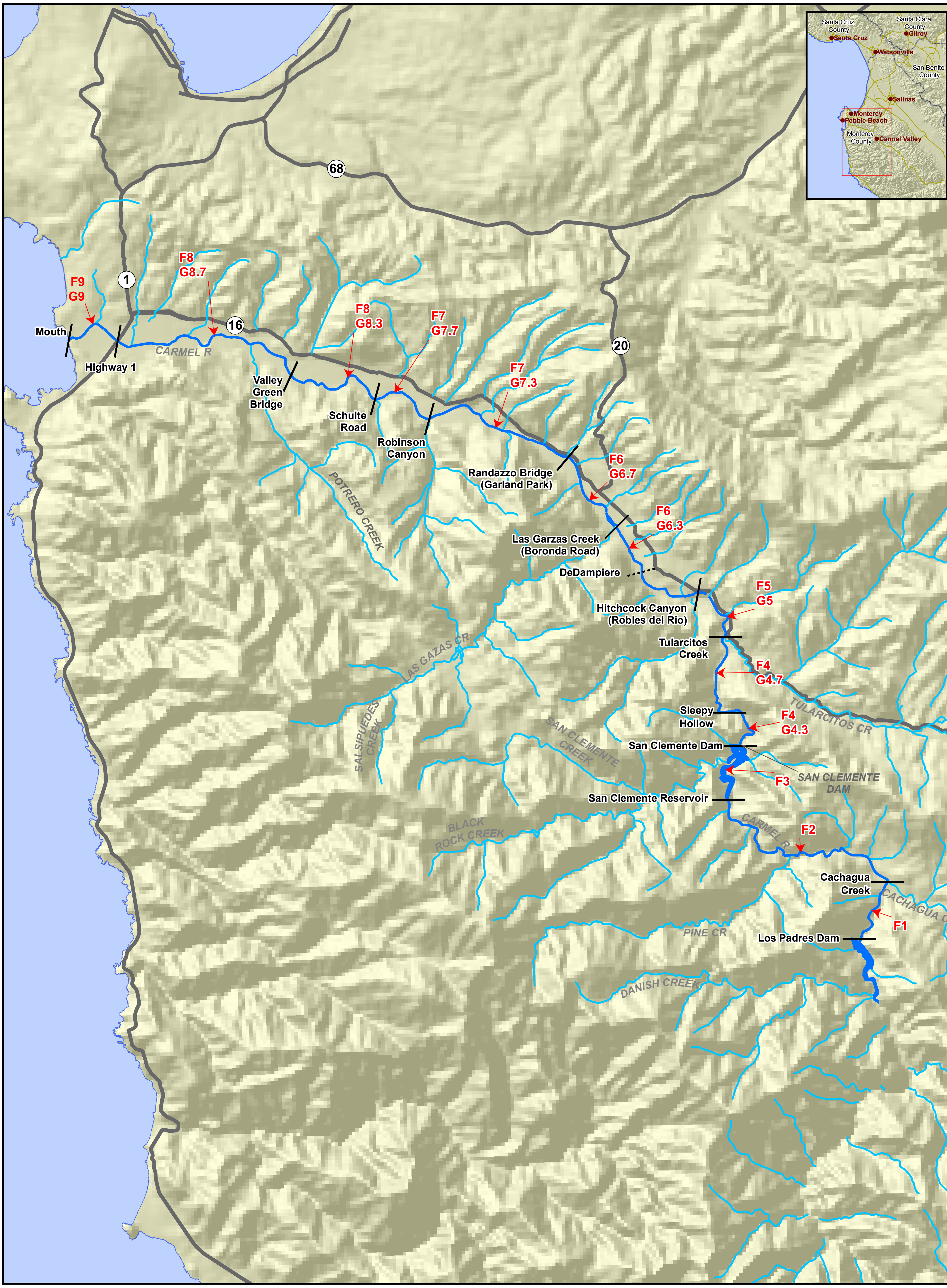
6c 1.6 Borondo Road to Garland Park

As is the case in most Central and South-Central Coast rivers, the Carmel River mouth is closed by a sandbar during the dry season (late spring through the first rains of the following winter). During dry years, all migration can be blocked at the mouth of river if the sand bar does not open, which happened in 1976 and 1977 and 1988 to 1990. When the sand bar is open and flows are less than about 45 to 60 cfs, upstream passage in the river can be impaired by shallow, wide riffles between the mouth and the Robles del Rio gage site. Several riffles have been identified in the Carmel Valley that in some years can become critical impediments to migration at low flows. These "critical riffles" change from one year to the next so they may not always present a passage problem, depending on the bed form and river flows.

Habitat Reaches

Fishery Habitat Reaches for the Carmel River are shown in Figure 4.4-1. Fishery Habitat Reaches are slightly different than geomorphic reaches. Fishery reaches extend to upstream of SCD, whereas Geomorphic Reaches are identified in the river downstream of SCD. Geomorphic reaches are divided into shorter sub-reaches in Reaches 4, 7, and 8 compared to the fish reaches. Reach 6 is divided into three subreaches for fish (6a, 6b, and 6c) and two for geomorphic assessment (6.3 and 6.7).

Both reach types are shown on Figure 4.4-1 in plan view, a comparison of the two reach types in profile is provided in Figure 4.4-2 and a crosswalk table is provided in Table 4.4-1. Reach lengths are provided in Table 4.4-1.



Legend

- Carmel River Reach*
- Stream
- Highway
- Reach Break

* F9, F8, etc. = Fisheries Reaches
G9, G8.7, etc. = Geomorphology Reaches

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 4.4-1

Carmel River Reach Designations

0 1 2 4
Miles
N

D:\GIS\Entrix\3018605\map\SC_ReachBreaks_17i11i_01.mxd 12/22/2005 2:30:37 PM Mukhtyar

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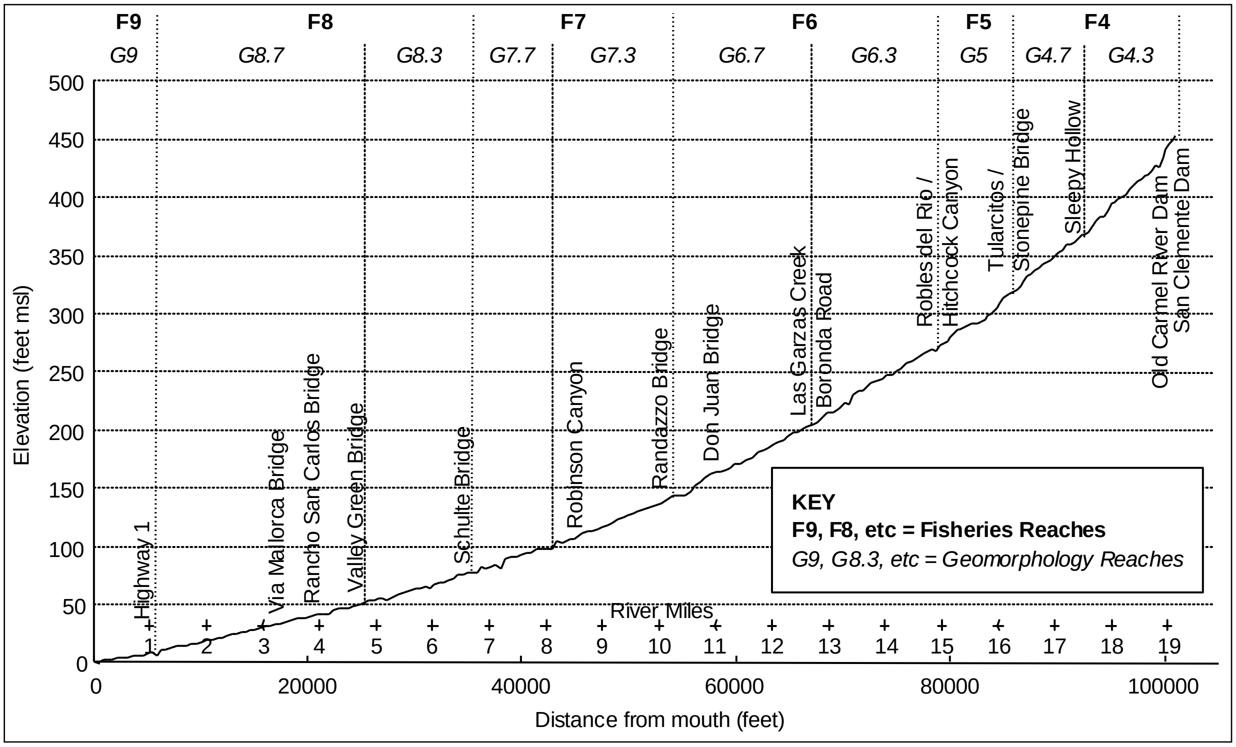
Figure 4.4-2: Stream Profile Showing Fishery and Geomorphic Reaches



The 10 fish habitat reaches identified in the Carmel River extend from upstream of LPD to the mouth of the river. The reaches are numbered from 0 to 9 from upstream to downstream and are discussed below.

Reach 0

Reach 0 encompasses the Carmel River above LPD. Steelhead access this reach via two ladders at LPD that lead to fish traps and a truck operation that takes steelhead from the traps and transports them over the top of the Dam where they are released into the reservoir. Downstream passage occurs through the spillway. Upstream of the reservoir there are approximately ten miles of mainstem habitat above the reservoir and a total of 14.4 miles of accessible habitat in the Carmel River and its tributaries.

Habitat upstream of the reservoir provides spawning, incubation and rearing habitat. All channels are located within the Ventana Wilderness area and flows are unregulated. Deep pools, separated by short, shallow glides typify the habitat, and include long, cobble/boulder riffles and runs. Habitat modeling studies (Dettman and Kelley 1986, Dettman 1990) of Rearing Habitat (RH) were done for three sections of the river; upstream of Los Padres Reservoir (Reach 0), between LPD and the back of San Clemente Reservoir (Reaches 1 and 2) and downstream of LPD (Reaches 4, 5, 6 and

7). This study did not include Reach 3 or any of the reaches downstream of Reach 7. Based on the RH assessment, approximately 39 percent of Age 0+ and 23 percent of Age 1+ rearing habitat for the Carmel River mainstem is located upstream of Los Padres Reservoir. The reservoir also provides some rearing habitat.

REACH 1
Reach 1 encompasses the 1.3 miles of the Carmel River from LPD to the Cachagua Creek confluence. The Carmel River in this reach is controlled by bedrock outcrops and large boulders. The reach provides a limited amount of gravel for spawning and incubation but does contain good rearing habitat. Minimum summer streamflow released from Los Padres Reservoir benefits rearing within this reach. Cachagua Creek contains about 8 miles of spawning and rearing habitat, but because of limited summer flows, only about 4 miles of seasonal rearing habitat is available during normal to wet years. Reach 1 has no barriers to migration downstream of LPD.

REACH 2
Reach 2 encompasses the four-mile stretch of river from the Cachagua Creek to the upper end of the historic extent of San Clemente Reservoir, which includes access to the Pine Creek tributary.

The Carmel River has good spawning, incubation and rearing habitat in this reach. Minimum summer streamflow released from Los Padres Reservoir benefits rearing within this reach. About 33 percent of Age 0+ and twenty percent of Age 1+ rearing habitat in the Carmel River occurs between SCD and LPD (Reaches 1 and 2). Reach 2 has no barriers to migration.

REACH 3
Reach 3 is the area that was originally inundated by San Clemente Reservoir. The reservoir now is filled with sediment through which the Carmel River has reestablished about 0.9 mile of channel. Good quality habitat has developed in the channel along its flood plain to within about 1,400 feet of the Dam. This part of the river supports steelhead spawning, incubation, rearing and migration. The lower 1,200 feet of channel is mostly a sand bed channel and supports some rearing habitat. The small reservoir that remains supports some rearing. Upstream migration occurs via a fish ladder at SCD. The fish ladder rises about 68 feet through a series of 28 pools and weirs. Downstream migration occurs over the spillway or via the ladder when the reservoir is spilling, but only via the ladder when the reservoir is not spilling. During the Annual Drawdown for Interim Seismic Safety Measures, downstream migration can occur through a fish bypass system into the ladder and upstream migration is not possible. The ladder is not operable at any time the reservoir is near or below the invert elevation of the fish ladder (524.5 feet). San Clemente Creek, flows into the reservoir and provides access to about 5 miles of tributary channels that provides spawning, incubation and rearing habitat.

Existing stream channels within the former inundation area of the reservoir will continue to evolve as sediments are deposited and reworked by fluvial processes and riparian vegetation becomes established and develops. Carmel River aquatic habitat conditions are good along the upper 3,200 feet of this reach and poor along the lower 1,200 feet. In 2005, open water habitat in the reservoir covered about 100 to 200 feet of the former Carmel River channel and about 850 feet of the former San Clemente Creek channel.

REACH 4

Reach 4 encompasses a three mile stretch of river from SCD to the confluence of Tularcitos Creek. The river has no tributaries in this reach and is confined in a rocky, steep-sided canyon. The river is bordered by a thin strip of riparian vegetation, primarily comprised of alders with an occasional large sycamore, willow, or cottonwood tree. From SCD downstream to Tularcitos Creek, the river is armored with cobble and boulder-sized materials. This reach supports rearing and migration but is nearly devoid of any spawning habitat because of sediment storage behind SCD. Two partial passage barriers occur in Reach 4 downstream of SCD. The OCRD is located about 0.34 mile downstream of SCD in Reach 4. Migration occurs past OCRD through a gate that has been permanently opened on the east side of the Dam. Flow from the gate can be obscured during moderate flows of about 800 to 900 cfs when spill over the entire crest of OCRD occurs. Migration may be delayed when fish attempt to jump the Dam instead of swim through the gate. Adult steelhead that successfully jump the Dam enter a very high velocity flow at the Dam crest and can be swept back downstream. At a few hundred cfs, another partial passage barrier can develop in the culverts and over the road crossing at the Sleepy Hollow Ford. During flows in this range velocities in the culverts can be too high to support upstream passage and flows over the roadway can to be too fast and shallow for easy upstream passage. The Sleepy Hollow Ford is located about 0.9 mile downstream of SCD. The Sleepy Hollow Steelhead Rearing Facility (SHSRF) is located just downstream of the Sleepy Hollow Ford within Reach 4. The SHSRF is used to rear juvenile steelhead rescued from the lower Carmel River and tributaries. Rescues are required when surface flow declines or ceases during the dry season and strands juvenile fish in isolated pools or stream sections. Rescues are required in most years.

REACH 5

Reach 5 encompasses the 1.4-mile section from the Tularcitos Creek confluence down to Robles del Rio and includes two tributaries; Tularcitos and Hitchcock creeks. Tularcitos Creek supports some spawning and rearing. Hitchcock Creek is a seasonal tributary and supports some spawning, incubation and early fry rearing in wet years. The river is still confined in a rocky canyon, but it is wider and less confined than Reach 4. The substrate is primarily cobble, gravel, and sand. Residential encroachment has affected bank conditions and associated habitat along this reach from about Camp Stephani downstream to Robles del Rio. This reach supports spawning, incubation, rearing and migration.

REACH 6

Reach 6 encompasses 4.4 miles of the Carmel River from Robles del Rio down to the Scarlett Narrows. Downstream of Robles del Rio the Carmel River is an alluvial river flowing between terraces and in an active floodplain. This reach has a wide channel bordered by riparian vegetation. Numerous houses exist along the banks of the river and on the terraces. This reach supports spawning, incubation, rearing and migration. During dry years, a short section at the downstream end of Subreach 6a can go dry. A potential barrier to fish passage exists within Subreach 6b upstream of Boronda Road where a critical riffle occurs. The tributary of Las Garzas Creek joins the Carmel River at RM 8.7 and supports about two to three miles of spawning and incubation habitat but provides only limited rearing habitat because of the seasonal nature of streamflow in this tributary.

About 28 percent of Age 0+ and 23 percent of Age 1+ rearing habitat in the Carmel River occurs downstream of SCD in reaches 4, 5, and 6 (Dettman and Kelley 1986, Dettman 1990). About 41 percent of the spawning habitat in the mainstem Carmel River occurs downstream of SCD (Dettman 1990).

REACH 7

Reach 7 encompasses the 3.4-mile stretch from the Narrows down to the Schulte Road Bridge. Robinson Creek is the main tributary in this reach. The Carmel River in this reach is an alluvial river with a bed comprised of cobble, gravel, and sand. The channel is bordered for the most part with healthy stands of riparian vegetation. This reach supports spawning, incubation, rearing and migration habitat. In years with limited rainfall, this reach can dry back as far upstream as the confluence with Robinson Canyon Creek. Only about a mile of Robinson Canyon Creek supports steelhead spawning, incubation and some rearing.

REACH 8

Reach 8 extends for 2.4 miles from the Schulte Road Bridge to Highway 1. Potrero Creek is the main tributary to this reach. The river valley in this reach is wide, the channel is incised in old terraces, and banks are often lined with rip-rap. Houses, golf courses, and agriculture border the channel. The streambed is comprised primarily of sand and provides very limited spawning and incubation habitat. Some rearing can occur in the upper portion of this reach throughout the summer months during wet years. During dry water years, this reach can completely dry up. The reach does support migration during the winter period. Potrero Creek has limited habitat for spawning, incubation and rearing habitat that is limited to a maximum of about 1.5 miles of channel upstream from the golf course.

REACH 9

Reach 9 is the 1.1-mile section of stream channel and lagoon downstream of State Highway 1 and extending to the mouth of the Carmel River. There are no tributaries in this reach. This reach is bordered on both sides by levees, contains a sand bed and does not support spawning or incubation. Recent work along the Carmel River for restoration of the lagoon and wetland has removed some of the levees along the south bank downstream of Highway 1. Rearing habitat is limited by available surface water in the flowing channel. Most rearing is confined to the lagoon except in very wet years when flows persist through the summer. Rearing within the lagoon occurs in all years, primarily for 1+ and older juveniles. In some years the lagoon can provide very important rearing habitat for the Carmel River watershed. The primary importance of this reach is the critical role of lagoon habitat for juveniles and smolts.

Adult access into the river is determined by the status of the river mouth during the migration season (January through May). Typically, the first storms of the year will open the sandbar at the mouth of the river by mid-December, and continuing storms or subsequent streamflow will keep the mouth open into May or June. The mouth closes when average daily flows fall below about 20 cfs.

Status of Carmel River Steelhead

Concern over the ongoing decline in steelhead numbers has led to protective measures directed at controlling the harvest of adults, providing suitable spawning grounds, and maintaining rearing habitat for juvenile steelhead. The CDFG has expressed concern for many years that the steelhead population in the Carmel River is threatened with becoming a remnant run due to the development of water resources, drought, and watershed, land use, and environmental problems (CDFG 1986, Snider 1983). CDFG's policy and goal for managing the steelhead resource is to "maintain it as a self-sustaining resource and to restore it as much as possible to its historic level of productivity" (McEwan and Jackson 1996).

NMFS 1996 status review of west coast steelhead populations (Busby et al. 1996) and NMFS final rule under the federal ESA (August, 1997) identified 15 population units of steelhead, called Evolutionarily Significant Units (ESUs)[1]. The Carmel River is within the South-Central California Coast (SCCC) ESU, which is designated as threatened. This DPS includes all naturally spawned fish (and their progeny) in streams below impassable barriers, from the Pajaro River (inclusive) in Santa Cruz County to (but not including) the Santa Maria River in southern San Luis Obispo County. The designated Critical Habitat for steelhead in the Carmel River (Federal Register September 2, 2005) includes all accessible reaches of the river including areas upstream of LPD where a trap and truck operation has occurred since 1949.

The Carmel River supports the largest run of about 27 anadromous streams within the SCCC DPS. Many of the streams in the SCCC DPS are short and occupy smaller watersheds compared to the Carmel River. The Carmel River is the only river within the DPS that has long-term data on adult returns and juvenile abundance. Run sizes in most of the other creeks in this DPS are undocumented but estimated to be in the low hundreds or less compared to counts at SCD that range from the low to high hundreds.

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[1] ESUs for west coast steelhead are currently referenced as Distinct Population Segments (DPS). DPS is utilized for the remainder of this EIR/EIS while discussing steelhead populations.

The fish counts at SCD do not include steelhead that spawn in the lower Carmel River or its tributaries. Consequently, the Carmel River supports an important population component of the SCCC DPS.

Steelhead Life Cycle in the Carmel River

Steelhead are anadromous fish; adults living in the ocean migrate to freshwater for spawning (Barnhart, 1986). Key elements of the steelhead life cycle are tied to the wet and dry seasons and are presented in Figure 4.4-3.

Figure 4.4-3: Occurrence of Steelhead Life Stages in the Carmel River

Life Stage	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Adult Upstream Migration												
Spawning/Incubation												
Adult Outmigration												
Alevin/Juvenile Rearing												
Smolt Outmigration												

Darker colors in a single row indicates high activity periods

Spawning and Incubation

In the Carmel River Basin, adults have been observed spawning from February through March, but they probably spawn from mid-January to late April (Dettman and Kelley 1986). The embryos incubate three to eight weeks (longer incubations are associated with lower temperatures) and hatch as alevins in late winter or spring (February through May). The newly hatched alevins reside in the gravel up to two weeks, then emerge as fry and disperse into low velocity areas along stream margins.

Rearing

Steelhead fry grow rapidly through the spring and early summer. Most juvenile steelhead in the Carmel River remain in freshwater for two years before migrating to sea as 8 to 10-inch sized fish. A few individuals may have a freshwater residency of three or four years, as indicated by observations of larger juvenile steelhead in the lower Carmel (Dettman and Kelley 1986) and in nearby Waddell Creek (Shapovalov and

Taft 1954). Some steelhead may never go to sea and will mature and spawn in freshwater.

Smolts

Juveniles generally become smolts after they reach about 8 inches in size usually near the end of their second year in freshwater. Smolts migrate downstream during peak periods coincident with large flow events in winter and spring and during the March to May smolt out-migration period. Some smolts may move downstream in all months of year but smolts that don't reach salt water will revert back to their freshwater form as juveniles (called residualized steelhead). These fish may smolt again at some future time when migration conditions to the lagoon or ocean improve. Once in the ocean, smolts will develop into mature adults and return to the river to reproduce one to three years after entering the ocean.

Kelts

Kelts can migrate back downstream and reenter the ocean from February through mid-April. Kelts can also hold over in the river or lagoon until the mouth reopens the following winter. An estimated 15 to 20 percent of adults sampled at the Los Padres fish trap or from anglers were adults that had spawned previously based on a scale analysis collected during the early to mid 1980's (unpublished data, D. Dettman, MPWMD pers. comm. as cited in RDEIR 2000 (Denise Duffy & Associates 2000). The percent of repeat spawners in the Carmel River is relatively consistent with nearby Waddell Creek which had an average of 17.2 percent repeat spawners (15 percent second-time spawners, 2.1 percent third-time and 0.1 percent fourth-time) over a ten-year period (Shapovalov and Taft 1954).

Steelhead Trends in the Carmel River

Trends in Adult Abundance

Adult steelhead have been counted in the SCD fish ladder from 1962 to 2005. Adult fish that spawn in the mainstem or tributaries downstream of SCD are not counted. From 1962 to about 1993 ladder counts were made by turning down the flow in the ladder and having an employee of CAW walk along the edge of the ladder and count the fish in the pools. This was done once in the morning and once in the evening and the two counts were added for the daily ladder count. A mechanical counter was used in 1974, 1975, and 1984. An electromechanical counter has been in use since 1994. No evaluation comparing the different counting methods was ever conducted. However, review of data collected by the electromechanical counter suggests that most steelhead move upstream through the ladder during daylight hours and the time it takes to move up the ladder is about 4 to 8 hours, suggesting that the summed twice daily visual counts may be good approximation of the electromechanical counts.

Visual counts could underestimate actual abundance when water is turbid during runoff events or during inclement weather when walking the ladder is particularly dangerous, or if counts were not made on weekends and holidays that were coincident with migration peaks. Visual counts should not be compared directly to total counts tallied by the electromechanical counter.

No counts were made in 1978 to 1983 and 1985 to 1987. Counts of anadromous steelhead for 1976, 1977, and 1988 to 1990 are assumed to be zero since the mouth of the river was not open to the ocean during these winters. During severe or extended droughts, winter flows are absent or inadequate to open the sandbar that closes the mouth between the river and the ocean. During these years, resident trout can move upstream through the ladder.

Adult steelhead runs (as indexed by visual ladder counts at SCD), have ranged from about 300 to 1,400 adults from 1962 to the mid-1970's. Since 1994, total counts at the SCD ladder have ranged from about 300 to 800 adults (Figure 4.4-4). Indices of the runs since the 1976 to 1977 drought have been 30 to 50 percent lower compared to indices made between 1962 and 1975. These reduced numbers are consistent with dramatic physical changes to habitat conditions in the Carmel River through Carmel Valley that occurred during the 1978 floods on the heels of the 1976 to 1977 drought (Kondolf and Curry 1984).

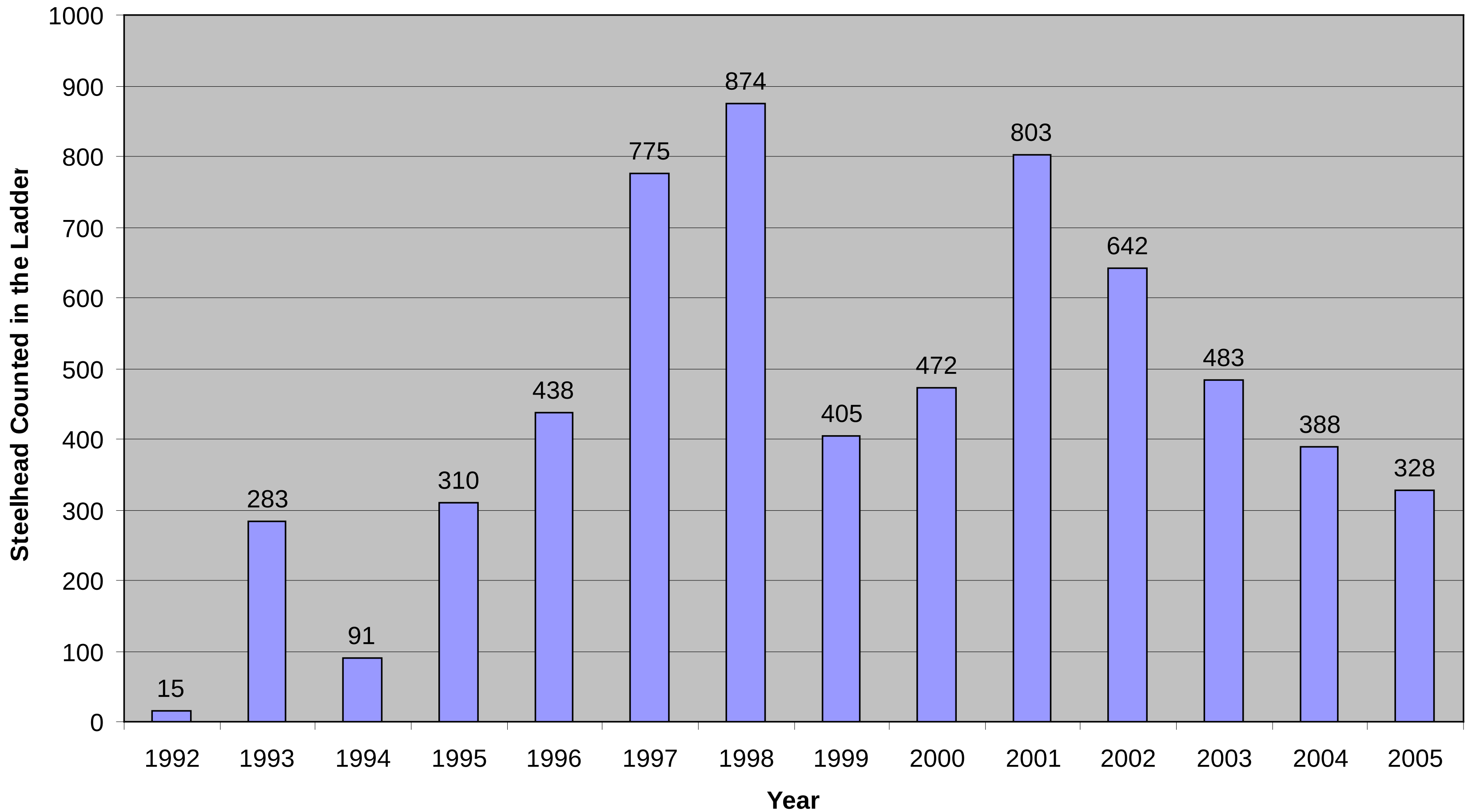
Since the end of the most recent drought in 1991, the run has varied from between 15 to 874 adults. Runs from 1992 to 1994 were recovering following river mouth closure from 1988 to 1990 and very low flow conditions and low juvenile abundance in 1992 and 1994 (Figure 4.4-5). The run increased through 1998, declined to 400 to 500 fish in 1999 and 2000, increased to over 800 fish in 2001 and then declined to about 384 fish in 2005 (Figure 4.4-4).

All adult counts have occurred at SCD located at RM 19.1. The number and proportion of adult steelhead that spawn in the lower river is unknown. A single study estimated that 55 percent of the total run migrated past SCD, but this estimate did not account for potential harvest (at the time) or nondetection of tagged fish between the lower river and the upper river recovery sites (Dettman and Kellog 1986). Data from the LPD trap and truck counts suggest year-to-year high variation in the proportion of the run that passed SCD. Counts at the LPD averaged about 30 percent of the counts at SCD with a range of 10 to 50 percent between 1992 and 2005.

Adult Run Timing

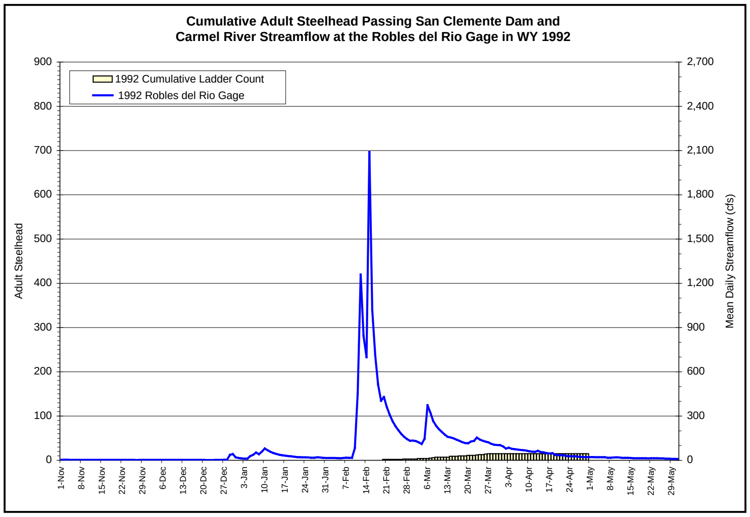
The timing and duration of the run depends on several factors, including the timing and intensity of storms, the type of water year, and the number of fish running in any given migration year. In low flow years with small runs, such as 1992 and 1994, adults entered the river from February through late March. More typically, the majority of adults enter the river from early January through mid-April. In years when storms are early, adults may begin their upstream migration in late November. The first storms of the season and the first opening of the mouth of the river control the initial upstream migration. The end of the migration period depends more on the size of the run, with larger runs extending into May or June.

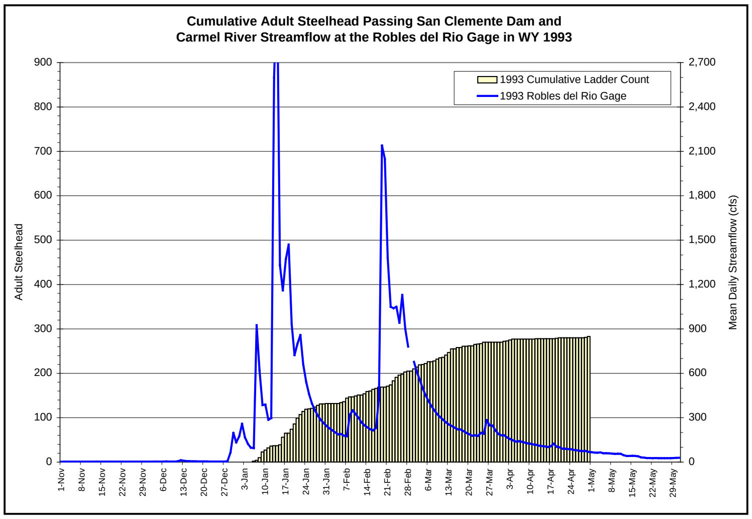
Figure 4.4-4: Total Adult Steelhead Counts at San Clemente Dam 1992-2005



Source: MPWMD 1998 upstated with from MPWMD wewbsite accessed 18, 2005)

Figure 4.4-5: Timing of Migrations and River Flows (1992 — 2005)





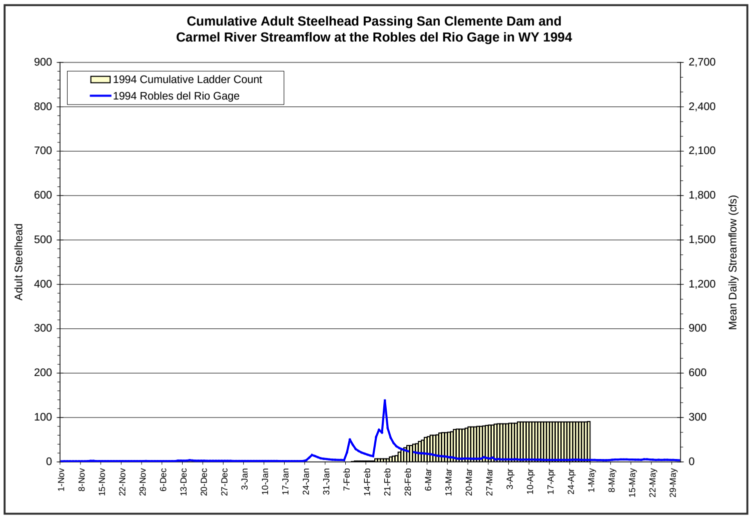
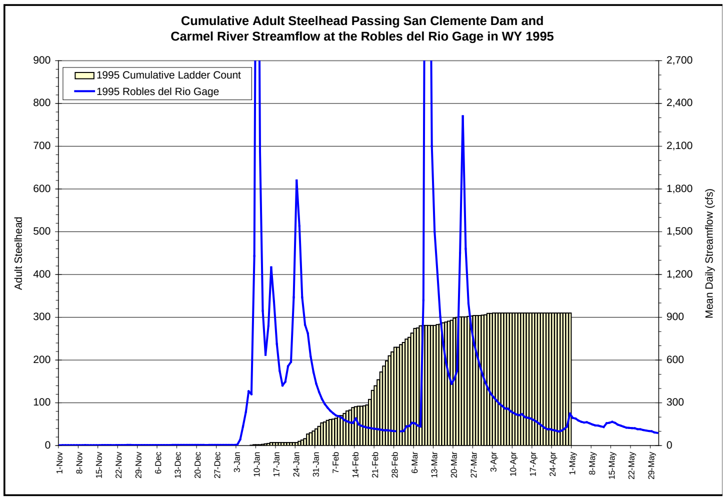
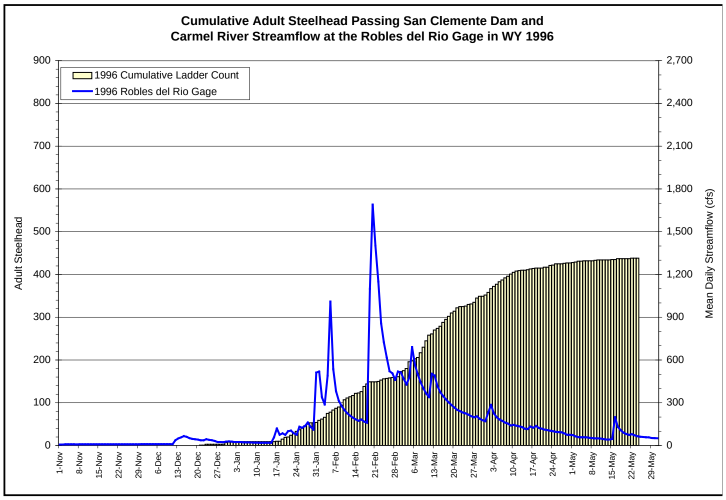


Figure 4.4-5: Timing of Migrations and River Flows (1992 — 2005) continued





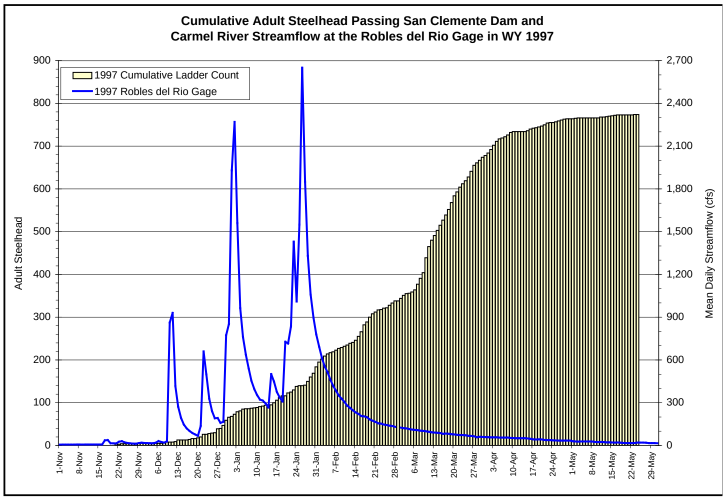


Figure 4.4-5: Timing of Migrations and River Flows (1992 — 2005) continued

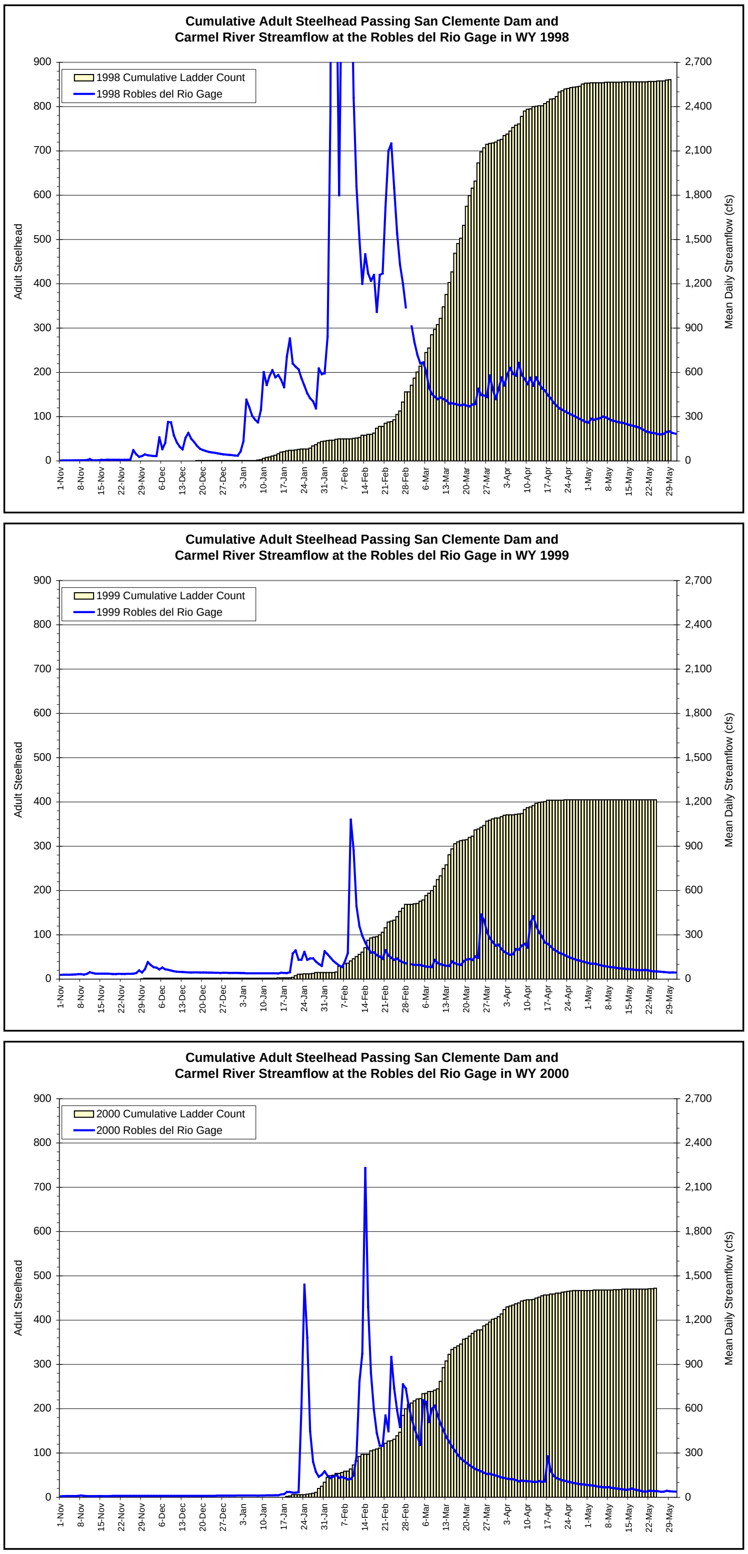
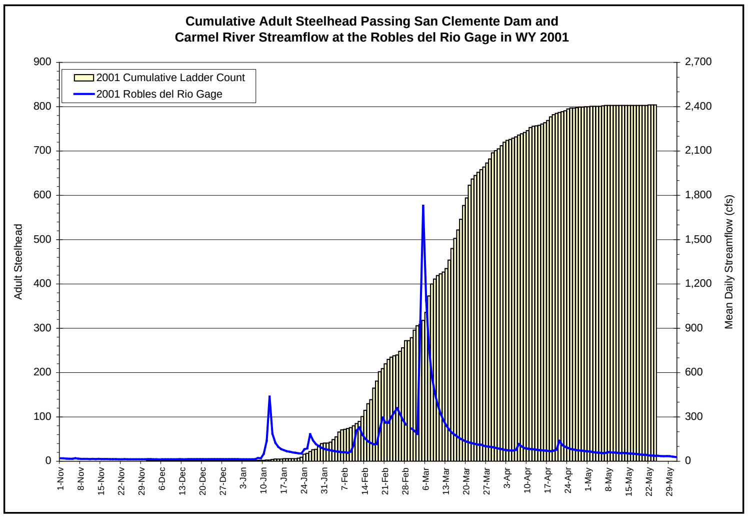
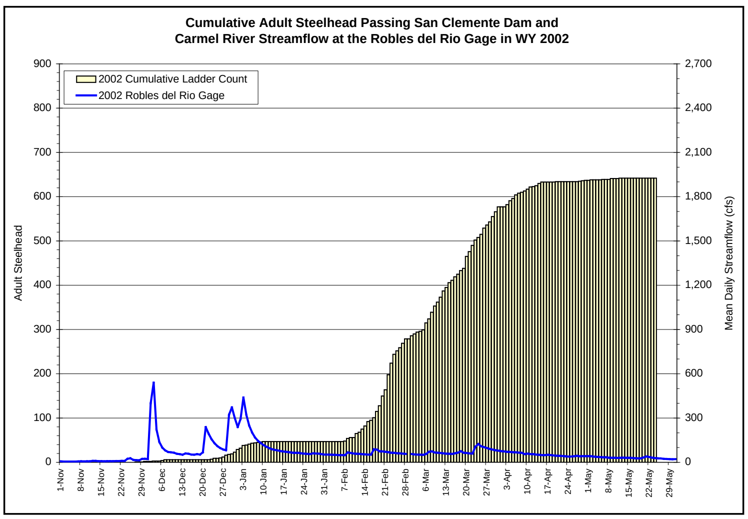


Figure 4.4-5: Timing of Migrations and River Flows (1992 — 2005) continued





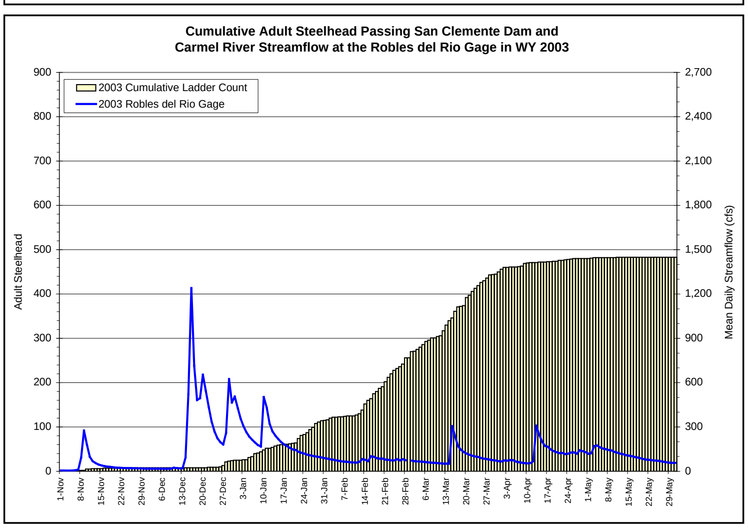
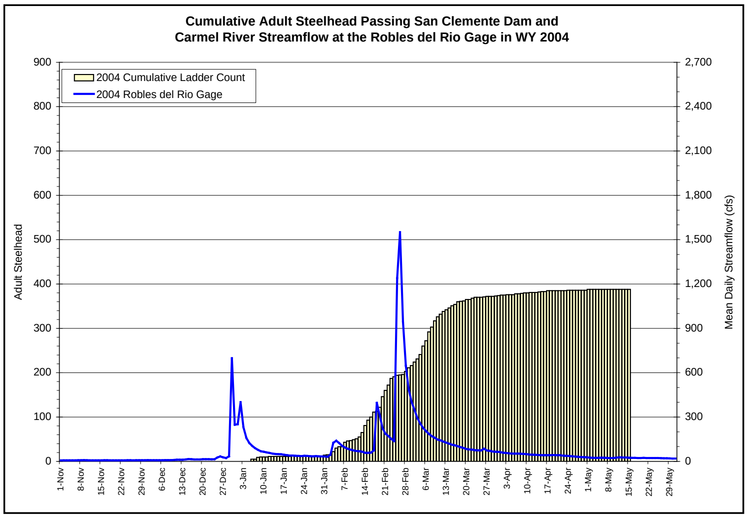


Figure 4.4-5: Timing of Migrations and River Flows (1992 — 2005) continued



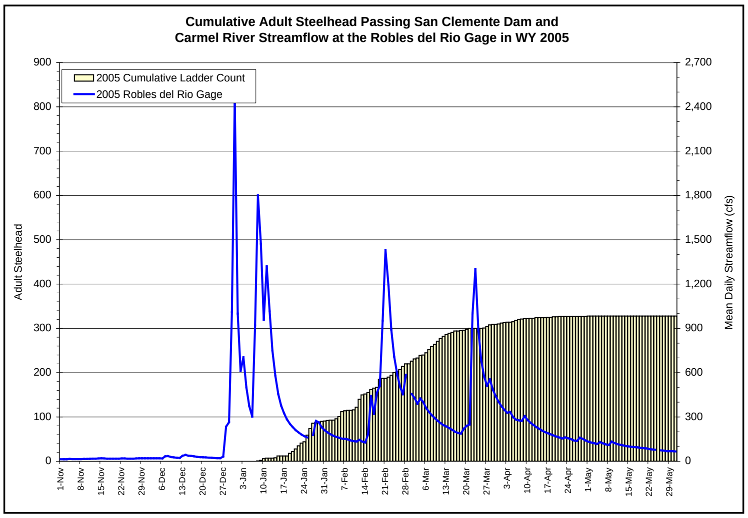


Table 4.4-2 shows biweekly fish counts and percent of the counted run at SCD for 1992 to 2005. Approximately 98 percent of the run as counted at the ladder had occurred between January 1 and April 30 for the 14 years of record. However, operation of the MPWMD fish counter was terminated on April 30 in all years before 1996 at the time flashboards were installed in SCD and the ladder was closed. This was standard operation prior to 1996. The counter has usually been closed down by May 30 most years and a few fish may move upstream after counter operation is suspended in some of the years. The migration appears to mostly over by the end of May and this is supported by a long-term study on a Central California Coastal DPS stream. Shapovalov and Taft (1954) trapped 96 percent of upstream moving adults between December 3 and May 5 for nine years in Waddell Creek, Santa Cruz County and in only one year were adult steelhead counted after May.

At SCD for the 1992 to 2005 counts, note that in most years a few fish probably ran before the counter was activated or after it was shut down and would not have been counted. Therefore the total count is biased slightly low for fish passing SCD. The "percent of the run" in Table 4.4-2 is relative to the number of fish counted at SCD and does not include the few fish that may have moved past the Dam before or after the counter was operating. The "percent of the run" also ignores any of the steelhead that spawn in about 12 miles of the lower river or its tributaries. The timing of the 1992 to 2005 migrations is graphically represented along with river flows in Figure 4.4-5. The same considerations that apply to Table 4.4-2 should be applied to the interpretation of Figure 4.4-5. This document defines the migration season in the Carmel River as January 1 through May 31 (January through May) acknowledging that an early onset of winter storms can advance the start of the migration in some years into late December, and that wet years with large runs can extend the migration season in some years into June.

Trends in Juvenile Abundance

Juvenile steelhead are found throughout the river system year-round including the mainstem river and tributaries that contain year-round surface water. Seasonal tributary streams can support spawning, incubation and early fry rearing into the spring or early summer, but young fish then must move to permanent water.

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Table 4.4-2: Summary of Adult Run Timing for Water Years 1992-2005 Based on Steelhead Counted at San Clemente Dam

	Lagoon Opened		Nov-1 to Nov-15	Nov-16 to Nov-30	Dec-1 to Dec-15	Dec-16 to Dec-31	Jan 1 to Jan 15	Jan-16 to Jan-31	Feb-1 to Feb-14	Feb-15 to Feb-28(29)	Mar-1 to Mar-15	Mar-16 to Mar-31	Apr-1 to Apr-15	Apr-16 to Apr-30	May-1 to May-15	May-16 to May-31	Jun-1 to Jun-15	Jun-15 to Jun-30	TOTAL
WY 1992	11-Feb	Fish	*Fish Counter Started 1/1*				0	0	0	3	6	6	0	0	*Ladder Closed 4/30*				15
		% Run					0.0%	0.0%	0.0%	20.0%	40.0%	40.0%	0.0%	0.0%					
WY 1993	3-Jan	Fish	*Fish Counter Started 1/1*				39	93	27	46	50	15	8	5	*Ladder Closed 4/30*				283
		% Run					13.8%	32.9%	9.5%	16.3%	17.7%	5.3%	2.8%	1.8%					
WY 1994	17-Feb	Fish	*Fish Counter Started 2/1*						2	35	36	13	4	1	*Ladder Closed 4/30*				91
		% Run							2.2%	38.5%	39.6%	14.3%	4.4%	1.1%					
WY 1995	9-Jan	Fish	*Fish Counter Started 1/3*				7	32	52	139	54	22	4	0	*Ladder Closed 4/30*				310
		% Run					2.3%	10.3%	16.8%	44.8%	17.4%	7.1%	1.3%	0.0%					
WY 1996	13-Dec	Fish	*Fish Counter Started 11/27*		0	8	1	45	68	39	118	73	59	16	8	3	*Counter Stopped 5/24*		438
		% Run			0.0%	1.8%	0.2%	10.3%	15.5%	8.9%	26.9%	16.7%	13.5%	3.7%	1.8%	0.7%			
WY 1997	6-Dec	Fish	*Started 11/14*	5	8	53	29	89	62	92	177	163	58	28	7	4	*Counter Stopped 5/24*		775
		% Run		0.6%	1.0%	6.8%	3.7%	11.5%	8.0%	11.9%	22.8%	21.0%	7.5%	3.6%	0.9%	0.5%			
WY 1998	3-Jan	Fish	*Fish Counter Started 12/2*		0	1	15	29	13	98	271	297	78	51	3	5	5	8	874
		% Run			0.0%	0.1%	1.7%	3.3%	1.5%	11.2%	31.0%	34.0%	8.9%	5.8%	0.3%	0.6%	0.6%	0.9%	
WY 1999	3-Nov	Fish	*Started 11/28*	2	0	0	1	12	56	98	125	70	36	5	0	0	*Counter Stopped 5/24*		405
		% Run		0.5%	0.0%	0.0%	0.2%	3.0%	13.8%	24.2%	30.9%	17.3%	8.9%	1.2%	0.0%	0.0%			
WY 2000	23-Jan	Fish	*Fish Counter Started 12/8*		0	0	0	34	63	113	124	74	47	12	3	2	*Counter Stopped 5/24*		472
		% Run			0.0%	0.0%	0.0%	7.2%	13.3%	23.9%	26.3%	15.7%	10.0%	2.5%	0.6%	0.4%			
WY 2001	11-Jan	Fish	*Started 11/28*	0	2	0	3	36	74	157	208	225	56	39	3	1	*Counter Stopped 5/24*		804
		% Run		0.0%	0.2%	0.0%	0.4%	4.5%	9.2%	19.5%	25.9%	28.0%	7.0%	4.9%	0.4%	0.1%			
WY 2002	3-Dec	Fish	*Started 11/1*	2	4	17	24	0	35	197	132	166	56	4	5	0	*Counter Stopped 5/24*		642
		% Run		0.3%	0.6%	2.6%	3.7%	0.0%	5.5%	30.7%	20.6%	25.9%	8.7%	0.6%	0.8%	0.0%			
WY 2003	15-Dec	Fish	6	2	0	17	34	56	37	104	90	104	22	8	3	0	*Counter Stopped 5/31*		483
		% Run	1.2%	0.4%	0.0%	3.5%	7.0%	11.6%	7.7%	21.5%	18.6%	21.5%	4.6%	1.7%	0.6%	0.0%			
WY 2004	30-Dec	Fish	*Fish Counter Started 1/1*				11	3	67	130	140	23	9	3	2	*Counter Stopped 5/5*			388
		% Run					2.8%	0.8%	17.3%	33.5%	36.1%	5.9%	2.3%	0.8%	0.5%				
WY 2005	30-Dec	Fish	*Fish Counter Started 1/1*				12	79	61	68	71	19	14	3	1	0	*Counter Stopped 5/31*		328
		% Run					3.7%	24.1%	18.6%	20.7%	21.6%	5.8%	4.3%	0.9%	0.3%	0.0%			
AVERAGE		Fish	0.4	0.8	1.0	6.9	12.6	36.3	44.1	94.2	114.4	90.7	32.2	12.5	2.5	1.1	0.4	0.6	450.6
		% Run	0.1%	0.1%	0.1%	1.1%	2.8%	8.5%	9.9%	23.3%	26.8%	18.5%	6.0%	2.0%	0.5%	0.2%	0.0%	0.1%	

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Juvenile population data were collected sporadically in the Carmel River system prior to 1990. In 1973 and 1974 juvenile abundance data primarily was collected upstream of SCD because limited surface flows in the lower river provided only about 10 percent of the available rearing habitat for the entire river. A few efforts to collect juvenile abundance data occurred during the 1980s. Since 1990, MPWMD has been collecting annual juvenile abundance data in the Carmel River, eventually establishing eight stations in the 15 miles between Robinson Canyon Road Bridge and LPD. In 2002, two sampling sites were added in Reach 3 upstream of SCD. Table 4.4-3 displays juvenile steelhead densities (in number of steelhead per foot of channel) for each reach. The table shows average densities (in number of fish per foot of channel and fish per mile) for each year from 1994 to 2004 in the right two columns and by reach in the lower two rows.

Estimates of juvenile steelhead abundance in the mainstem Carmel River downstream of LPD is estimated by multiplying the steelhead reach density by the length of the reach (in feet) and summing the reaches. Reach 9 goes dry in most years and does not support any rearing, except for the lagoon, which can support thousands of steelhead but is not included in the comparison because there are no long-term data. Reach 8 dries back in most years and abundance estimates are based on its minimum estimated flowing length for each year (refer to Figures 4.4-1 and 4.4-2 and Table 4.4-1 for Reach locations and descriptions). The same approach is used in years when dry back extends into Reach 7 (in years when Reach 8 goes completely dry it supports no fish and abundance for Reach 7 would be based on its minimum flowing length).

Juvenile abundance by reach and year for the mainstem Carmel River downstream of LPD is shown in Figure 4.4-6, these data show the relatively low abundance during the end of the drought from 1990 to 1992 then a relatively consistent level of abundance between 1993 and 1999 and in 2001, 2002 and, 2004 ranging from about 50,000 to 100,000 juveniles. Juvenile abundance increased in 2000 to over 170,000 juveniles and in 2003 to over 120,000 juveniles. No consistent sampling has occurred upstream of LPD.

Table 4.4-4 shows average densities of juvenile steelhead collected during late summer or fall from sites in the Carmel River for the years 1973 to1974, 1983, 1985 to 1987, and from 1990 to 2004. Data obtained before 1983 includes mainstem and tributary sites as well as sites in the Carmel River upstream of Los Padres Reservoir. Data since 1990 has been collected from the mainstem Carmel River from LPD downstream. These data sets show that average fish densities for years when sites were sampled upstream of LPD in 1973 and 1974 in the Carmel River and from only lower river sites in 1983 and 1985 to 1987 are comparable to the lower river sites for the years 1990 to 2004 compared to the much lower densities that occurred during the 1987 to 1992 drought.

Table 4.4-3: Carmel River Juvenile Steelhead Density 1990-2004 by River Reach[1]

Lineal Population Density at Survey Stations (numbers per foot of stream)[3, 4]															
	Lower River Sites	Scarlett Narrows	Garland Park	Boronda	DeDamp. Park	Stonepine Resort	Sleepy Hollow	SCR Delta Lower Station	SCR Delta Upper Station	Los Compadres	Cachagua	**Overall Annual Average**		**Average[2] 1994-on Comparison**	
YEAR	RM 5.8	RM 8.7	RM 10.8	RM 12.7	RM 13.7	RM 15.8	RM 17.5	RM 19.0	RM 19.6	RM 20.7	RM 24.7	**(nos./ft)**	**(nos./mi)**	**(nos./ft)**	**(nos./mi)**
1990	0	0	0	0	0	0.50	0.27			0.26	0.22	**0.14**	**733**	--	--
1991	0	0	ND	0.12	0	0.74	0.39			0.09	0.62	**0.25**	**1,294**	--	--
1992	ND	ND	0.67	0.36	ND	0.96	0.30			0.40	0.83	**0.59**	**3,098**	--	--
1993	ND	0.62	0.91	0.92	0.82	0.84	0.52			1.22	1.84	**0.96**	**5,075**	**0.96**	**5,075**
1994	ND	0.44	0.23	0.43	0	0.50	0.29			1.51	0.71	**0.51**	**2,713**	**0.51**	**2,713**
1995	0.49	0.65	1.01	1.61	ND	1.42	0.69			0.50	1.63	**1.00**	**5,281**	**1.07**	**5,666**
1996	0.24	1.52	0.82	1.05	2.03	1.22	0.29			0.95	1.92	**1.12**	**5,890**	**1.23**	**6,468**
1997	0.02	0.22	1.02	1.74	1.15	0.5	0.22			1.15	1.41	**0.83**	**4,359**	**0.93**	**4,891**
1998	0.19	0.30	0.67	0.34	1.50	0.27	0.60			0.54	2.24	**0.74**	**3,901**	**0.81**	**4,264**
1999	0.17	0.26	0.50	0.32	0.62	1.67	0.45			0.46	1.35	**0.64**	**3,403**	**0.70**	**3,716**
2000	0.91	1.03	0.64	1.38	5.66	1.71	1.46			1.41	2.3	**1.83**	**9,680**	**1.95**	**10,289**
2001	ND	0.48	0.35	0.63	0.68	1.08	0.32			0.47	1.62	**0.70**	**3,716**	**0.70**	**3,716**
2002	ND	0.68	0.85	1.67	0.83	1.07	0.5	0.33	0.68	1.52	2.73	**1.09**	**5,734**	**1.09**	**5,734**
2003	1.53	0.82	2.16	1.86	1.45	1.55	1.23	0.58	1.09	1.69	2.16	**1.47**	**7,738**	**1.46**	**7,704**
2004	0.25	0.46	0.78	1.21	0.43	1.24	0.55	0.58	0.41	0.45	0.89	**0.66**	**3,480**	**0.70**	**3,696**
Station Ave (no./ft)	**0.38**	**0.53**	**0.76**	**0.91**	**1.17**	**1.02**	**0.54**	**0.50**	**0.73**	**0.84**	**1.50**	**0.83**	**4,406**	**1.01**	**5,328**
Station Ave (no./mile)	**2,006**	**2,822**	**4,001**	**4,801**	**6,161**	**5,375**	**2,844**	**2,622**	**3,837**	**4,442**	**7,909**				
Overall Station Averages:												**0.81**	**4,257**		

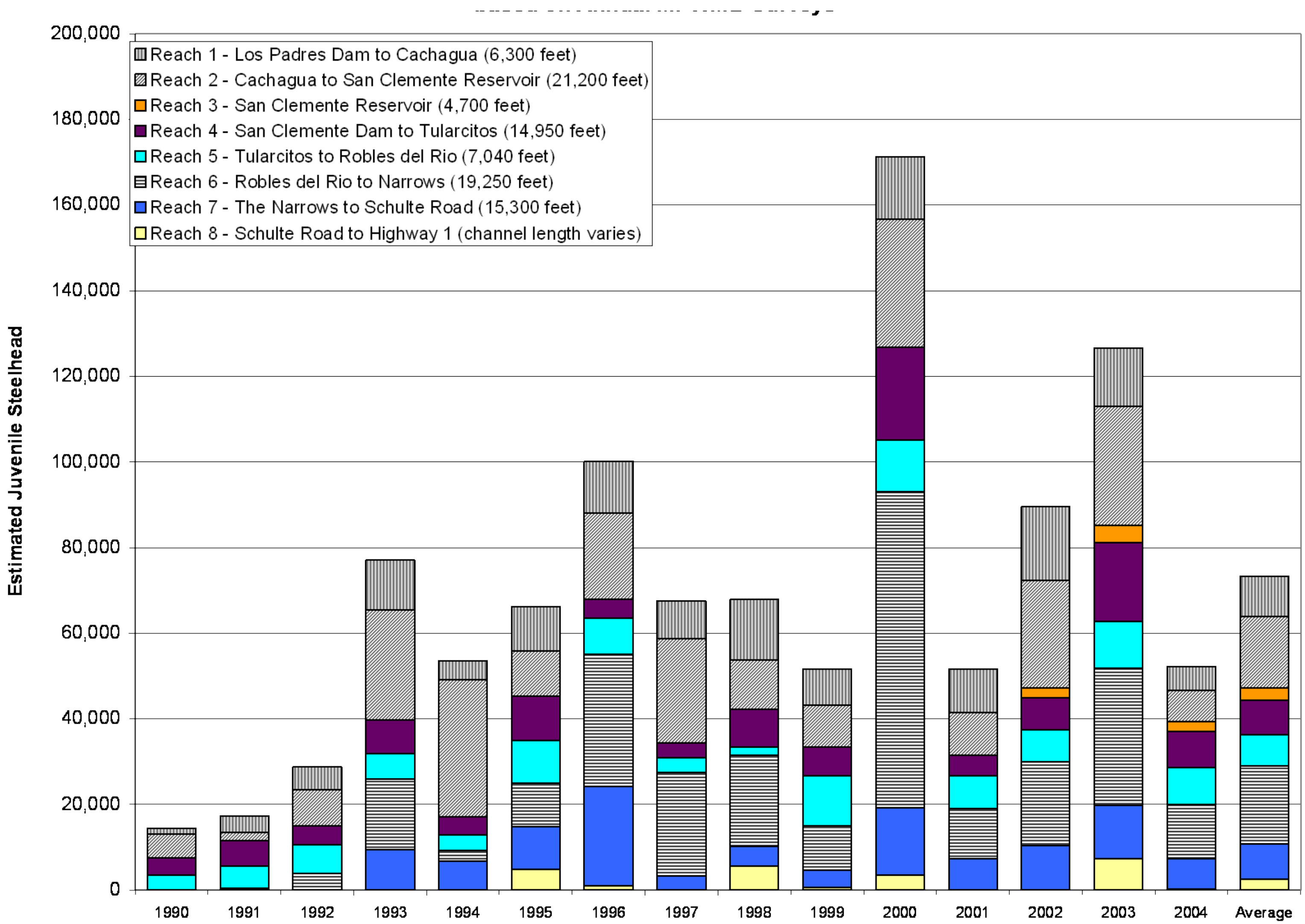
Notes:
[1] Surveys completed in October and results based on repetitive 3-pass removal method using an electrofisher.
[2] Average 1994-on comparison does not include data for lowest river sites at Meadows Road (1995); Schulte Area (1996), and Red Rock Area (1997-2003).
[3] RM; indicates site location in miles from river mouth.
[4] ND means No Data was collected, A “0” indicates stream was dry at sampling station, no entry means that the site was not part of the sampling program..

Table 4.4-4: Carmel River Juvenile Steelhead Population Density 1973-2004

Year	No./foot	No./mile
1973	1.16	6,121
1974	0.69	3,648
1983	1.16	6,116
1984		
1985	0.94	4,966
1986	1.77	9,307
1987	0.97	5,107
1988		
1989	0.00	22
1990	0.14	733
1991	0.25	1,294
1992	0.59	3,098
1993	0.96	5,075
1994	0.51	2,713
1995	1.00	5,281
1996	1.12	5,890
1997	0.83	4,359
1998	0.74	3,901
1999	0.64	3,403
2000	1.83	9,680
2001	0.70	3,716
2002	1.09	5,734
2003	1.47	7,738
2004	0.66	3,480
Averages		
1973,74,83,85-87	1.12	5,878
1989-1991	0.13	683
1992-2004	0.93	4,928

Source: Snider 1983 (1973-1974), CDFG (83, 85-87), MPWMD (1990-2004)

Figure 4.4-6: Carmel River Juvenile Steelhead Density in the Carmel River Downstream of Los Padres Dam (LPD) from 1990-2003



Distribution of Habitat

Spawning

In most years an estimated 61.5 miles of channel (mainstem and tributaries) provide spawning habitat in the Carmel River system, including approximately 40.5 miles upstream of SCD and 21.0 miles downstream. Spawning habitat distribution in the mainstem Carmel River is presented in Table 4.4-5. According to Dettman (1990) slightly more than half of the potential spawning habitat occurs upstream of SCD. Total area of spawning habitat in the 25.3 miles of the mainstem is estimated at 120,000 square feet. Of that total, the estimated amount of spawning habitat upstream of SCD in the mainstem is 70,800 square feet (59 percent) compared to 49,200 square feet downstream of SCD (41 percent).

Table 4.4-5: Spawning Habitat Distribution Estimated within the Carmel River Mainstem Upstream and Downstream of San Clemente Dam

	Upstream	Downstream	Total
Square Feet	70,800	49,200	120,000
Percent	59%	41%	-

Rearing Habitat

Summer rearing habitat for juveniles is believed to be the most critical limiting factor for juvenile steelhead production in the Carmel River Basin. Almost three-quarters of the potential summer rearing habitat occurs upstream of SCD (Table 4.4-6), and varies depending upon the type of water year. Each dry season, depending on the amount of winter rainfall and pumping volume from the Carmel Valley Aquifer, the river downstream of Robles del Rio can dry back from one mile upstream of the mouth up to 5 to 8 miles, causing a loss of rearing habitat. During times when the river begins drying back, juvenile steelhead are rescued from the drying reaches and tributaries by the MPWMD and volunteers from the Carmel River Steelhead Association. Rescued fish are taken to the Sleepy Hollow Steelhead Rearing Facility (SHSRF) or released into permanently flowing sections of the Carmel River.

Table 4.4-6: Rearing Habitat Index for the Carmel River Watershed*

		Young-of-the Year (0+)		1 + and Older Fish	
Portion of the Watershed	Reaches	Total Rearing Index Units**	Percent Watershed Rearing	Total Rearing Index Units**	Percent Watershed Rearing
Upper	0	3.8 million	39%	2.5 million	57%
Middle	1,2	3.2 million	33%	0.8 million	20%
Lower	4,5,6	2.7 million	28%	1.0 million	23%
Total		9.7 million		4.4 million	

Notes:

Watershed delineation as noted by MPWMD 1998. Reaches 3, 7, 8, & 9 not sampled by MPWMD nor included in analysis.
San Clemente Dam divides the middle and lower watersheds
10* Total rearing index units are a measure of rearing index per foot multiplied by the length of the section
*Based on a rearing index presented in (Dettman 1990)

During most water years (aside from critically dry and dry years) approximately 49 miles of channel support habitat for juvenile rearing, including 36 miles upstream of the SCD and 13 miles downstream (Table 4.4-6). A “Rearing Habitat Index” (RHI) model was developed for the mainstem Carmel River (Dettman and Kelley 1986, Dettman 1990) as a method to assess the quality and quantity of rearing habitat available in the river. Dettman divided the river into upper, middle, and lower sections and evaluated rearing habitat for 0+ and 1+ steelhead. The RHI model shows about 72 percent of Age 0+ and 77 percent of Age 1+ and older rearing habitat is located in the mainstem Carmel River upstream of SCD (Table 4.4-6). About 33 percent of Age 0+ and 20 percent of Age 1+ and older rearing habitat is located between SCD and LPD. About 28 percent of Age 0+ and 23 percent of Age 1+ and older rearing habitat is located downstream of SCD (Table 4.4-6).

Sleepy Hollow Steelhead Rearing Facility

The Carmel River does not maintain surface flows through most summers in a nine-mile reach downstream of the Scarlett Narrows and in some years, a 1.8-mile reach upstream of the Narrows. As part of the steelhead mitigation program, the MPWMD has rescued juvenile steelhead from drying reaches since 1991. Following the 1987 to 1992 drought, steelhead production has increased in the Carmel River drainage and less rearing habitat is available in the lower river for rescued fish. The Sleepy Hollow Steelhead Rearing Facility (SHSRF) accommodates any rescued fish that are not transplanted and reared in the river.

The SHSRF was constructed one mile downstream of SCD as mitigation for project operations on the Carmel River in order to meet the increased demand of summer rescues for rearing juvenile steelhead through the dry season.

In early 1997 the District completed construction of the SHSRF, which includes a diversion and pump station, three large circular tanks, an 800-foot long rearing channel, electrical, water, pressurized air and drainage systems, a combination office-shop-lab building and miscellaneous equipment. The water diversion facility includes a screened intake, located in a large pool adjacent to the facility. Approximately 250 feet of 6-inch-diameter PVC pipe delivers up to 1 cfs of river water to the holding tanks and supplemental rearing channel. The channel and tanks are sized to hold and rear a maximum of 64,000 wild Ages 0+ and 1+ steelhead. The fish are allowed to emigrate out of the rearing facility during the fall and winter period when flows increase available habitat in the river (Hanna and Dettman 1993).

Two alternative sources of water serve as a backup supply for the river diversion. A 4-inch pipeline connects to CAW's 24-inch diversion pipeline that supplies the Carmel Valley Filter Plant (CVFP) and is used as back up in case of a power failure. This would occur if the main intake is damaged or needs servicing or if flow in the river is too high during the fall/winter period. A second backup system with a five horsepower pump can draw water directly from the river in case of other emergencies (Hanna and Dettman 1993).

The survival rate for juvenile fish at SHSRF after construction was lower than expected (less than 15 percent) due to warm river water temperatures and the resulting infectious diseases caused by *Ichthyothirius* and *Flexibacter columnari* outbreaks and mortalities. In October 2000, a new cooling tower, new pumps, an emergency generator, and electrical panels were installed to reduce water temperatures and disease problems and decrease the mortality rate. Water temperature goals at the SHSRF are:

- Maximum daily water temperature should be 70 °F; and
- Mean daily water temperature should not exceed 65 °F.

An automated alarm system was installed in June 2001 and upgraded in 2002 to monitor power supply, pumps, water depth, water flow, temperature, and pressure. The system automatically calls MPMWD staff when problems occur to the water or power supply.

SHSRF was out of service during the 2002 rescue season because of damage to the two river pumps. Sand and fine silt abrasion in the pump housing damaged the seals and impellers in the pumps. One pump was overhauled while the other was replaced. A sand and silt separator was installed to prevent damage to river pumps. In anticipation of additional sediment problems during the DSOD-required Interim Seismic Safety Measures spring/summer SCD drawdowns, MPWMD retrofitted the SHSRF intake structure. The intake pumps were upgraded and an additional backup pump and portable pump was purchased prior to the 2003 fish rescue season.

Juvenile steelhead survival rates for SHSRF were greater than 40 percent for the 2003 and 2004 rescue seasons and were estimated to be near 50 percent for the 2005 rescue season. The number of fish released from SHSRF included up to 12,500 juvenile steelhead for the 2003 and 2005 rescue seasons (MPWMD 2003b and 2006).

Fish Passage at SCD

Steelhead passage at SCD is predicated by a series of events that happen in sequence each year. Similar to many other coastal streams from the Navarro River in the north to the Ventura River or Malibu Creek in the south with bar-built lagoons, the Carmel River is only seasonally connected with the ocean. Before adult steelhead can enter the river for spawning, the mouth of the river has to connect with the ocean. The hydrologic connection is initiated by runoff from winter storms.

In the Carmel River, flows into the lagoon must increase to about 200 cfs to fill the lagoon and breach the bar to open the mouth. Opening of the barrier beach at the mouth is managed by the Monterey County Water Resources Agency under a BO issued by NMFS to avoid flooding low lying homes. The protocols require certain conditions to be met prior to artificially opening the lagoon instead of allowing it to overtop the barrier beach without intervention. These protocols combine the use of river flow at the Near Carmel Gage with lagoon water levels to determine when or whether to artificially breach the bar.

In order for the river to establish surface flow at the Near Carmel Gage however, the following sequence of events must occur after rainfall begins in the watershed: 1) Los Padres Reservoir must first fill and spill, providing flows from the upper watershed; 2) San Clemente Reservoir must fill and spill; 3) the aquifers in the Carmel Valley that are pumped for water supply during the summer and are depleted by fall must recharge before surface flow is restored through the Carmel Valley and connects with the lagoon; and 4) a storm event that generates about a 200 cfs flow into the lagoon must occur.

Access from the ocean to the Carmel River is normally established by mid February (Table 4.4-7). Along with a hydrologic connection of the river and the ocean, there is a seasonal component to the steelhead migration. Steelhead generally migrate from December to May and sometimes June in the Carmel River. A summary of the 1992 to 2006 steelhead migration and river opening timing is provided in Table 4.4-7. For three years prior to 1992 the river mouth remained closed during the drought years of 1988 through 1990 and it opened only briefly in 1991. Records on the timing of the river mouth openings prior to 1988 are incomplete and this period was not included in the table. The mouth must remain open for migration into the river to be sustained. The mouth may close if flows drop to less than 20 cfs at the Near Carmel gage. For adult steelhead to successfully move upstream though the Carmel Valley, flows of between 45 to 75 cfs must be sustained for fish to pass the most shallow (critical) riffles.

If the above conditions are met and sustained during the migration season, steelhead would enter the river and begin arriving at the base of SCD.

Adult Migration

In some years the upstream adult migration begins as early as mid-December (Table 4.4-7). The steelhead migration can extend through April into May or even June in some years. A consistent period of high activity occurred during a six-week period from late February through March for the 15 years of record, when about 66 percent of the steelhead passed through the ladder. For the 15 years of record, steelhead have migrated upstream as early as late November (in one year out of 15) when the mouth opened early, and as late as June (1 year out of 15) when the ladder was still operating. The late migration occurred in 1998 following a very wet winter and spring that coincided with a relatively large adult run (over 800 fish). In most years of record, the ladder was closed or the counter removed by the end of May so there may have been other years when fish movement occurred in June but was not documented. Local climate conditions during these years played a key role in the timing of the early and late upstream migrations. Early migration can occur when storms open the river mouth earlier than usual. Late migrations have occurred in years when late spring or early summer flows are still very high. During this 15-year period, early and late migrations have not occurred within the same year.

Table 4.4-7: Fifteen Year Summary of Adult Steelhead Counted in Semi-monthly Periods at San Clemente Dam Showing Timing of River Mouth Opening and Migration in the Carmel River 1992-2006

Semi-monthly Period	1992-2006 Total No. of Steelhead* Counted for Period	Percent of Total Steelhead Migration for Period	No. of Years Steelhead Counted in Ladder for Period	No. of Years Mouth First Opened ** in this Period	No. of Years Counting Stopped or Ladder Closed in this Period
Nov-1 to Nov-15	0	0.0%	0	1	
Nov-16 to Nov-30	2	0.0%	1	0	
Dec-1 to Dec-15	12	0.2%	1	5	
Dec-16 to Dec-31	99	1.5%	5	3	
Jan 1 to Jan 15	198	3.0%	9	3	
Jan-16 to Jan-31	546	8.2%	11	1	
Feb-1 to Feb-14	653	9.8%	13	1	
Feb-15 to Feb-28/29	1,348	20.3%	15	1	
Mar-1 to Mar-15	1,717	25.8%	15		
Mar-16 to Mar-31	1,335	20.1%	15		
Apr-1 to Apr-15	486	7.3%	13		

Table 4.4-7: Fifteen Year Summary of Adult Steelhead Counted in Semi-monthly Periods at San Clemente Dam Showing Timing of River Mouth Opening and Migration in the Carmel River 1992-2006

Semi-monthly Period	1992-2006 Total No. of Steelhead* Counted for Period	Percent of Total Steelhead Migration for Period	No. of Years Steelhead Counted in Ladder for Period	No. of Years Mouth First Opened ** in this Period	No. of Years Counting Stopped or Ladder Closed in this Period
Apr-16 to Apr-30	186	2.8%	9		4
May-1 to May-15	36	0.5%	6		1
May-16 to May-31	15	0.2%	4		9
Jun-1 to Jun-15	5	0.1%	1		
Jun-15 to Jun-30	8	0.1%	1		1
Total	6,646			15	15

Fish counted in the SCD ladder prior to the lagoon opening were removed from the total

* Migration Year is fall/winter period of Year-1 and winter/spring period of Migration Year (MY). (Example MY 1992 is from Nov 1991 to Jun 1992)

* * Mouth of River opened one year out of 15 in Nov 1-15 Period, Mouth was open the same year for Nov 16-30 period.

For this set of years, mouth was always open by Late February.

In summary, the seasonal hydrology is an important factor that greatly influences the beginning and end of the migration season. However, in spite of the hydrology, in most years the peak migration occurs between mid February and the end of March, during which about two-thirds of the run is counted at SCD with about more than 90 percent of the run counted at SCD between mid January and the end of April (Table 4.4-7). When flows are not capable of sustaining passage, or when there are no more steelhead waiting in the ocean to enter the river, the migration for that year is essentially over, even if the migration season has not ended. Conditions to support migration end when the river flow through the valley falls below 45 cfs and access to the lagoon is no longer possible when the bar closes which normally happens when flow at the Near Carmel River gage falls below 20 cfs. In some years conditions suitable for upstream migration continue to persist long after the last fish has been counted in the ladder.

Juvenile Migration

Juvenile steelhead can move downstream year-round but peak periods of movement occur during the initial runoff of the wet season and then again in March through May (Shapovalov and Taft 1954). Adults that have spawned in the upper watershed can return to the ocean and become repeat spawners in future years. Adult and juvenile downstream passage is not as constrained as upstream passage by depth of flow, but the mouth must be open for adults (and smolts) to move into the ocean. If the mouth is not open, smolts and adults may reside in the lagoon during the summer and complete their migration the following fall or winter when the mouth does open. Smolts feed on the abundant invertebrate fauna in the lagoon and can grow rapidly as long as dissolved oxygen levels remain suitable and lagoon depth is not compromised. Lagoon habitat is dependent upon inflow. During dry years when inflow is low, water levels drop and fish are exposed to poor water quality conditions (warm temperatures and low DO levels). Poor water quality can force fish toward the surface where oxygen levels are better but in the process expose fish to predation by gulls and other birds. Lagoon residency is not a good option for adults since they do not feed while in freshwater and water quality conditions in the lagoon can be poor during the summer and fall.

Description of the Existing Fish Ladder

Passage of fish from the lower river to upstream of the Dam is currently accomplished with a pool and weir fish ladder with an entrance at the plunge pool below the Dam and exit at the upper end of the ladder into the reservoir on the San Clemente Creek (west) side of the Dam. The existing ladder has 28 pools and rises some 68 feet from the river to the reservoir. While the average step between pools is a little more than 2 feet, some steps in the ladder range up to about three feet. Passage into the reservoir is through the Dam via an 18-inch high by 24-inch tunnel with a floor elevation of 524.5 feet (or 0.5-foot lower than the present spillway elevation of 525 feet above MSL). The ladder has three resting pools and can operate at flows of between 10 and 2 cfs. Flow is regulated by adjusting the slide gate on the upstream side of the Dam. Ladder walls are not high enough above the water level in the ladder to prevent fish from jumping out of the ladder. Metal screen fencing has been installed along the upper walls to contain jumping fish and keep them from leaping out of the ladder.

Prior to 1997, flashboards were installed in SCD at the end of April to surcharge the reservoir and increase storage. At the time flashboards were installed, the fish ladder was closed. Surcharging the reservoir stopped after the 1996 season because much of the inundated area was so shallow it increased summer water temperatures, thereby increasing water temperatures in the river downstream of the Dam and creating disease problems in the temporary fish rearing tanks at Sleepy Hollow.

The existing ladder does not meet current standards for fish passage conditions promulgated by either NMFS or CDFG. The new ladder would have a maximum of one foot steps between pools, greater freeboard, adequate pool volume, greater attraction flows and will provide for upstream fish to swim from one pool to the next instead of jumping as in the present ladder.

After exiting the fish ladder into San Clemente Reservoir, steelhead swim through the reservoir into the Carmel River or San Clemente Creek and continue upstream migration.

2030 Baseline Conditions

San Clemente Reservoir, San Clemente Creek, and the Carmel River would continue to change through time and so an extended environmental baseline setting through the year 2030 is used in this analysis. The 2030 Baseline incorporates the changes that are expected to occur over the 25 years from initiation of the EIR/EIS to provide a more comprehensive analysis and evaluate trends and changes that may occur to existing conditions.

One of the major changes that could affect aquatic resources is the prediction that San Clemente Reservoir will fill with sediment within 6 to 10 years. As a result of this filling, the Annual Drawdown would only continue until the reservoir storage capacity is less than 50-acre feet. In the absence of new sediment management action, sediment would begin to move into or block the fish ladder, interfering with successful steelhead migration up the existing ladder.

Aquatic habitat conditions upstream of SCD in the Camel River and in San Clemente Creek would generally continue to improve as riparian vegetation would become established and continue to develop along the channel. This, in turn, would cause the banks to become more defined. All of the riparian vegetation along San Clemente Creek and most of riparian vegetation along 4,800 feet of the Carmel River upstream of SCD has developed since 1996 after the practice of raising the reservoir water level by 12 feet each spring was discontinued. The raised water level previously prevented vegetative growth in the inundated area below elevation 537 feet.

4.4.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

The significance criteria for evaluating project effects for this EIR/EIS are similar to the criteria and standards of significance used in the CRDRP (as modified and updated from the 1994 Final EIR/EIS for the New Los Padres Project) (MPWMD 1998). In accordance with these criteria, as well as CEQA Guidelines and agency and professional standards, a project impact would be significant if the project would:

- Have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a threatened or endangered, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG, NMFS, or USFWS;

- Prevents or interferes substantially with the movement of any native resident or migratory fish species;

- Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Impact Assessment Methodology

Impacts to Carmel River steelhead and aquatic habitat conditions are evaluated for the 2030 Baseline Condition (reservoir filled with sediment) and compared to Existing Conditions and to the Proponent's Proposed Project and each of the alternatives. The effects of the Proposed Project and each alternative are evaluated with respect to aquatic habitat conditions and fishery resources within each of the 6 fishery reaches or 10 geomorphic reaches in the Carmel River downstream of SCD and in the inundation area of the reservoir upstream of the Dam. Issues related to fish passage are also considered. Assessing the effects of sediment movement to downstream habitat is an important component of the analysis. Sediment will begin moving downstream when the reservoir fills with sediment (the No Project Alternative, Proponent's Proposed Project, and Alternative1), additionally with the operation of a sluice gate under the Proponent's Proposed Project or Alternative 1 and with dam removal under Alternatives 2 and 3.

Sediment, Aquatic Habitat Conditions and Effects on Steelhead

There are two general categories of sediment that are evaluated in this document relative to aquatic habitat conditions and steelhead populations: deposited sediment and suspended sediment.

Deposited sediment is the sediment that makes up the channel bed and banks and is carried in the river as bedload along the bottom of the channel primarily during storm events. Changes to the nature of the channel bed and floodplain can alter the physical habitat conditions in and along the river. Generally, finer sediment, such as sand, is more deleterious to biological resources than coarse sediment like gravel or cobble. Large volumes of sediment would generally cause negative changes to habitat conditions, regardless of the particle size of the sediment. Even moderate volumes of fine sediment can have deleterious effects on spawning habitat and on life stages ranging from zygotes to alevins buried in the gravel. Deposited fine sediments can reduce or cut off water flow through the gravel and suffocate zygotes. Deposition of coarse sand does not necessarily cut off inter-gravel flow, but can entomb alevins in the redd by creating a physical barrier between the redd and the river that young fish are not capable of escaping.

Large sediment volume can fill pools, obliterate channel features and turn single thread channels into multi-thread channels. Sediment flux (the change in sediment volume from year to year) can have varying effects on riparian vegetation. Moderate amounts of sediment deposited on the floodplain can provide a substrate for riparian vegetation to become established and grow. In contrast, large volumes of sediment can cover and kill established vegetation. Aquatic habitat conditions from deposited sediment are evaluated by looking at the change in reach-averaged bed elevation, change in substrate volume and change in volume of gravel at the end of the hydrologic simulation period.

The analysis of deposited sediment evaluates reach conditions to support adult upstream migration, spawning and incubation habitat for zygotes and alevins, and rearing habitat to support juvenile steelhead. Adult migration could be impaired if large volumes of sediment are deposited in the channel possibly creating critical passage conditions. Spawning and incubation habitat would be improved by an increase in the volume of gravel, or degraded by an increase in fines. Rearing habitat would be improved by an increase in cobble and gravel or degraded by an increase in fines.

Suspended sediment is fine sediment (mostly clays and fine sands) that is carried as suspended load in the water column greater than 0.5 foot above the bed of the channel. Some of the bedload in a river is moved along the bed by bouncing along the bottom, hence, the near bed water column contains both sediment that is carried in suspension and the coarser bedload. The water column above 0.5 feet over the bed primarily contains only suspended sediment. It is the suspended sediment that causes the muddy appearance of the Carmel River and other streams during storm flows. High suspended sediment levels normally occur in the Carmel River during winter runoff events when migrating adults, incubating zygotes, juvenile steelhead, and smolts can be present in the river. Any effects from the project that would alter winter turbidity conditions could affect these life stages.

During low flow periods which occur during the summer, water in the river is typically clear so an increase in turbidity or suspended sediment from project activities would have a detrimental effect on juvenile steelhead rearing in the river. Conditions could become adverse depending on the concentration of suspended sediment and the duration of exposure.

Analyses that evaluate effects on the various life stages of steelhead in the Carmel River depend on available information on steelhead population. Juvenile steelhead data is available from 1990 to 2004 (Table 4.4-3) and adult counts are available for 1992-2006 (Table 4.4-7). There is limited information on spawning use in the river and virtually no data on incubation. Most of the data available provides for an analysis on life stages from young-of-the-year to two year olds and adults. There is limited information available on the number or distribution of redds in the Carmel River and on the smolt life stage in the Carmel River. Life stages between smolts and adults occur in the ocean and would not be directly affected by the Proponent’s Proposed Project. Therefore, analysis of effects to steelhead is focused on the juvenile data that includes young-of-the-year, yearling and two-year old fish and on the adults based on counts at SCD. Analyses of project effects on steelhead redds containing the incubation life stage and on the smolt life stage are based on information from the literature and inferences drawn from knowledge of the Carmel River steelhead biology.

DEPOSITED SEDIMENT

The effect of deposited sediment varies depending on the starting channel bed conditions and on the volume and sediment particle size of the deposited sediment. The habitat change for a gravel-cobble bed channel that is covered by fine sediment such as silt and fine to coarse sand would be negative as the fine sediment would fill in the interstitial spaces in the substrate and eliminate habitat for invertebrates and cover for fish. However, gravel substrate deposited on a stream bed that is composed primarily of boulder and cobbles could improve conditions for spawning, invertebrate production and juvenile rearing. An increase in streambed elevation could be positive for habitat if it improves pool and riffle sequences in the channel but this would depend on the degree of increase in elevation, the particle size, and the starting conditions of the bed.

Fishery and invertebrate effects were attributed to changes in bed elevation, change in volume of sediment and change in volume of gravel with the assumption that a change in reach-averaged bed elevation has to be greater than 0.5 foot to be meaningful because the average bed elevation includes both the wetted channel and flood plain. If the change in the model output meets that criteria, then aquatic habitat conditions are evaluated under the following guidelines: 1) an increase of 2 feet or more of channel bed elevation (aggradation) and/or an increase in sediment volume would tend to fill habitat features like pools and runs and create a braided channel or critical riffles that could create fish passage problems, 2) a decrease of 2 feet or more of channel bed elevation (degradation) and/or a decrease in sediment volume would tend to scour channel features such as riffles or bordering vegetation and act to simplify habitat. 3) An increase in gravel volume would generate a positive biological response by improving spawning habitat and invertebrate production, 4) a decrease in gravel volume could have a negative effect by degrading spawning habitat and invertebrate production if the gravel would be replaced by sand; 5) if gravel would be replaced by cobble, the effect would be neutral to positive.

As an example, in SR 4.3, aggradation and an increase in gravel volume could have a beneficial effect because the present armored condition of this reach provides for almost no gravel in this reach. However, in SR 9, in the lagoon, aggradation and an increase in sediment volume could have a negative effect on fisheries habitat because valuable deep water habitat for summer and fall growth could be reduced; conversely, degradation and a reduction in sediment volume in the lagoon would have a beneficial effect.

Changes in habitat quality related to substrate quality are evaluated through use of a sediment transport model (MEI 2003). The sediment transport model evaluated and compared Existing Conditions, the 2030 Baseline and Alternatives 1, 2 and 3. The 2030 Baseline model run represents conditions consistent with the Proponent's Proposed Project and Alternative 4 (reservoir full of sediment with a small remnant pool) and is similar to the modified baseline (reservoir full of sediment without a small remnant pool that was used to represent the worst case scenario for modeling the effects of sluicing) as presented in Hydrology Section 4.2. The sediment transport model predicts a change in sediment particle size and bed elevation in yearly time steps based on historical hydrology on a reach-averaged basis (Mussetter 2003). The effects of sediment particle size and change in bed elevation are evaluated as being "better," "worse," or "about the same" relative to Proponent's Proposed Project. Additional reports were prepared to address the specific effects of some alternatives on sediment transport (MEI 2005, 2006b). Appendix M provides additional information on the sediment model.

The model output sums the amount of sediment that each flow event moves past the Dam site and how much of that amount is deposited in the lower river at the end of the 41-year modeling period (Appendix N). Parameters from the model include change in bed elevation, change in sediment volume and change in volume of gravel for each subreach.

SUSPENDED SEDIMENT

The effects of suspended sediment were assessed using an index developed by Newcombe and Jensen (1996). Their work evaluated potential adverse effects on fish from suspended sediment through the development of an empirical model based on numerous laboratory studies that examined responses of fish to the length of exposure to various suspended sediment concentrations. Suspended sediment has been documented to affect steelhead in several ways.

At low levels suspended sediment can reduce visibility disrupting social interactions, and interfering with feeding behavior at low levels and causing habitat degradation and causing physical stress and harm at high levels of suspended sediment. The concentration and duration of exposure to suspended sediment are nearly equally important factors in assessing impacts to fish and aquatic habitat. Higher levels of suspended sediment and longer exposure times generally create a greater, more deleterious effect on fish. Even persistent low levels of suspended sediment can cause stress that reduces feeding, slows growth, impairs reproductive abilities, reduces population size, and causes mortality. At low concentrations, suspended sediment can cause avoidance behavior, reduced feeding, respiratory impairment, or reduced tolerance to disease and toxicants (Waters 1995). Suspended sediment can also affect fish ecologically by increasing invertebrate drift and reducing light penetration in the water column, thereby reducing primary productivity (ENTRIX 2005a).

Newcombe and Jensen (1996) developed the empirical model to estimate the effects of various levels of exposure to suspended sediment on fish. The equation for the empirical model is:

$$Z = a + b\,(ln[\text{exposure time}]) + c\,(ln[\text{concentration}])$$

<u>Where</u>:

Z is the Severity of Ill Effects Score (SEV); a, b, and c are factors adjusted according to fish species (or group) and life history stage; and ln is the natural log,

Newcombe and Jensen (1996) based their model on a large body of peer reviewed and published literature on the effects of fish exposure to suspended sediment. Data from many studies, most of them laboratory studies, were used to develop multiple regressions to generate the model equation. Although the model is useful in making broad estimations of suspended sediment effects, it has a wide range of error, and therefore needs to be applied with caution to average daily suspended sediment concentrations from the MEI model. Newcombe and Jensen's model helps to illustrate key points about the effects of suspended sediment on fish and on strength of the relationship between the SEV score and Level of Effect: 1) Duration of exposure is almost equal in importance to suspended sediment concentration in determining the overall effects of suspended sediment; 2) A wide range of suspended sediment concentration and duration of exposure can result in a similar SEV score (Figure 4.4-7, top and bottom); 3) There is an exponential difference between one Effects Level and the next, and 4) There is a large amount of overlap in the response of individual fish to suspended sediment concentration and duration (See Table 4.4-8).

EFFECTS LEVELS

Effects Levels are evaluated through the calculation of SEV scores and then the scores are used to group the effects into four different levels: No Effect (SEV=0), Behavioral Effects (SEV=1 to 4), Sublethal Effects (SEV=5 to 8), and Lethal and Paralethal Effects (SEV ≥ 9).

Behavioral effects (SEV Scores of 1 to 4) occur at relatively low levels of suspended sediment and can alter fish behavior. In some cases, fish initially will attempt to move away from turbid water into clearer water if it is available. Fish that remain in areas of elevated suspended sediment will experience reduced visibility. For visually oriented and territorial species such as steelhead trout, a reduction in visibility may result in a reduction in the efficacy of feeding as well as a breakdown of social structure in the stream.

Table 4.4-8: Effects and Severity Types of Ill Effects Scores (SEV) to Fish from Exposure to Suspended Sediments

No Effects (SEV=0)
Behavioral Effects (SEV=1-4)
Avoidance and distribution
Risk to predation
Reduced feeding
Sublethal Effects (SEV=5-8)
Impaired homing and migration
Respiratory impairment
Physiologic effects
Stress
Reduced growth
Reduced tolerance to disease and toxicants
Lethal and Paralethal Effects (SEV > 9)
Reduced growth rate
Reduced reproductive success
Reduced fish density
Moderate to severe habitat degradation
Direct mortality

Note: compiled from Newcombe and Jensen 1996 and Waters 1995

Sublethal effects (SEV Scores of 5 to 8) to fish health can occur from short- and long-term exposure to various levels of suspended sediment concentrations. High concentrations or long-term exposure to moderate levels of suspended sediment concentrations may cause respiratory irritation and impairment as well as a reduced tolerance to disease and toxicants. High suspended sediment concentrations may further disrupt sensory perception to the point of interfering with or preventing the homing behavior of migrating steelhead. All of these direct physiological impacts culminate in a general stress increase characterized by physiological symptoms such as elevated cortisol levels in the bloodstream.

Lethal and paralethal effects (SEV Scores of 9 to 14) may result from extremely high and/or prolonged exposure to suspended sediment concentrations. Harsh physiological effects may severely stress fish decreasing health or causing direct mortality. This level of effect would likely result in a measurable change in fish abundance and distribution and would be an adverse effect on the population. The youngest steelhead life stages may be particularly susceptible to mortality from the smothering of eggs in the gravel and the entrapment of emerging sac fry if high suspended sediment concentrations also result in the deposition of fines on the bed.

Newcombe and Jensen organized these effects into a relative scale presented in Table 4.4-8. Figure 4.4-7 shows the effects of suspended sediment concentration and duration of exposure on the average SEV scores on adult and juvenile salmonids.

Figure 4.4-7: Empirically Derived Average of Severity of Ill Effects (SEV) Scores Table (calculated) Showing the Relationships for Juvenile and Adult Salmonids

Juvenile and Adult Salmonids

Duration of exposure to SS ($\log_e$ hours)

(B) Average severity-of-ill-effect scores (calculated)

Concentration (mg SS/L)	0	1	2	3	4	5	6	7	8	9	10	($\log_e$ mg SS/L)
162755	10	11	11	12	12	13	14	14	-	-	-	12
59874	9	10	10	11	12	12	13	13	14	-	-	11
22026	8	9	10	10	11	11	12	13	13	14	-	10
8103	8	8	9	10	10	11	11	12	13	13	14	9
2981	7	8	8	9	9	10	11	11	12	12	13	8
1097	6	7	7	8	9	9	10	10	11	12	12	7
403	5	6	7	7	8	9	9	10	10	11	12	6
148	5	5	6	7	7	8	8	9	10	10	11	5
55	4	5	5	6	6	7	8	8	9	9	10	4
20	3	4	4	5	6	6	7	8	8	9	9	3
7	3	3	4	4	5	6	6	7	7	8	9	2
3	2	2	3	4	4	5	5	6	7	7	8	1
1	1	2	2	3	3	4	5	5	6	7	7	0
	1	3	7	1	2	6	2	7	4	11	30	
	Hours			Days			Weeks		Months			

Half-95% confidence intervals (±)
around calculated severity-of-ill-effect scores (above)

Concentration (mg SS/L)	0	1	2	3	4	5	6	7	8	9	10	($\log_e$ mg SS/L)
162755	0.9	0.8	0.8	0.8	0.7	0.7	0.8	0.8	-	-	-	12
59874	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	-	-	11
22026	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.7	0.7	-	10
8103	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8	9
2981	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	8
1097	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7	7
403	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.7	6
148	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	5
55	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	4
20	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	3
7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	2
3	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1
1	1.0	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1	0
	1	3	7	1	2	6	2	7	4	11	30	
	Hours			Days			Weeks		Months			

Source: Newcombe and Jensen (1996)

The analysis of impacts uses an empirical model of suspended sediment concentration effects on salmonids to estimate effect levels.

Using the sediment model, average daily suspended sediment concentrations (SSC) (in the water column greater than 0.5 feet above the river bed) were simulated for the 41 year period of record for Existing Conditions, the 2030 Baseline, and the project alternatives. These results were examined using a frequency analysis and time series graphs.

Average daily suspended sediment concentrations were simulated to compare potential effects of sediment management activities (sluicing) with the same dam configuration without sluicing for a wet year (1978) and dry year (1985) to represent conditions for the Proponent's Proposed Project and Alternative 1. Dam removal would occur under Alternatives 2 and 3; sluicing would not be a component of these two alternatives.

The representative suspended sediment analysis was run from the simulated sluice event date to the end of June because the model routed sediment down the fish ladder during the low-flow season. Sediment movement down the fish ladder during the low flow season would be precluded by other sediment management activities so the analysis of suspended sediment was restricted to the period from the modeled sluice event to June 30 and did not include the period from July 1 to the end of the calendar year. The details of sluicing events are discussed in Section 4.2 and Appendix J.

Using the SEV scores developed by Newcombe and Jensen (1996) described above, the number of consecutive days of average daily suspended sediment level for each geomorphic reach was accumulated for each day to equate to an SEV score for the simulated wet-year (to June 30) for the 2030 Baseline and compared to Existing Conditions, the Proponent's Proposed Project and each alternative. For the Proponent's Proposed Project and Alternative 1, a modeled sluicing event was added to the analysis for comparison purposes. The comparable SEV scores are summarized by Geomorphic subreach for Existing Conditions, 2030 Baseline (representing Alternative 4 or Future No Project conditions), the Proponent's Proposed Project and each Alternative (Table 4.4-9).

The simulated exposure times for modeled suspended sediment concentration data were not directly applied to the X and Y axes of the Newcombe and Jensen empirical model provided in Figure 4.4-7 (top graph) because the modeled suspended sediment concentration is based on average daily values whereas Newcombe and Jensen (1996) used a time step based on hours. In nature, suspended sediment is highly variable through time and space and reach-averaged daily values do not necessarily represent the range of concentrations of suspended sediment or exposure durations that fish in the river would experience. However, the analysis is a comparison of similarly structured modeled information and therefore can be used to make an informed comparison for the basis of this evaluation.

Table 4.4-9: Severity of Ill Effects Scores (SEV) for Suspended Sediment Concentrations

Subreach	Existing conditions	2030 Baseline	Proponent's Proposed Project	Alt 1	Alt 2	Alt 3
4.3	7	7	8	8	8	7
4.7	7	7	7	7	8	7
5	7	7	7	7	9	7
6.3	7	8	8	7	8	8
6.7	7	8	8	8	8	8
7.3	7	8	8	8	8	8
7.7	7	8	8	8	7	7
8.3	7	8	7	7	7	7
8.8	7	8	7	7	7	7
9	7	8	8	8	7	8

Note: Scores represent the number of consecutive days and Suspended Sediment Concentrations following a wet year sluice event for the existing conditions and 2030 Baseline compared to the Proponent's Proposed Project and alternatives by Subreach. The 2030 Baseline also represents the Future No Project Condition.

The suspended sediment model provides average daily values for suspended sediment concentration from post-processed simulations. Because of the modeling limitations, it is probably not valid to compare SEV scores between the Proponent's Proposed Project and the alternatives to evaluate differences in impacts. The error table (Figure 4.4-7, bottom graph) shows that the error in the SEV scores is relatively large. In consideration of the error inherent in the Figure 4.4-7 and the additional limitations imposed from the simulations, a more equitable assessment would be to compare effects levels (Table 4.4-8) instead of actual SEV scores (Table 4.4-9). The SEV scores are discussed and compared to support the effect levels determination.

Comparisons of the change in effect level are made between the 2030 Baseline condition, Existing Conditions, and Alternatives 1, 2, and 3. A difference in the SEV score within an effect level would not be either a significant or beneficial impact because of the factors described above. However, a change in effect level would be either significant or beneficial. SEV scores are presented in the following discussion to support the findings of the analysis. The effects levels in the Lethal and Paralethal range would be adverse for the population or habitat for the purposes of determining the level of significance of an action.

The SEV scores are shown in Table 4.4-9, and their corresponding effect level is shown in Table 4.4-8. The scores indicate that under existing conditions, storm events result in SEV scores of 7 in the 10 geomorphic subreaches downstream of SCD for the simulated hydrologic period. Under the 2030 Baseline, SEV scores increase from 7 to 8 in the downstream-most seven reaches (from 6.3 to 9) compared to the existing conditions because fine sediment would no longer be trapped in the reservoir after it has filled. For the Proponent's Proposed Project, SEV scores increase from 7 to 8 in six subreaches (4.3, 6.3, 6.7, 7.3, 7.7, and 9), compared to Existing Conditions and are similar to the 2030 Baseline. For Alternative 1, SEV scores increase from 7 to 8 in five subreaches (4.3, 6.7, 7.3, 7.7, and 9), compared to Existing Conditions, and are similar to the 2030 Baseline. For Alternative 3, SEV scores increase from 7 to 8 in four subreaches (6.3, 6.7, 7.3, and 9), compared to Existing Conditions, and are similar to the 2030 Baseline. For the Proponent's Proposed Project, Alternatives 1 and 3 SEV scores do not result in significant changes compared to either Existing Conditions or 2030 Baseline because the SEV score remains within the Sublethal Effects Level. Additionally, the Proponent's Proposed Project, Alternative 1, and Alternative 3 each result in a change in SEV scores that are less than the SEV scores for the 2030 Baseline Condition.

For Alternative 2, the SEV scores increase from 7 to 8 in five subreaches (4.3, 4.7, 6.3, 6.7 and 7.3) and increase from 7 to 9 in one subreach (5) compared to Existing Conditions. The SEV scores increase from 7 to 8 and are similar to the 2030 Baseline, except in Subreach 5 that increases from an SEV of 7 to 9. This would be a significant impact because an increase from an SEV of 7 to SEV of 9 indicates the effect changes from the Sublethal Effect Level to the Lethal and Paralethal Effect Level.

Modeled suspended sediment concentrations were graphed to compare the suspended sediment effects of the Proponent's Proposed Project, and all alternatives (Appendix P, Figures P-1 through P-20).

Flow

The effects of the various alternatives on flows in the Carmel River were evaluated in 1998 for and presented in the 2000 RDEIR (Denise Duffy & Associates 2000) in Appendix D. Flow changes were found to be insignificant because the project is a dam safety project and would not change storage volume or operations. Flows are influenced by a change in storage behind a dam. This project would not result in an increase or decrease in storage but would maintain the status quo in regard to storage volume behind SCD. Short-term effects on flow from construction activities are addressed in the Impacts and Mitigation Section 4.4.3. Relocation of the point of diversion on the Carmel River upstream would affect flows in the section of river between the new diversion point and SCD where water is presently diverted. This effect is also addressed in the Impacts Section 4.4.3.

Construction and Operation Activities

This assessment evaluates effects of construction and operation on aquatic habitat in the Carmel River and on the steelhead population. The river channel in the vicinity of the Dam and downstream would be affected by the construction activities of the Proponent's Proposed Project and each alternative. Construction activities for road and bridge improvements to access the Dam or reservoir would occur during the first construction year primarily during the low flow season — June to October. Dam strengthening, notching or removal would occur in subsequent construction years and would only occur during the low flow season. The steelhead life stage that would be most affected by reservoir and stream dewatering and construction-related activities would be the juvenile rearing life stage. Fry and yearling steelhead would be rearing in the river. The adult and smolt migration is essentially complete and redds would no longer hold alevins by June. Construction impacts, therefore, are evaluated in regard to the juvenile rearing life stage.

Operations following project implementation would affect all life stages of steelhead in the river downstream in all seasons. Conditions in the river downstream of SCD could be affected by sluicing to maintain fish passage through the reservoir during early winter storm events and by the transport of larger volumes of sediment passing the Dam for Alternatives 1, 2, and 3 compared to existing conditions. Under Alternative 4, No Project, sediment transport past the Dam would also increase relative to existing conditions because in six to ten years the Dam would be full of sediment.

Bed sediment transported past the Dam would affect aquatic habitat in the river downstream of SCD. These changes would affect all life history stages of steelhead including migrating adults, spawning habitat, incubation, rearing habitat and smolt outmigration.

Operations for the Proponent's Proposed Project and Alternative 1 include sediment sluicing to maintain fish passage through the remnant reservoir. Sediment sluicing is one method to manage sediment that accumulates behind the Dam for fish passage. Sluicing events would occur with the first storm event of the season and would affect fish in the river during the early winter period. Sluicing protocols require the sluice event to be staged as the river flow increases over 300 cfs. At flows above 300 cfs the channel segment immediately downstream of the Dam would have sufficient transport potential to mobilize all the sediment released during the following storm event. The analysis examines the levels of suspended sediment that steelhead in the river would be exposed to under the Proponent's Proposed Project and each alternative relative to existing and No Project conditions. Suspended sediment is primarily evaluated for its effect on rearing juvenile steelhead in the river, but the assessment is also applicable to adult steelhead.

Impacts are assessed on a river-wide basis using four components: 1) The amount and distribution of spawning habitat throughout the Carmel River system that has been assessed by Dettman (1990) and modeled in the mainstream Carmel River upstream and downstream of SCD by Alley & Associates (1992 and 1998) 2) The amount of juvenile steelhead rearing habitat available in the Carmel River summarized for the upper, middle and lower portions of the watershed and expressed as rearing habitat units. For this assessment, the upper portion of the Carmel River is defined as upstream of LPD, the middle portion is between San Clemente Reservoir and LPD and the lower portion is downstream of SCD (Dettman 1990). Only a gross estimate for steelhead abundance is available for the existing reservoirs. 3) The 1990 to 2004 average density of juvenile steelhead in the Carmel River fishery reaches and, 4) Adult steelhead counts in the SCD ladder. The two components of rearing habitat (distribution of juvenile rearing habitat and average juvenile density) are the best data available to make estimates of impacts. However, it should be noted that habitat conditions and juvenile steelhead density can change markedly from year to year, depending on habitat changes resulting from the magnitude of winter flood events and the flow conditions in the lower river during the dry season.

In the presentation of the following impact mechanisms for fisheries, estimates are provided for the amount of channel affected by construction activities such as dewatering, or by project operations such as sluicing. The evaluation of impacts compares the amount of rearing habitat (length of channel) and an estimated number of steelhead affected by a project activity (Table 4.4-10). The estimated number of juvenile steelhead is based on the average juvenile density data collected by MPWMD. These data are compiled by river reach and expressed as the number of fish per linear foot of channel. The average annual reach density was multiplied by the length of the channel to estimate the juvenile abundance for Reaches 1 through 8. This represents an estimate of the total juvenile abundance for the mainstem Carmel River between LPD and State Highway 1. There is no consistent data to estimate juvenile steelhead abundance upstream of LPD, in the tributaries, or the lagoon in Reach 9. Therefore, the impacts to juvenile abundance based on this data would represent an over-estimate since it does not include all of the habitats supporting steelhead in the river and would represent a conservative estimate relative to the overall impact to juvenile steelhead in the Carmel River.

In regard to the distribution of spawning rearing habitat in the river, the amount of juvenile steelhead rearing habitat available downstream of SCD represents is about 28 percent of the 0+ and 23 percent of 1+ habitat in the watershed according to Dettman and Kelley (1986) (Table 4.4-6). These estimates do not include habitat in Fishery Reaches 3, 7, 8 or 9 (Dettman and Kelley 1986). About 30 percent of the potential spawning habitat in the watershed is available downstream of SCD (Dettman 1990). For the purposes of this analysis, we assumed that about a 30 percent of the spawning habitat in the river and 25 percent of the juvenile rearing habitat (0+ and 1+ combined) in the river occurs downstream of SCD. These percentages provide a point of comparison to assist in evaluating relative effects of the Proponent’s Proposed Project to the Alternatives on a river-wide basis. Estimates of steelhead densities and abundance are provided in Table 4.4-10.

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Table 4.4-10: Amount of Habitat and Estimated Number of Rearing Juvenile Steelhead Affected by Construction and Operations for Each Alternative

		Estimated Length of Channel Dried and No. of Steelhead Rescued for each Construction Year or Length of channel affected by Diversion					Estimated SH[f] Affected by Suspended Sediment and Streambed Changes downstream of SCD from construction and operations				% SH Affected by Construction Activities	% of SH Habitat Affected by Construction Activities	% SH Affected by Sus. Sed. from Operations	% Rearing Habitat Affected by Operations
		Reach 3(L)[a]	**Reach 3(U)[a]**	**S.C. Creek[b]**	**Reach 4**	**Tularcitos[b]**	**Reach 4[c]**	**Reach 5[c]**	**Reach 6[c]**	**Reach 7[c]**				
Existing Conditions	Reach Length (ft)	2,200	4,300	1,350	14,950	100	14,950	7,040	19,250	15,300				
	Steelhead reach density (fish per ft)[d]	0.50	0.73	0.50	0.54	0.50	0.54	1.02	1.04	0.91			Total Average SH downstream of LPD =	79,843
	SH Population Estimate[e]	1,100	3,139	675	8,053	50	8,053	7,167	20,020	13,923			Total channel downstream of LPD (ft) =	133,584
Proponent's Proposed Project	Length (ft)	1,200	0	0	500	100	14,950	7,040	0	0				
	Construction Year 1 (SH)	0	0	0	0	50	2,532	7,167	No Effect	No Effect	0.04	0.1	12.1	
Steelhead Rescued during Construction	Construction Year 2 (SH)	600	0	0	269	0	8,053	7,167	No Effect	No Effect	1.0	2.0	19.1	
Steelhead Affected by Operations	Sluicing Operations (SH)	550	N/A	N/A	N/A	N/A	8,053	7,167	20,020	13,923			61.6	42.3
	Water Intake Diversion	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A				
Alternative 1	Length (ft))	2,200	4,300	1,850	500		14,950	7,040	0	0				
Steelhead Rescued during Construction	Construction Year 1 (SH)	N/A	N/A	N/A	269	N/A	2,532	7,167	No Effect	No Effect	0.2	0.0	12.1	
	Construction Year 2 (SH)	1,100	3,139	675	269	N/A	8,053	7,167	No Effect	No Effect	3.1	5.2	19.1	
	Construction Year 3 (SH)	1,100	3,139	675	269	N/A	8,053	7,167	No Effect	No Effect	3.1	5.2	19.1	
Steelhead Affected by Operations	Sluicing Operations (SH)	550	N/A	N/A	N/A	N/A	8,053	7,167	20,020	13,923			61.6	42.3
	Water Intake Diversion (SH)	3,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Alternative 2	Length (ft)	2,200	4,300	1,850	500		14,950	7,040	0	0				
Steelhead Rescued during Construction	Construction Year 1 (SH)	N/A	500	N/A	269	N/A	2,532	No Effect	No Effect	No Effect	0.6	0.6	3.2	
	Construction Year 2 (SH)	1,100	3,139	925	269	N/A	8,053	7,167	No Effect	No Effect	4.2	4.2	19.1	
	Construction Year 3 (SH)	1,100	3,139	925	269	N/A	8,053	7,167	No Effect	No Effect	4.2	4.2	19.1	
	Construction Year 4 (SH)	1,100	3,139	925	377	N/A	8,053	7,167	No Effect	No Effect	4.3	4.3	19.1	
Steelhead Affected by Operations	Operations (#SH)	N/A	N/A	N/A	N/A	N/A	8,053	7,167	20,020	13,923			61.6	42.3
	Water Intake Diversion	3,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Alternative 3	Length (ft)	2,200	1,000	1350	500		14,950	7,040	0	0				
Steelhead Rescued during Construction	Construction Year 1 (SH)	N/A	N/A	N/A	N/A	N/A	2,532	No Effect	No Effect	No Effect	0.00	0.0	3.2	
	Construction Year 2 (SH)	1,100	730	675	269	N/A	8,053	7,167	No Effect	No Effect	2.2	2.2	19.1	
	Construction Year 3 (SH)	1,100	730	675	377	N/A	8,053	7,167	No Effect	No Effect	2.3	2.3	19.1	
Steelhead Affected by Operations	Operations (#SH)	N/A	N/A	N/A	N/A	N/A	8,053	7,167	20,020	13,923			61.6	42.3
	Water Intake Diversion	1,700	N/A	N/A	N/A	N/A								
No Project	Diversion (ft)	0	0	0	0	0	0	0	0	0	0.0	0.0		
	Operations (#SH)	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0

Notes
a Reach 3 is divided in Lower (L) and Upper (U) subreach. For impacts that exceed total Reach 3 length (Alts 1 and 2), abundance is based on Upper Reach 3 density
b Rearing juvenile steelhead density estimated at 0.5 SH/foot of channel for San Clemente and Tularicitos creeks.
c Reach Distance is from Figure 4.4-6
d Average annual steelhead (SH) per linear foot of stream based on reach station during MPWMD fall surveys (Table 4.4-3)
e Abundance is based on long-term average estimate of juvenile standing crop by Fishery Reach downstream of LPD excluding Reach 9 (Lagoon) and tributaries
f Estimated SH is number of steelhead affected within each reach
g Underlined Bolded Text denotes long-term beneficial effects from restoration of sediment transport past the Dam

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Impact Mechanisms and Timeframes

Direct impacts are defined as those caused by project activities that occur at the same time and place. Indirect or secondary impacts are defined as those caused by project activities that occur later in time, are one step removed, or removed by distance but are still reasonably foreseeable.

Direct impacts would be expected to occur in the reservoir or stream channels where dewatering occurs to support construction activities such as dam strengthening, demolition, bridge and road construction and sediment removal. Direct impacts would also arise from construction activities that occur outside of the stream channels, along the access roads, in the watershed at sediment disposal sites and downstream of in-channel construction sites. Direct impacts include temporary changes to flow volume, water temperature regimes and turbidity or sedimentation. These changes are evaluated based on the magnitude of change, amount of habitat affected and, duration of time and season(s) over which the event is expected to occur. These effects are evaluated by an analysis of the anticipated extent of changes to temperature, turbidity, suspended sediment, and sedimentation levels in downstream reaches.

Indirect impacts would result from effects that are one-step removed or physically distant from the location of the impact. For example, higher turbidity levels may reduce feeding rates, available food, or invertebrate production that would then affect growth rate in fish. The reduction in the shading provided by riparian vegetation would affect temperature regimes in the river that could affect habitat conditions for juvenile steelhead.

Project activities are identified as having a short-term or long-term impact. Short-term impacts are those that are typically construction related. Long-term impacts are those that endure beyond the construction period. Long-term time frames are defined as those that last from months to years, and also cover events that may occur periodically into the future but may not be continuous.

The following impact issues have been defined for Fisheries:

- FI-1 – Access Route Improvements (short-term alteration of aquatic habitat)
- FI-2 – Dewatering River Channels for Construction Purposes (short-term loss of aquatic habitat)
- FI-3 – Operation of a Trap and Truck Facility at OCRD (removed from analysis)
- FI-4 – Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes (short-term loss of aquatic habitat)
- FI-5 – Reservoir Dewatering (short-term loss of aquatic habitat)
- FI-6 – Water Quality Effects on Fish (short-term loss of aquatic habitat)

- FI-7 – Fish Ladder Closure (short-term limiting fish movement past the Dam site)
- FI-8 – Upstream Fish Passage (long-term impact to fish migrating to upstream spawning and rearing habitat)
- FI-9a – Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream (long-term alteration of aquatic habitat)
- FI-9b – Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage (potential juvenile fish entrainment and mortality)
- FI-10 – Relocate CAW Water Diversion Upstream (long-term reduction of flow in reaches of Carmel River between the new diversion point and dam)
- FI-11 – Fish Screen Installation (long-term elimination of entrainment or impingement at the diversion)
- FI-12 – Downstream Fish Passage over SCD (long-term improvement to fish passage over the Dam)
- FI-13 – Stream Sediment Removal, Storage, and Associated Restoration (long-term reduction of aquatic habitat, short-term alteration of aquatic habitat)
- FI-14 – Notching Old Carmel River Dam (OCRD) (short-term loss of rearing habitat, improvement of fish passage)
- FI-15 – Sleepy Hollow Steelhead Rearing Facility (loss or degradation of water supply)

4.4.3 IMPACTS AND MITIGATION

~~***This***~~*The* Final EIR/EIS analysis ~~*describes*~~ **described** the impacts or benefits associated with the Proponent's Proposed Project, and each alternative, relative to existing conditions. Mitigation actions are described to minimize or compensate for the effects of the project. ~~*The*~~ **Impacts to listed species will be mitigated to less than significant by adoption of measures described in this document. The** analysis evaluates impacts to steelhead through the impact mechanisms which describe the type and magnitude of impact. Any project would require permitting which could involve the adoption of conditions and mitigation measures beyond those identified in the Final EIR/EIS.

Endangered species are afforded the highest of priorities under state and federal law. Under CEQA, certain impacts to endangered, rare or threatened species trigger a mandatory finding of significance and require the preparation of an EIR. Significant impacts to state and federally listed endangered or threatened species must be mitigated in compliance with conditions imposed by the relevant resource agencies as a condition of incidental take authorization for the project.

Reasonable and prudent measures recommended by those agencies, if beyond those mitigation measures described in this document, will be incorporated into the mitigation for the project. Compliance with measures that are part of any incidental take authorization will be a condition of undertaking the project. The project will not proceed without appropriate take authorization, and will adhere to all measures incorporated into that authorization. Because the resource agencies are given authority to determine such measures for the benefit of threatened or endangered species, compliance with such measures, combined with mitigation measures adopted for the project, will reduce the net impact to the listed species to less than significant.

Some impacts may affect both listed and non-listed species. Implementation of mitigation measures identified in this document combined with measures that are part of any incidental take authorization for the listed species may reduce impacts to non-listed species to less than significant. However, the possibility exists of significant and unavoidable impacts to those non-listed species, even where impacts to listed species have been mitigated to less than significant.

One of the requirements for the Proponent's Proposed Project as well as for Alternatives 1, 2, and 3 is the issuance by the USACE of a Clean Water Act Section 404 permit to dredge or fill waters of the U.S. The application for a Section 404 permit for the Proponent's Proposed Project has been filed with the USACE. Section 7 of the ESA requires the USACE to consult with USFWS and NMFS whenever listed species may be affected by the action to be permitted. In this case, the USFWS will be consulted concerning the California red-legged frog, and NMFS will be consulted concerning the California South Central Coast steelhead trout. During this process, the USACE will prepare BAs for the relevant species and submit them to the respective agency. USFWS, in turn, will prepare a BO for the California red-legged frog and NMFS will prepare a BO for the steelhead. If the action is found not to jeopardize the continued existence of the species, each BO will provide for appropriate mitigation to meet conditions of the Section 404 permit. The USFWS and NMFS each will include an "incidental take" statement as part of the BO if it appears that some of the listed species will be lost as a result of the permitted action. (This ESA consultation process will proceed in parallel with NEPA review). Final Section 404 permit mitigation conditions could be the same as or in addition to any required NEPA/CEQA mitigation; ultimate jurisdiction over the selection, implementation and monitoring of mitigation measures lies with the appropriate federal agency.

Similarly, the Proponent's Proposed Project and Alternatives 1, 2, and 3 will require agreements with the CDFG. Such agreements may contain conditions requiring mitigation that could be the same as or in addition to the NEPA/CEQA mitigation outlined in this report. This section 4.4 addresses NEPA/CEQA mitigation for Fisheries. Vegetation and Terrestrial Species are covered in Section 4.5 and Wetlands in Section 4.6.

Proponent's Proposed Project (Dam Thickening)

Issue FI-1: Access Route Improvements

Short-term alteration of aquatic habitat
Determination: **less than significant with mitigation, short-term, less than significant with mitigation, long-term**

IMPACT

Construction of the bridge across Tularcitos Creek would directly affect aquatic habitat through removal of riparian vegetation during construction year (CY) 3. Road approach and bridge construction would result in the loss of up to 50 feet of riparian vegetation shading along each bank of Tularcitos Creek during Phase 1.

Road improvements along the Carmel River between the Sleepy Hollow Ford and OCRD would affect aquatic habitat through removal of riparian vegetation reducing shading and food resources. Indirect and direct, short-term impacts may be caused by sedimentation and increased turbidity along about a mile of the Carmel River from OCRD downstream to the Sleepy Hollow Ford from road construction, including rock blasting, and widening in CY 3. The Carmel River would not be dewatered to upgrade the piers and bridge deck at the OCRD. Road widening activities along the Carmel River would potentially expose rearing juvenile steelhead along about a third of Reach 4 to short-term minor increases in suspended sediment.

Road construction and widening along the Carmel River between the Sleepy Hollow Ford and OCRD and road construction between the OCRD and SCD would directly and indirectly affect aquatic habitat by the removal of riparian vegetation along the east bank of the Carmel River during CY 3. Reduction of riparian habitat would reduce the amount of shading along the river and reduce the source of terrestrial insects as a food resource for juvenile steelhead along Reach 4 of the Carmel River for about one mile, affecting about four percent of the habitat downstream of LPD and slightly less than four percent of the juvenile steelhead downstream of LPD (Table 4.4-10). This would be a significant impact.

MITIGATION

Riparian Vegetation

BMPs for riparian vegetation, identified in Appendix U (Botanical Resources Management Plan), would mitigate for some construction activities. Although these measures are typical of those applied to construction activities, they have not received formal approval by NMFS, CDFG, USFWS, CCRWCB, or DWR.

Tularcitos Creek

Water quality would be protected during construction (see Section 4.3 and Appendix K (Storm Water Pollution and Prevention Plan [SWPPP]) for mitigation measures to address sedimentation and turbidity), and the stream margins would be revegetated with native species when construction work is completed as described in Appendix U.

Carmel River

Measures would be taken to minimize effects of blasting for road widening activities (such as falling rock debris) in areas near the channel. Blasting mats and temporary walls would be used to prevent rock fall and blast debris from entering the river channel (see SWPPP, Appendix K) for mitigation measures to minimize sedimentation and turbidity). Tree removal would be limited to only those limbs or trees that require cutting to meet access requirements along the Carmel River between the Sleepy Hollow Ford and the OCRD. Construction of the road from OCRD to SCD would minimize tree removal to the extent practical by careful consideration of road alignment, equipment access routes and laydown areas. Road fill would be needed to raise the access road above frequent flood elevations. The fill would be placed on a fabric or rubber liner on the floodplain. Rip rap or boulders that are too large for the river to move during floods would be used to face the road fill to prevent mobilization of the fill. An erosion control and road drainage plan as described in Appendix K (SWPPP) would avoid or eliminate aquatic impacts due to sedimentation and turbidity. The boulder covering, road-fill and fabric or rubber liner would be removed after access to the base of the Dam was no longer necessary. Disturbed areas would be revegetated if necessary.

The use of blasting mats and temporary walls will substantially reduce the amount of rock material and dust directly entering the Carmel River. Shading and invertebrate habitat is provided by trees along on both sides of the river and by rushes growing on the banks and in the river. Shading is also provided by the steep canyon topography. Tree and limb removal will be minimized by removing only those trees or limbs of trees that are necessary to provide clearance along the access road. Limb removal would primarily occur on the outside of the riparian zone along the road while river shading is primarily provided by trees or branches overhanging the river. Therefore, limb removal toward the outside of the riparian zone would have minimal effects on overall river shading. Invertebrate input from the canopy would be affected by limb removal since insects from most locations in the riparian zone fly or fall into the river from the canopy overhead. Selective tree and limb removal will minimize the amount of tree canopy removal along the Carmel River. The reduction in overall canopy to the river would be relatively minor because it would involve only a portion of the total canopy along the east side of the river. The canopy along the west side of the channel would not be altered. Afternoon summer shade along the western side of the river is more critical to temperature regulation. Given these mitigations, overall canopy is expected to relatively minor.

The Carmel River between SCD and the Sleepy Hollow Ford contains about four percent of the juvenile steelhead and four percent of the rearing habitat downstream of LPD. Impacts from construction activities to suspended sediment in the river would be confined to the upper sections of Reach 4 and minimized by the use of temporary walls and blast nets. Blasting and rock removal would affect about a mile of river channel downstream of SCD in the short-term. With mitigation this would be a less than significant, short-term impact.

Impacts from tree or limb removal would be occur at localized sites but collectively would affect shading and terrestrial invertebrate input to the Carmel River in Reach 4. The reduction in shade and terrestrial invertebrate input would extend beyond the construction period until the tree canopy recovers and by definition would be a long-term impact. Minimizing tree or limb removal would reduce the effect of shade loss and invertebrate input by reducing the amount of canopy removed during construction. This would be a less than significant, long-term impact.

Issue FI-2: Dewatering River Channels for Construction Purposes

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

Approximately 100 feet of Tularcitos Channel would be dewatered during CY 3 construction for up to eight months for the construction of a new bridge over Tularcitos Creek. A small diversion weir would be constructed upstream of the dewatered reach to direct streamflow into a pipe that would convey through the construction site.

The plunge pool and about 400 feet of channel immediately downstream of SCD would be dewatered to facilitate dam thickening in CY 4. The plunge pool would be isolated from the river by the installation of two downstream cofferdams. A pump would be used to dewater the pool and any channel segments still holding water. The pool would be filled with crushed rock to support the base of a tower crane. The material used to fill the pool would be removed and the pool restored to pre-disturbance condition once the Dam thickening is complete.

Juvenile steelhead rearing habitat would be lost for a single construction year during the time the channel segments are dewatered. The reach of Tularcitos Creek and the dewatered Carmel River reach both provide rearing habitat for juvenile steelhead that would be lost for one rearing season each. This would be a significant impact because rearing habitat could not be replaced during the construction phase.

Based upon the average juvenile steelhead density for Reach 4 of 0.54 fish per linear foot of channel, rearing habitat supporting about 270 juvenile steelhead would be lost in the plunge pool and 400 feet of channel and the rearing habitat would be lost for a single season. Steelhead present in the Carmel River are listed as a federally threatened species and loss of these fish would be a significant, short-term impact.

MITIGATION

Fish rescues would be undertaken to capture and relocate fish from the affected reaches and relocate them to sections of the Carmel River that would support their growth and development. Fish would be rescued primarily with the use of block nets, seines and dip nets. Backpack electrofishing units would be used if bottom topography makes the use of nets ineffective. Electrofishing would follow guidelines established by NMFS (2000).

Streamflow from the Carmel River upstream of SCD would be directed into appropriately-sized flex pipes and inflowing water would be diverted around the plunge pool and the section of the river to be dewatered. Once flow is diverted out of the channel, water levels would be reduced in the plunge pool and other sections of the river by pumping. Once water levels are lowered in a section of river, a fish rescue would begin and continue until all possible fish are removed from the dewatered reach.

The fish rescue would be completed prior to the complete dewatering of a reach. Field crews would continue to search for stranded fish during the final phases of dewatering. Some fish mortality may occur as a result of the rescue efforts. Capture and handling increases stress and presents a risk of injury.

Captured fish would be temporarily held in aerated coolers for transport to relocation sites. Rescued fish would be transported downstream and released into the Carmel River near the Carmel Valley Filter Plant or moved to the SHSRF if rearing capacity in the release site in the river is already at the maximum capacity. Water quality would be protected during construction (see Section 4.3 and Appendix K for BMPs addressing sedimentation and turbidity). The plunge pool would be restored to its original configuration after CY 4.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead cannot be fully mitigated and would be significant.

Issue FI-3: Operation of a Trap and Truck Facility at OCRD

Short-term loss of access for adult steelhead to upstream reaches
Determination: ***Removed from the analysis***

The operation of a Trap and Truck facility has been eliminated from the fisheries impact issues. In the Draft EIR/EIS, operation of the Trap and Truck facility was proposed as mitigation for Fish Ladder Closure (Impact Issue FI-7) which was anticipated to occur in late April or May. Based on regulatory agency input, the earliest that instream construction-related actions could begin is on June 15. Construction activities requiring diversion of the river would begin on June 15 or the first day thereafter when the flow passing San Clemente Dam is 50 cfs or less. This timeframe has virtually eliminated the Fish Ladder Closure Issue. The fish ladder has only operated through June once since 1998.

Additionally, construction could not occur until all inflow to the reservoir can be diverted around the reservoir and released downstream. The planned bypass flow capacity is 50 cfs. The combined restriction of a June 15 (river diversion start date) and at a flow less than 50 cfs means that it is unlikely that the project would affect any upstream migrating adult steelhead. In 1998, the year when 13 adult fish moved upstream in June, flows dropped from approximately 200 cfs on June 1 to about 80 cfs by June 30.

With the calendar date and flow constraints there would be few, if any years when upstream migrating adults would be present in the ladder and there would be minimal, if any impairment to upstream migration. Consequently, a Trap and Truck operation would not be warranted. See Impact Issue FI-7, Ladder Closure, for a more comprehensive discussion of the adult migration issues.

Issue FI-4: Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

The Carmel River and San Clemente Creek would be diverted around San Clemente reservoir and dam site. A sheet pile cutoff wall would be used to collect and divert water from the Carmel River and San Clemente Creek into pipes designed to carry up to 50 cfs for the Carmel River and up to 10 cfs for San Clemente Creek. The collected water would be conveyed by the pipes installed parallel to, or in the channels, along both streams to a location about 500 feet downstream of SCD, where flow would be returned to the Carmel River. The intakes of both pipes would be screened consistent with CDFG and NMFS criteria to prevent the entrainment of and to reduce the opportunity for impingement of fish, frogs, and other aquatic organisms.

The diversions would have direct, short-term impacts to rearing habitat upstream of the reservoir, in about 1,200 feet of the inflowing Carmel River, and in less than 100 feet of San Clemente Creek. The diversion intake location on San Clemente Creek would be located near the confluence of the creek with the reservoir. Diversion of water into bypass pipes would affect rearing habitat for up to approximately 600 juvenile steelhead in the Carmel River and a few fish in San Clemente Creek (Table 4.4-10). These impacts would occur during CY 4. This would be a significant, short-term impact.

MITIGATION

Mitigation for dewatering the Carmel River would be similar to mitigations described in FI-2. In addition to actions mentioned in FI-2, fish traps would be installed upstream of diversion points to capture downstream migrating fish so they could be transported around the diversion site and continue their downstream movement. Fish would be rescued from the area of the diversion sites prior to constructing the diversion structures. Once the sheet piles are installed and the diversion pipes connected, water would be diverted into the pipes. Flow in the river channel downstream of the diversion would be reduced and the reduction in flow would facilitate fish rescues. A fish rescue would occur in the Carmel River and San Clemente Creek channels between the diversion point and the reservoir. Block nets would be set near the mouth of each stream to prevent fish from moving upstream of the reservoir. Once all fish were rescued from the channels, all flow would be directed into the bypass pipes. Some fish mortality may occur as a result of the rescue efforts, capture and handling increases stress and presents a risk of injury. See Impact FI-2.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of rearing habitat for steelhead cannot be fully mitigated and would be significant.

Issue FI-5: Reservoir Dewatering

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

The reservoir would be lowered from about 525 to 510 feet elevation and sheet piles would be installed in the reservoir around the inoperable mid-level intake gate located 31 feet below the spillway crest. The area between the Dam and the sheet piles would be excavated to expose the intake gate, and the intake gate would be repaired to operating condition.

Lowering the water level to 510 feet would initially create a shallow, warm pool of standing water behind the reservoir with an estimated maximum depth of about five feet. The water level would be lowered to the bottom of the reservoir (approximately 505 feet elevation) once the intake gate was repaired. Construction dewatering would cause a loss of steelhead and a short-term loss of steelhead rearing habitat in the reservoir during the construction season in CY 4. This would be a significant, short-term impact.

MITIGATION

Nets would be installed across the channels leading into the reservoir to prevent fish from swimming upstream into the Carmel River and San Clemente Creek. A fish rescue would occur in the reservoir during drawdown. Fish would be captured using large and small seines and dip nets. Backpack electrofishing units may be used if needed. Electrofishing would follow guidelines established by NMFS (2000). Rescued fish would be relocated to other suitable habitat downstream of OCRD in the Carmel River. Some fish mortality may occur as a result of the rescue efforts. Capture and handling increases stress and presents a risk of injury. See mitigations under Issue FI-2. During dewatering, water quality in the river would be protected (see FI-6 Water Quality Effects on Fish) and impacts mitigated as described in Section 4.3.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of rearing habitat for steelhead cannot be fully mitigated and would be significant.

Issue FI-6: Water Quality Effects on Fish

Short-term alteration of aquatic habitat
Determination: **less than significant with mitigation, short-term**

IMPACT
Construction activities, river diversions and reservoir dewatering would affect turbidity, DO levels, and temperature in the river downstream of SCD during the summer low flow period. These effects may extend downstream for up to several miles.

Increases in turbidity could occur during installation of seasonal stream diversions, from dewatering stream channels and the plunge pool, from dewatering the reservoir, and from dewatering the reservoir sediment. Increased turbidity would occur during the time of the year when flows are low and the river normally sustains low levels of turbidity.

Increases in temperature could occur as a result of channel dewatering and reservoir dewatering. Reservoir dewatering would result in a shallow, warm pool of water in the bottom of the reservoir for a period before the reservoir is completely empty. Dewatering would occur in the early summer when air temperatures can already be warm.

Decreases in DO levels could occur as a result of dewatering channels and from reservoir dewatering. DO levels would be rapidly moderated by aeration at the release point and when aerated at downstream riffles.

During dewatering of the reservoir, turbidity levels would increase in the reservoir water from the mobilization of fine particulate organic matter and sediment on the reservoir bed. During dewatering, iron-rich pore water would surface and bring dissolved iron into contact with oxygen in the surface water. The iron would precipitate out in the water column, creating turbidity, and in the process consume oxygen in the water. These factors would increase turbidity in the reservoir water and in water being released into the Carmel River.

Experience from the Interim Dam Safety Measures (annual drawdowns) indicate that turbidity levels are generally less than 10 NTUs (for weeks or months) with short spikes (for hours to days) up to higher levels. The annual drawdowns lowered the reservoir level by 10 feet to elevation 515 and held the reservoir at that level for the remainder of the dry season by discharging inflow via the reservoir through the drawdown ports. The Proponent's Proposed Project would completely dewater the reservoir and divert the inflowing streams around the reservoir via bypass pipes. Once the reservoir is dewatered, there should be no reservoir water source of turbidity.

Turbidity levels in the reservoir are expected to be in the Behavioral or Sublethal Effects range for days to weeks. These effects could impair visual cues affect behavioral interactions and possibly disrupt feeding in the short-term. Turbidity during dewatering could affect Reaches 4, 5, and 6. Turbidity levels would attenuate in a downstream direction with the most pronounced effects in Reach 4 attenuating to minor or undetectable effects in Reach 6. Collectively these three reaches support about 40 percent of the total steelhead in the river and about 30 percent of the rearing habitat in the Carmel River downstream of LPD for days to weeks (Table 4.4-10). This would be a significant, short-term impact.

MITIGATION

Control of turbidity from construction activities on adjacent roads, stream crossings, and bridges is addressed in Section 4.1 and 4.3. Moderating the rate at which the reservoir is dewatered could mitigate turbidity from dewatering. During the annual drawdown, all inflow was allowed to flow through the reservoir and turbidity control was not practical or possible, except by moderating the rate of drawdown. During construction dewatering, the inflow would be piped around the reservoir and released into the downstream channel. The reservoir would be dewatered to 510 feet by pumps then lowered further by reopening the lower level valve. Dewatering would also occur, using well points once surface water is depleted. Releases from the reservoir into the river can be regulated to minimize the effect on downstream turbidity. If reservoir water is highly turbid, it would be treated by running it through a mobile filter plant prior to release to the river. Turbidity effects from the dewatering would be short-term and localized in the river downstream of SCD. Turbidity may affect Reach 4 and some of 5, but the ability to regulate and treat the release of highly turbid water from behind SCD would mitigate the effects to the river. Aerating the water prior to release into the river would mitigate decreased DO levels. Cooling the water prior to release into the river would mitigate increased temperatures.

Turbidity caused by dewatering the plunge pool would be regulated by the rate at which the plunge pool is pumped down. Typically, the highest turbidity occurs near the end of the dewatering process. It would also be possible to treat this water prior to release into the river in the same manner that the water in the reservoir would be treated.

Water temperature increases would be mitigated by dewatering the reservoir as much as possible during cool periods or during the early part of the day. As the water level is lowered and surface water temperatures rise during the day, dewatering would switch from a surface release to a release from well points. Surface water releases would be restricted to cooler periods at night or early in the day. River temperatures downstream of the Dam should not increase by more than 1 to 2 ºC over water temperature levels upstream of the sheet-pile diversion.

Reducing thermal loading in diversion pipes around the reservoir would be accomplished by placing the pipeline in locations that are shaded, burying the pipe beneath a shallow layer of sand or covering the pipe with shade cloth or burlap. The pipe would be painted white where it is not possible to shade or bury it.

DO levels would be mitigated through aerating the water either as it leaves the diversion pipes or with a mechanical aerator prior to releasing pumped or treated water into the river. Low DO levels in the reservoir would quickly moderate from water falling over the Dam. During bypass operations for the river, the design shall incorporate a feature that would aerate the water as it descends from the Dam to the river. The reservoir dewatering would make use of the surface release to aerate water. Water that is pumped from the reservoir or from well points would be discharged in a similar manner to fully aerate low DO water prior to discharge into the river.

While a substantial number of fish could be exposed to increased turbidity and water temperatures and reduced DO levels, the actions proposed would fully mitigate for the impacts. The level of impacts is mitigable to less than significant and any residual impact would be a short-term effect on the fish. Therefore the impact is less than significant with mitigation.

Issue FI-7: Fish Ladder Closure

Short-term limiting fish movement past the Dam site
Determination: **less than significant, short-term**

IMPACT

Dewatering the reservoir during CY 4 may result in temporary closure of the fish ladder for a period of days to weeks toward the end of the migration season. Closure of the ladder would result in direct, temporary effect on adult steelhead in the Carmel River by stopping migration at the Dam. Based on migration information, the number of adult steelhead potentially affected by ladder closure could range from 0 to 13 fish during all of June (Table 4.4-2).

Construction would not begin until the Carmel River is diverted around the work area. The bypass system for the project can handle about 50 cfs, so reservoir dewatering and construction would not begin until the flows in the river at SCD are at 50 cfs or less. Flows would be diverted into the bypass pipes and the ladder would be closed. Bypass pipes would be designed to carry 50 cfs on the Carmel River and 10 cfs on San Clemente Creek. Construction activities requiring diversion of the river would begin on May 15 or the first day thereafter when flow passing San Clemente Dam is 50 cfs or less. The flow conditions and calendar start date imply it would be unlikely that any adult fish would still be moving up the river when the ladder would be closed. The ladder is usually closed in early to late May when flows recede in the river and the mouth closes. The ladder has operated in June only one year out of 15. In 1998 (a wet year) the fish ladder was able to operate in June when flows at the beginning of the month were well over 200 cfs (Figure 4.4-5).

Given these natural constraints, it is unlikely that the Proponent's Proposed Project would have any effect on upstream migrating adult steelhead. An analysis of the most recent 15 years of ladder operations shows that the ladder operation occurred during the May 1 to 15 period in 10 out of 15 years; during the May 16 to 31 period in 7 out of 15 years and occurred only for one year after June 1. A total of 21 fish ascended the ladder in May and June of 1998, the highest count of all the years for operations continuing after May 1 and represented 2.3 percent of the adult run for that year (Table 4.4-2). A total of 13 fish ascended the ladder in June of 1998 representing 1.5 percent of the adult run, and 8 fish representing 0.9 percent of the 1998 run ascended the ladder between June 16 and 30. The largest number of fish that ascended the ladder in May occurred in 1996 and 1997 when 11 fish ascended the ladder each year representing 2.5 percent of the run in 1996 and 1.4 percent of the run in 1997. In 1999 no fish entered the ladder in May and no fish entered the ladder during second half of May when it was operating in 2002 or 2005 (Table 4.4-2).

During the ten years that steelhead were counted in the ladder in May and/or June, a total of 59 fish passed up the ladder, representing 1.4 percent of the total of 5,609 fish that were counted in the ladder for those years (Table 4.4-7). While ladder closure may affect some fish, based on available data, ladder closure on May 31st for a single year would not prevent or interfere substantially with the movement of any native resident or migratory fish species.

In the Draft EIR/EIS, a Trap and Truck facility plan was proposed as a mitigation measure for fish that might pass through the ladder during May and June when the reservoir was being dewatered. The migration is essentially over when river diversion activities start after May 31. The level of impact to migrating adult steelhead from ladder closure would be less than significant. Therefore, the impact is less than significant, short-term. This is a change from the Draft EIR/EIS because of the date for stream diversion to begin has been deferred several weeks.

Issue FI-8: Upstream Fish Passage

Long-term impact to fish migrating to upstream spawning and rearing habitat
Determination: **beneficial with mitigation, long-term**

IMPACT

The existing ladder would be demolished and a new vertical slot ladder would be constructed. Operation of the new ladder would improve passage conditions at SCD compared to the existing ladder for several reasons. The new ladder would increase the attraction flow at the ladder, would have more steps, which would reduce the height between steps compared to the existing ladder, and would have larger pools providing better resting habitat and the ladder design is a vertical slot design which would enable swim-through passage rather than the leaping passage between steps required by the existing ladder. Upstream passage would be improved since all flows less than 55 cfs would be conveyed down the ladder and not over the spillway. The present ladder can pass only 10 cfs. During spills, the ladder would carry up to about 77 cfs and would continue to provide upstream fish passage. The ladder could become impaired by sediment and debris transported from upstream and by the deposition of sediment behind The Dam and upstream of the ladder. The operation of a sluice gate could result in fallback of adult fish that have ascended the ladder and are entrained in the flow during sluice gate operation.

Operation of the new ladder would improve passage conditions at SCD, and would be a beneficial impact compared to existing conditions.

MITIGATION

The sluice gate would be operated under the protocols of the SOMP (Appendix J). The 10-foot diameter sluice gate would be installed near the ladder entrance and periodically operated to keep the ladder free of sediment and maintain passage conditions upstream of the ladder. Sluicing operations are defined in the SOMP, and sediment impacts are discussed in Issue FI-9a. Sluicing or dredging would occur as needed to maintain the ladder free of sediment and provide for passage through upstream river channels for adult fish. Sediment management would occur on a preventative basis under appropriate flows. Dredging and excavation would occur during low-flow periods. Sluicing would only occur on the rising limb of an early winter storm event. A gate would be installed on the upstream end of the fish ladder to prevent fish from moving out of the ladder before and during sluice gate operation. The fish ladder exit would be closed for a period of time before the sluice event begins. Fish would not be able to exit the upstream end of the ladder when the gate is closed which includes a period prior to and during the sluice event. Following completion of a sluice event, flows would again spill over the Dam. The gate at the upstream end of the ladder would be reopened to allow passage into the remnant reservoir and to access upstream river channels. Fish that are in the remnant reservoir prior to operation of the sluice gate could be subject to fallback through the sluice gate. The ladder would be closed prior to operation of the sluice gate to allow fish that had exited the ladder to move upstream away from the sluice gate. The sluice gate would be partially opened to eliminate resting habitat near the ladder exit and encourage steelhead in the remnant pool to move upstream away from the gate prior to fully opening the sluice gate. A few adult fish may be subject to fallback during the 2 hour period when the gate is fully open. Because of the changing nature of the Carmel River's flows and the experimental nature of early sluice gate operation, the SOMP is an adaptive management plan that would be modified by the Fish Passage Management Committee composed of representatives from CAW, NMFS, CDFG, and MPWMD.

With mitigation, the new ladder and sluice gate operations, would improve upstream fish passage conditions at SCD and would have a beneficial effect compared to existing operations.

Issue FI-9a: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream

Long-term alteration of aquatic habitat
Determination: **less than significant, long-term, no mitigation required**

Issue FI-9 as identified in the Draft EIR/EIS has been designated as FI-9a in the Final EIR/EIS to separate the analysis of downstream sediment impacts from sluicing, dredging, or sediment transport from the impacts to fish due to excavation or dredging in the remnant reservoir for fish passage (presented as Issue FI-9b).

IMPACT

This impact was listed as FI-9 in the Draft EIR/EIS and had the impact determination “significant unavoidable.” Based on the additional analyses on suspended sediment levels from sluicing to downstream channels that was conducted in response to comments, the impact determination has been changed to “less than significant.” The additional studies are presented earlier in this section and the results are further discussed in the following paragraphs.

The Proponent's Proposed Project would retain the Dam and construct an improved fish ladder. Sediment has nearly filled the reservoir at SCD and is expected to fill the reservoir to the spillway elevation in 6 to 10 years. Fine sediment would begin spilling over the Dam during large flow events. Initially, only fine sediment would be delivered to the downstream river reaches. However, substrate size is expected to increase to include gravel-sized material within 12 to 20 years. An estimated average 16.5 AF of sediment is delivered to the San Clemente reservoir area annually and about 12 AF of that sediment would be transported downstream (MEI 2003).

In order to keep an open channel between the top of the fish ladder and the upstream river, construction and operation of a sluice gate would be employed. The sluice gate would be 10 feet in diameter and situated so the opening would be about 10 feet from the entrance to the fish ladder. The bottom of the sluice gate would be about 2.7 feet below the invert elevation of the fish ladder. The sluice gate would be operated according to protocols set forth in the SOMP (Appendix J). Sluicing events would only occur during winter storm runoff when the river is already turbid from high flows. Adequate fish passage conditions are defined as a minimum of one foot of depth in the channel upstream of SCD.

Sediment management protocols employ dredging or excavation during low flow periods to avoid sluicing under these conditions to provide for fish passage in advance of the time when storm flows in the river flow reach 300 cfs. Under the sluicing protocols, sediment sluicing operations would open the sluice gate for two hours and release about 2.4 acre feet of sediment. This would cause a short-term increase in the suspended sediment load of fine-to-coarse sand-sized material to the river. No alteration of water temperature would be expected from sluicing operations.

The change in suspended sediment delivered to the lower river for existing conditions and the Proponent's Proposed Project would remain in the Sublethal Effects Level with SEV scores of 7 to 8 in all reaches downstream of SCD for a typical wet year sluice event (Table 4.4-9). The Sublethal Effects Level would include reduced feeding success, delayed hatching and indications of physiological stress and poor condition (Newcombe and Jensen 1996).

Subsequent flows of 300 cfs or more following closure of the sluice gate have adequate transport capacity in the Carmel River downstream of SCD to fully mobilize the sluiced sediment and move it downstream (Appendix S). Organisms in the river downstream would experience periods of increased suspended sediment as the material passes downstream. Graphic analysis of suspended sediment concentrations show a rapid increase in suspended sediment in Geomorphic Subreach 4.3a with attenuation of the peak and dispersal downstream to subreaches 4.3b and 4.3c (Appendix O Figures 11 to 14) for a wet year sluice event. The dry year sluice event shows a somewhat similar behavior but because of lower flows following the sluice event, suspended sediment levels would stay elevated in Subreach 4.3b and 4.c at the end of four days (Appendix O Figures 25 to 28).

Suspended sediment concentrations would increase in Subreach 4.3 (upstream section of Fishery Reach 4) for about 2-3 days (Figure O-1, Appendix O), and in Fishery Reaches 5, 6, and the upper half of 7 of the Carmel River compared to 2030 Baseline Conditions. Suspended sediment effect levels remain the same for the Proponent's Proposed Project compared to the existing conditions for subreaches 4.3, 6.3, 6.7, 7.3, 7,7 and 9, and does not change the effect level from sublethal. Suspended sediment effect levels are the same with slightly higher concentrations but similar duration (See Figures O-3 through O-9, Appendix O) with an SEV of 8 for the Proponent's Proposed Project compared to the 2030 Baseline for subreaches 6.3, 6.7, 7.3, 7.7 and 9. Suspended sediment effect levels are 8 for the Proponent's Proposed Project compared to 7 for the 2030 Baseline in Subreach 4.3 (higher concentration, similar duration see Figures O-1 and O-2) but this does not change the effect level from sublethal. Suspended sediment would affect fishery reaches 4, 5, 6, and, 7 with the greatest effects on Fishery Reach 4 and progressively lesser effects to downstream sites.

The analysis based on a change in Effects Level indicate that the effects from suspended sediment released by sluicing under the Proponent's Proposed Project are similar to effects of background levels of suspended sediment that already occur in the river during high flow events or would be expected to occur in the river under the 2030 Baseline condition (with the reservoir completely full of sediment except for a remnant pool).

Impacts from exposure to suspended sediment from the Proponent's Proposed Project to downstream resources are similar to impacts that occur during storm events under the 2030 Baseline and therefore are less than significant long-term.

Issue FI-9b: Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage

Potential juvenile fish entrainment and mortality
Determination: **less than significant, long-term**

IMPACT

In response to comments, since issuance of the Draft EIR/EIS, the SOMP (Appendix J) has been expanded to include other methods for managing sediment, in addition to sluicing. Mechanical sediment removal using a suction dredge or an excavator would be employed to maintain fish passage upstream of the ladder when sluicing sediment is not possible because of potential downstream impacts. Excavation or dredging would be conducted under low flow conditions and not during periods of peak steelhead migration. Recently deposited fine grained substrates impeding fish passage would be removed from the area upstream of the ladder.

Suction dredging can entrain and kill small fishes and invertebrates, degrade benthic habitat, and increase turbidity in a localized area. The bottom habitat that would be dredged consists of a generally flat bottom of fine sediments that have recently accumulated behind the Dam and would be of very poor habitat quality. These fine sediments would support very low invertebrate productivity and collectively the area would provide very poor rearing habitat. Excavation with a mechanical excavator could kill fish by striking them with the bucket, capturing fish in the bucket or exposing fish in the area of the excavation to turbulence and localized elevated turbidity. During dredging or excavation, flow through the fish ladder would be minimized and most of the flow would be spilled over the Dam. Reducing flow into the ladder would minimize the amount of suspended sediment from removal activities from entering the ladder flow. While there is a potential for juvenile steelhead to be entrained in the suction dredge and killed, this potential is very low. The intake for the dredge is operated in the substrate and would rarely encounter steelhead. Additionally, juvenile and adult fish are known to easily avoid suction dredges (Harvey and Lisle 1998). Juvenile steelhead are not likely to be found in the area to be excavated because habitat conditions would be very poor, water depth would be shallow, substrate would be sand, velocities would be low, and the area would be devoid of cover.

Given the poor habitat for steelhead in the area requiring dredging, the ability of steelhead to avoid suction dredges and/or a bucket, the low probability of encountering steelhead in the area, and excavation activities that would only occur for a period of days, this would be a less than significant, long-term impact.

Issue FI-10: Relocate CAW Water Diversion Upstream

This issue does not apply to the Proponent's Proposed Project.

Issue FI-11: Fish Screen Installation

Long-term elimination of entrainment or impingement at the diversion
Determination: **beneficial, long-term**

IMPACT

A new fish screen meeting NMFS and CDFG criteria would be installed at the intake in SCD. The intake would be moved to a location that would be in proximity of the sluice gate. The fish screen would eliminate entrainment into the diversion and minimize impingement. Sluice gate operation for fish passage as described in FI-9a (Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream) would also maintain the intake in operational condition.

MITIGATION

The impact of the fish screen is beneficial; no mitigation is required. Mitigation for the sluice gate operation is described in Issue FI-9a.

Issue FI-12: Downstream Fish Passage over SCD

Long-term improvement to fish passage over the Dam
Determination: **beneficial, long-term**

IMPACT

The spillway would be modified by raising the elevation of the two lateral spillway bays by 0.5 feet relative to the center bay. Spillways would be extended to directly spill into the plunge pool, and not strike the thickened dam face. During low flows, all surface flow would be carried through the fish ladder (up to 55 cfs). At flows above 55 cfs, surface flow would begin to spill through the center spillway bay. For stream flows in the range of approximately 55 to 115 cfs, most of the flow (55 to 62 cfs) would pass through the ladder. The remaining flow would spill over the lower, center spillway (elevation 525.0). Above stream flows of approximately 115 cfs, spill would also occur at the higher two spillway segments (elevation 525.5 feet). This configuration provides an increased depth of flow during lower flows compared to the existing spillway and ladder configuration. The new spillway bays would be equivalent to or better than the existing spillway bays for fish passage. Fish passing over the Dam would fall about 65 feet into the plunge pool, as they do under existing conditions. The new fish ladder would pass all flows up to about 55 cfs, reducing the amount of time the reservoir spills and providing safer passage down the ladder. The ladder would continue to operate during higher flows and would carry up to about 77 cfs when river flow volume is about 700 to 800 cfs or higher. Sluicing events would occur as needed and be consistent with conditions in the SOMP (Appendix J) when it is necessary to mobilize sediment from upstream of the dam and fish ladder. Sluicing would occur for up to 2 hours during storm flows of 300-700 cfs. During the sluice event nearly all flow would pass through the sluice gate with a small volume of flow going down the ladder. Juvenile and adult fish entrained in the sluice event would pass downstream through the sluice gate into the plunge pool. Water levels behind the dam would drop below the level of the spillway during the sluice event preventing juvenile and adult fish from passing through the spillway bays. There is potential for juvenile and adult fish passing downstream through the sluice gate and into the plunge pool to become injured by the turbulence and shear zones as they enter the plunge pool. Potential injury from downstream passage while sluicing is occurring is not expected to be substantially different from potential injury that would occur as a result of passage through the spillway bays and the fall into the plunge pool. This would be a beneficial, long-term impact.

MITIGATION

Spillway and fish ladder modifications described above would improve downstream fish passage compared to existing conditions. No mitigation is required.

Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration

Sediment removal is not a component of the Proponent's Proposed Project and no stream restoration would occur. Except for local removal of sediment for construction purposes, existing conditions would be unchanged. Table 4.4-11 provides a summary of changes to fish habitat and changes to lengths of channel by alternative.

Table 4.4-11: Summary of Channel Length Changes for the Proponent's Proposed Project and Each Alternative Upstream of San Clemente Dam

	Habitat Changes		Gain or Loss of Channel Length		
	San Clemente Creek	**Carmel River**	**San Clemente Creek**	**Carmel River**	**Net Change**
Existing Conditions	1,350 feet of channel, creek mouth is 850 feet U/S from SCD*	6,500 feet of channel, river mouth is 200 feet U/S from SCD	No Change	No Change	0ft
Proposed Project	No change	No Change	0 feet	0 feet	0 feet
Alternative 1 Dam Notching	Remove sediment in San Clemente Creek arm to a depth of 20 feet; remove 1,350 feet of existing SCC channel. Reconstruct 2,200 feet of SC Creek channel on new sediment surface.	Remove sediment in Carmel River arm to a depth of 20 feet, remove 6,500 of existing CR channel, Reconstruct 6,700 feet of new CR channel on new sediment surface	Gain 850 ft of channel length	Gain 200 feet of channel length	Gain 1,050 feet of channel length
Alternative 2 Dam and Sediment Removal	Remove all sediment in San Clemente Creek arm to valley bottom; remove 1,350 feet of existing SCC channel. Reconstruct 2,200 feet of SC Creek channel in new valley bottom.	Remove all sediment in Carmel River arm to valley bottom, remove 6,500 of existing CR channel, Reconstruct 6,700 feet of new CR channel in new valley bottom	Gain 850 ft of channel length	Gain 200 feet of channel length	Gain 1,050 feet of channel length
Alternative 3 Reroute and Dam Removal	Remove all sediment in San Clemente Creek arm to valley bottom; remove 1,350 feet of existing SCC channel. Reconstruct 2,200 feet of Carmel River Channel through San Clemente Arm in valley bottom.	Abandon 3,000 feet of Carmel River Channel, construct 450 feet of bypass channel and connect with San Clemente Arm channel.	Loss of 1,350 feet of channel length	Old Channel length was 3,000 feet, new channel constructed is 2,650 feet, = loss of 350 feet channel	Loss of 1,350 feet of San Clemente Creek and 350 feet of Carmel River. Net loss of 1,700 feet of channel.
Alternative 4 No Project	Same as Existing conditions		Same as Existing Conditions		

* all distances measured from dam to upstream extent of former Inundation Zone and assumes 850 ft for San Clemente Creek and 200 ft for Carmel River beneath the reservoir.

Issue FI-14: Notching Old Carmel River Dam

Short-term loss of rearing habitat, Improvement of fish passage
Determination: **short-term, less than significant; long-term, beneficial**

IMPACT

The OCRD would be notched in CY 3. Sheet piles would be installed upstream and downstream around the central portion of the Dam. The sheet pile installation will isolate the demolition area from the river so the plunge pool downstream of the OCRD would not be dewatered and the river would not be diverted around the site. Once the sheet piles have been set, the water on the downstream side would be pumped out and bed material from the upstream side of the Dam would be excavated as the Dam is notched. Flow in the river in the late summer or early fall would be on the order of 10 cfs or less. During CY 3 or CY 4, steelhead captured from the upstream work at SCD and reservoir would be released well downstream of OCRD (See FI-2, FI-4, and FI-5). This would minimize the number of steelhead in the river at OCRD.

In the Draft EIR/EIS, mitigation was proposed for this impact which would include fish rescue activities because of dewatering of the plunge pool downstream of the OCRD. However, current plans would not involve dewatering of the pool below OCRD. Impacts would be minimal due to: late season low flow conditions; minimal disruption in the river channel from isolating the work using sheet piles; the short duration of the project; and because juvenile steelhead migrating downstream would be moved to river sites well below OCRD for the summer period preceding dam notching work at the OCRD. Construction of the notch would result in a less than significant, short-term impact. Notching would remove a large center section of the Dam and eliminate a passage barrier and would be long-term benefit.

MITIGATION

No Mitigation is required. This would be a less than significant short-term impact and notching would result in a long-term benefit.

Issue FI-15: Sleepy Hollow Steelhead Rearing Facility

Loss or degradation of water supply
Determination: **less than significant with mitigation, long-term**

IMPACT

The SHSRF depends on Carmel River water to operate from early summer to winter or early spring. Construction and operation of the Proponent's Proposed Project could result in water of poor quality, (high turbidity, low DO, or warm temperatures) during CY 3 and 4 and during operations into the future. Road construction, dewatering the plunge pool, diverting water around the reservoir and dewatering the reservoir could affect water quality at the SHSRF. Sediment delivered to the river below SCD from sluicing or from sediment transported over the Dam could affect water quality for the SHSRF. This would be a significant long-term impact.

MITIGATION

An alternative water supply would be made available to the SHSRF. Water can be pumped up from the Russell Wells and be made available to the SHSRF as an alternative water supply during construction years, or during periods of excessive turbidity or sediment levels in the Carmel River. With mitigation, this would be a less than significant, long-term impact.

Alternative 1 (Dam Notching)

Aquatic biology and fisheries impacts and mitigation for Issues FI-3 (Operation of Trap and Truck Facility at ORCD), FI-6 (Water Quality Effects on Fish), FI-8 (Upstream Fish Passage), FI-9a (Sediment Impacts to Downstream Channels from Sluicing, Dredging, or Sediment Transport Downstream), FI-9b (Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage), FI-11 (Fish Screen Installation) and FI-15 (Sleepy Hollow Steelhead Rearing Facility) would be the same as described for the Proponent's Proposed Project. Issue FI-14 (Notching Old Carmel River Dam) would be the same as described for the Proponent's Proposed Project except notching would occur in CY 6.

Issue FI-1: Access Route Improvements

Access route improvements (short-term alteration of aquatic habitat)
Determination: **less than significant with mitigation, short-term**

IMPACT

The existing San Clemente Drive would serve as a secondary access road to reach the Dam. No Tularcitos Access Road would be constructed. Road improvements would be similar along the Carmel River between the Sleepy Hollow Ford and the OCRD and between the OCRD and SCD therefore impacts would be similar to the Proponent's Proposed Project for FI-1 except there would be no Tularcitos Creek impacts.

The main access route would be via Carmel Valley Road and Cachagua Grade then via the improved Jeep Trail to the sediment disposal area. A new temporary road will be constructed to access the reservoir. The Cachagua Access Route is located some distance from the river. Access to the reservoir would not occur until it was dewatered. Therefore there is no impact from this access route.

MITIGATION

Mitigation would be similar to the Proponent's Proposed Project but to a lesser extent because access route improvements under Alternative 1 would not include impacts to Tularcitos Creek and the associated riparian habitat. With mitigation, this would be a less than significant, long-term impact.

Issue FI-2: Dewatering River Channels for Construction Purposes

Short-term loss of aquatic habitat
Determination: ***significant, unavoidable, short-term***

IMPACT

The plunge pool immediately downstream of SCD would be dewatered to facilitate dam notching in the same manner as in the Proponent's Proposed Project except that it would occur during CY 4 and would not involve Tularcitos Creek.

MITIGATION

Mitigation actions are the same as the Proponent's Proposed Project FI-2 (Dewatering River Channels for Construction Purposes), except they would not include Tularcitos Creek and would occur in CY 4.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead cannot be fully mitigated and would be significant.

Issue FI-4: Diversion of Carmel River and San Clemente Creek for Construction Purposes

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

Impacts would be similar to those described for the Proponent's Proposed Project Impact FI-4 (Diversion of Carmel River and San Clemente Creek for Construction Purposes), but diversions would occur over longer distances and for two consecutive construction years.

The diversions would have direct, short-term impacts to rearing habitat upstream of the reservoir for about 5,200 feet in the Carmel River and for about 1,350 feet in San Clemente Creek during CY 4 and CY 5. This would affect rearing habitat for up to about 3,480 juvenile steelhead in the Carmel River and 600 juvenile steelhead in San Clemente Creek, or about 3.1 percent of juveniles in the river and represent about 5.2 percent of the habitat downstream from LPD (Table 4.4-10). These impacts would occur for two years during CY 4 and CY 5 and would be short-term, significant impacts.

MITIGATION

Mitigation measures would be the same as for the Proponent's Proposed Project, except fish rescues would occur for two consecutive years along 5,200 feet of the Carmel River and 1,200 feet of San Clemente Creek upstream of the Dam.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead during 2 construction years cannot be fully mitigated and would be significant.

Issue FI-5: Reservoir Dewatering

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

Impacts would be similar to those described for the Proponent’s Proposed Project, and would include lowering the reservoir approximately 21 vertical feet to facilitate sediment removal and dam notching. Lowering the water level to 504 feet would completely dewater the reservoir. The reservoir would be dewatered three times, once in CY 4, 5,and 6. The reservoir would store about 500 AF of water between CY 4, 5, and 6 and would affect hydrology of the Carmel River in late fall/early winter (see Section 4.2 Hydrology). These hydrologic effects would occur during reservoir filling and again in the spring during the dewatering and would affect movement of steelhead in the Carmel River. At the beginning of the wet season there would be about 500 AF of storage in the reservoir that would need to be filled before the Dam would spill. In the spring months, the 500 AF in storage would be released through the drawdown ports or the slide gate at the 494-foot elevation, increasing flows for a short time in the river downstream of SCD. Flows would be managed to begin bypass flow around the reservoir by May 31^{t} or the first day when the flow passing San Clemente Dam is 50 cfs or less and dewatering of the reservoir would begin soon after.

Direct, temporary impacts to fish in the reservoir would occur from draining the reservoir CY 4, 5, and 6. The reservoir would store up to 500 AF of water at the end of year four and would affect flows in the lower river from one day to eight weeks depending on the water year type until the reservoir fills (ENTRIX 2000). Release of the 500 AF during the start of CY 5 would occur at a time when some adult steelhead would be actively moving downstream.

The direct effects to aquatic habitat during reservoir dewatering would create significant, unavoidable impacts to steelhead resources in the San Clemente Reservoir, resulting in a loss of rearing habitat in the reservoir during CY 4, 5, and 6 Impacts would occur for three consecutive construction seasons and result in greater impacts than the Proponent’s Proposed Project. This is a significant, short-term impact.

MITIGATION

Mitigation measures would be the same as for the Proponent’s Proposed Project, except that fish rescues would occur for two consecutive years. Mitigation for operation of a 500 AF reservoir would be provided by maintaining upstream passage through the fish ladder through May 31 or the first day when the flow passing San Clemente Dam is 50 cfs.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead for three construction years cannot be fully mitigated and would be significant.

Issue FI-7: Fish Ladder Closure

Short-term limiting fish movement past the Dam site
Determination: ***less than*** significant**, short-term**

IMPACT
See issue FI-7 under the Proponent's Proposed Project for a discussion of the issues and analysis of the impacts. Under Alternative 1, the fish ladder would be closed near or after the end of the migration season in CY 4, 5, and 6. This would be a less than significant, short-term impact.

Issue FI- 8: Upstream Fish Passage

Long-term impact to fish migrating to upstream spawning and rearing habitat
Determination: **beneficial with mitigation, long-term**

IMPACT
The existing ladder would be demolished and a new, shorter vertical slot ladder would be constructed. Impacts associated with operation of the new ladder are the same as those presented under the Proponent's Proposed Project, except that the ladder would be reduced in length by about 19 vertical feet. The ladder would be operated consistent with the SOMP in Appendix J.

Operation of the new ladder would improve passage conditions at SCD and would be a beneficial impact compared to existing conditions.

MITIGATION
Mitigation is the same as describe in FI-8 for the Proponent's Proposed Project. This would be a long-term benefit.

Issue FI-10: Relocate CAW Water Diversion Upstream

Long-term reduction of flow in reaches of Carmel River between the new diversion point and dam
Determination: **less than significant with mitigation, long-term**

IMPACT
Relocating the water supply diversion intake 7,200 feet upstream on the Carmel River from current dam site would reduce flow in the river between the diversion intake and the Dam site compared to existing conditions. Downstream flows (below the Dam) would not be affected by this change. This would be a significant long-term impact.

MITIGATION
Minimum flows are addressed in the current MOU between MPWMD, CDFG, NFMS, and CAW. Minimum flows are based on available upstream storage in Los Padres Reservoir, the water year type and water demand. A similar plan would be developed in conjunction with NMFS Fisheries, CDFG, SWRCB, and the MPWMD to provide flows for steelhead habitat in the reach of the river affected by the new point of diversion.

Terms of the new plan would avoid impacts to the river resulting from moving the diversion upstream. With this mitigation, relocation of the CAW water diversion would have a less than significant long-term impact.

Issue FI-12: Downstream Fish Passage over SCD

Long-term improvement to fish passage over the Dam
Determination: **beneficial, long-term**

IMPACT

The improved ladder would be similar to the ladder improvements for the Proponent's Proposed Project. The Dam would be lowered by about 20 feet and the height of the fall would be reduced from about 65 feet to 45 feet. This would be a benefit to downstream passage. The notch would be cut in the Dam at an elevation where the Dam is thicker resulting in a longer spillway. Passing through a longer spillway would increase exposure of fish to potential contact with the spillway surface. Direct long-term impacts to fish passing over the Dam would occur from abrasions against the spillway as they pass downstream. The shorter drop to the plunge pool would be an improvement compared to existing conditions and the Proponent's Proposed Project; however, the fall to the plunge pool may still injure or kill some larger fish. However, the overall impact would still be beneficial, long-term.

MITIGATION

The reduced height from the Dam crest to the plunge pool is an improvement compared to existing conditions and to the Proponent's Proposed Project. A low flow channel would be created within the notched spillway to increase depth of flow and reduce the potential to contact the spillway surface. The new, shorter ladder would pass a greater volume of flow and reduce the amount of time that flow would move spill over the Dam.

This would be a long-term benefit.

Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration

Long-term reduction of aquatic habitat, short-term alteration of aquatic habitat
Determination: **significant, unavoidable, short-term, less than significant with mitigation, long-term**

IMPACT

Approximately 6,500 feet of the Carmel River and about 1,350 feet of San Clemente Creek would become unavailable as rearing habitat for the three years it would take to remove sediment from the reservoir and notch the Dam. Existing channels would be eliminated during CY 4 as sediment is removed from the inundation area. Sediment removed from the reservoir would be stored at Site 4R – area upland and away from the reservoir and river. The channels would be flooded during the winter between CY 4 and CY 5. During CY 6, geomorphically appropriate channels would be reconstructed and re-vegetated in about 6,700 feet of the Carmel River and 2,200 feet of San Clemente

Creek (Table 4.4-11). The long-term loss of steelhead habitat would be an unavoidable significant impact.

MITIGATION

New channels for the Carmel River and San Clemente Creek would be reconstructed through the newly exposed sediments. The channels would be rebuilt with gravel, cobble and boulder materials salvaged during sediment removal. Channels would be geomorphically appropriate to the new valley gradient and substrate sizes. The channels would be re-vegetated with native trees and shrubs. Approximately 6,700 feet of channel would be constructed in the Carmel River and about 2,200 feet in San Clemente Creek. Full recovery to functional channels may take from 3 to 7 years after restoration is completed. Because the impact lasts beyond the construction period, this would be a significant, long-term impact. Following full recovery, the impact would be reduced to less than significant.

Alternative 2 (Dam Removal)

Aquatic and fisheries impacts and mitigation for Impacts and mitigation for Issues FI-3 (Operation of a Trap and Truck Facility at ORCD), FI-6 (Water Quality Effects on Fish), FI-11 (Fish Screen Installation) FI-14 (Notching Old Carmel River Dam), and FI-15 (Sleepy Hollow Fish Rearing Facility) would be the same as described for the Proponent's Proposed Project except notching of OCRD would occur during CY 6*. Impact Issues FI-1, (Access Route Improvements) and FI-10 (Relocate CAW Water Diversion Upstream), would be the same as Alternative 1. Impact Issues FI-9b (Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage) and FI-12 (Downstream Fish Passage over SCD) would not apply to this alternative.*

Issue FI-2: Dewatering River Channels for Construction Purposes

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

The plunge pool immediately downstream of SCD would be dewatered to facilitate dam notching in the same manner as in the Proponent's Proposed Project except that it would occur during CY 4 and would not involve Tularcitos Creek.

MITIGATION

Mitigation actions are the same as the Proponent's Proposed Project FI-2 (Dewatering River Channels for Construction Purposes), except they would not include Tularcitos Creek and would occur in CY 4.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead cannot be fully mitigated and would be significant.

Issue FI-4: Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACTS

Impacts would be similar to those described for Alternative 1, except the stream channels would be out of production for three construction seasons. The length of stream diversions would be the same as for Alternative 1. This would be a significant, unavoidable impact because of the loss of seasonal rearing habitat.

Loss of habitat in the Carmel River would affect about 3,800 juvenile steelhead and about 1,100 juvenile steelhead from San Clemente Creek. This represents about 6.2 percent of the total steelhead in the river below LPD. This loss of production would occur for three construction seasons.

MITIGATION

Mitigation measures would be the same as Alternative 1, except they would occur for three years during the construction season.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the temporary loss of habitat for steelhead for 3 construction years cannot be fully mitigated and would be significant.

Issue FI-5: Reservoir Dewatering

Short-term loss of aquatic habitat
Determination: **significant, unavoidable, short-term**

IMPACT

Impacts resulting from reservoir dewatering would occur in CY 4, 5, and 6 and would be similar to those described for Alternative 1 except that in CY 5, the reservoir would be excavated down to 480 to 500 feet in elevation and in CY 6, the sediment would be excavated down to the original bed of the river, around elevation 460 feet at the Dam. This would be a significant, unavoidable impact because of the loss of seasonal rearing habitat in the reservoir. At the end of the CY 5, the reservoir would hold about 1,000 AF of water before it would spill, potentially affecting habitat conditions downstream in the Carmel River and possibly delaying the downstream migration of juvenile steelhead until the Dam spills.

Impacts would be similar to those described for Alternative 1 FI-5 (Reservoir Dewatering), except the reservoir would be lowered by about 21 vertical feet to facilitate sediment removal in CY 4. Lowering the water level to 504 feet would completely dewater the reservoir. The reservoir would be drawn down three times, once in CY 4, 5, and 6. This would be a significant, unavoidable impact due to the temporary loss of habitat for steelhead.

Operation of a 500 AF reservoir between the second and third construction seasons would be the same as Alternative 1.

Operation of a 1000 AF reservoir between the third and fourth construction seasons would affect the hydrology of the Carmel River in late fall/early winter (see Section 4.2) during refill. These hydrologic effects would occur again in the spring during the dewatering and would affect habitat in the lower river for steelhead. At the beginning of the wet season there would be about 1000 AF of potential storage in the reservoir that would need to fill before the Dam would spill. During late spring, the 1000 AF in storage would be released through the slide gate at 494-foot and 456-foot elevations, potentially affecting steelhead habitat conditions in the river downstream of the Dam.

Short-term impacts to fish in the reservoir would occur from draining the reservoir at the start of the second, third and fourth construction seasons. The reservoir would store up to 500 AF of water at the end CY 4 and would affect flows in the lower river from one day to eight weeks, depending on the water year, until the reservoir fills (ENTRIX 2000). Release of the 500 AF during the start of CY 5 would occur after the end of the steelhead migration season. The reservoir would store up to 1000 AF of water at the end of CY 5 and would affect flows in the lower river from one day to eight weeks, depending on the water year, until the reservoir refills (ENTRIX 2000). Release of the 1000 AF during the start of CY 6 would occur at a time after the end of the steelhead migration season.

Loss of reservoir rearing habitat is estimated to eliminate habitat for an unknown number of juvenile steelhead. This loss would occur for three construction years.

The direct effects to aquatic habitat during dewatering would be a significant, unavoidable impact to steelhead resources in San Clemente Reservoir resulting in a loss of rearing habitat in the reservoir during CY 4, 5, and 6. Short-term impacts would be greater than the Proponent's Proposed Project because the reservoir would be drained for three consecutive years.

Mitigation

Mitigation measures would be the same as for the Proponent's Proposed Project Mitigation Measure FI-5 (Reservoir Dewatering), except that fish rescues would occur for three consecutive years. Mitigation for operation of a 500 AF and 1000 AF reservoir in CY 5 and CY 6 respectively would be provided by maintaining upstream passage through the fish ladder during the entire migration season.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead for three construction years cannot be fully mitigated and would be significant.

Issue FI-7 Fish Ladder Closure

Short-term limiting fish movement past the Dam site
Determination: **less than significant, short-term**

IMPACT
See issue FI-7 under the Proponent's Proposed Project for a discussion of the issues and analysis of the impacts. Under Alternative 2, the fish ladder would be closed near or after the end of the migration season in CY 4, 5, and 6. This would be a less than significant, short-term impact.

Issue FI-8 Upstream Fish Passage

Long-term impact to fish migrating to upstream spawning and rearing habitat
Determination: **beneficial, long-term**

IMPACT
Removal of the Dam and reservoir would eliminate the unnatural obstruction to migration at the Dam and reservoir site.

Mitigation

This is a beneficial impact. No mitigation is required.

Issue FI-9a: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream

Long-term loss of aquatic habitat
Determination: **significant, unavoidable in the short-term, beneficial long-term**

Issue FI-9 as identified in the Draft EIR/EIS has been designated as FI-9a in the Final EIR/EIS to separate the analysis of downstream sediment impacts from sluicing, dredging, or sediment transport from the impacts to fish due to excavation or dredging in the remnant reservoir for fish passage (presented as Issue FI-9b).

IMPACT
Alternative 2 would remove the Dam and most of the sediment behind it. Fish in the river downstream of the Dam would be exposed to some sedimentation during the winter CY 4, 5, and 6, but most of the sediment would be retained within the newly excavated reservoir. Most potential sediment impacts would occur after dam removal is completed in the winter CY 6. Pre-dam sediment transport rates would be restored to the river downstream of the Dam site for the first time in over 80 years. At the end of the 41-year simulation, deposited sediment would increase bed elevation, sediment volume and gravel volume in all subreaches except 8.3 and 8.7. Additional gravel would

improve habitat for fish and aquatic invertebrates throughout the Carmel River from the Dam downstream through Subreach 7.7.

There would be an initial large volume of fine sediment released from the exposed former inundation area. Suspended sediment modeling indicated this alternative would attain an SEV of 8 in subreaches 4, 6, and 7 and attain an SEV of 9 in Subreach 5. An increase to an SEV of 9 would be a significant impact because it shifts the Effects Level from Sublethal Effects to Lethal and Paralethal Effects. Fishery Reach 5 makes up about 9 percent of the steelhead and 5.3 percent of the juvenile rearing habitat downstream of LPD.

Compared to the existing conditions with an SEV of 7 in all subreaches, Alternative 2 scores are higher for subreaches 4.3 to 7.3 with an SEV of 9 for Subreach 5 and an SEV of 8 for the other subreaches. Compared to the 2030 Baseline with an SEV of 8 in subreaches 6.3 through 9, Alternative 2 is the same for subreaches 6.3, 7.3 and 7.7 and is lower (SEV of 7 compared to 8) for the subreaches 8.3 through 9. Subreaches 4.3 and 4.7 for Alternative 2 have an SEV of 8 compared to 7 for the 2030 Baseline; Subreach 5 has an SEV of 9 compared to 7 for the 2030 Baseline.

Fishery Reaches 4 through 7 support about 49,200 juvenile steelhead representing about 60 percent of the total juvenile steelhead and about 42 percent of the rearing habitat in the river downstream of LPD.

MITIGATION

BMPs for erosion control (SWPPP, Appendix K) and revegetation (Botanical Resources Plan, Appendix U) would be implemented in the reservoir zone during CY 6 as the Dam is being demolished. BMPs are described in Appendix K for erosion and Appendix U for revegetation. The channels through the former reservoir site would be restored to a geomorphically correct form. Sediment transport would be restored to the Carmel River downstream of the former dam site. The mitigation measures would reduce the impacts. However, the overall impact would remain significant and unavoidable in the short-term. Restoring historic sediment transport rates through the reservoir would eventually improve habitat conditions in the lower Carmel River and would be beneficial in the long-term.

Issue FI-13: Stream Sediment Removal, Storage and Associated Restoration

Long-term reduction of aquatic habitat, short-term alteration of aquatic habitat
Determination: **short-term, significant, unavoidable; long-term, beneficial**

IMPACT

Sediment excavation impacts would be similar to those described for Alternative 1, although a larger volume of sediment would be moved and impacts would occur CY 4, 5, and 6. This would cause a temporary loss of steelhead habitat in the reservoir area.

As mitigation, the dewatered Carmel River and San Clemente Creek would be restored during CY 6 as the Dam is removed as mitigation. This would be a significant impact.

MITIGATION
As part of Alternative 2, both the Carmel River and San Clemente Creek would be completely rebuilt with gravel, cobble and boulder materials salvaged during sediment removal. Channels would be restored to mimic their historic condition. The buried channels would be exhumed during the sediment removal process. Restoration of the channels would be based upon the uncovered topography and a geomorphic understanding of appropriate channel dimensions, considering substrate size, gradient, and valley width. The restored channel length would be similar to the channel lengths that existed prior to the construction of SCD. These activities would restore about 6,700 feet of Carmel River channel and about 2,200 feet of San Clemente Creek channel (Table 4.4-11). Riparian zones along the restored channels would be re-vegetated with native trees and shrubs. However, with mitigation, this would be a significant short-term impact but would be a long-term benefit.

Alternative 3 (Carmel River Reroute and Dam Removal)

Aquatics and fisheries impacts and mitigation for Issues FI-3 (Operation of a Trap and Truck Facility at ORCD), FI-6 (Water Quality Effects on Fish), FI-7 (Fish Ladder Closure), FI-11 (Fish Screen Installation), F-14 (Notching Old Carmel River Dam) and FI-15 (Sleepy Hollow Steelhead Rearing Facility), would be the same as the Proponent's Proposed Project **except as noted**. ~~*Impacts and mitigation for Issues FI-1 (Access Route Improvements) and*~~ Impact FI-10 (Relocate CAW Water Diversion Upstream) would be the same as Alternative 1 except that it would relocate the diversion upstream 2,900 feet. Impact Issues ~~***FI-2 (Dewatering River Channels for Construction Purposes) and***~~ FI-8 (Upstream Fish Passage), would be the same as Alternative 2**.** ~~*except FI-2 would occur during CY 4.*~~ Impact Issues FI-9b (Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage), and FI-12 (Downstream fish passage over SCD) would not apply to this alternative.

Issue FI-1: Access Route Improvements

Access route improvements (short-term alteration of aquatic habitat)
Determination: **less than significant with mitigation, short-term**

IMPACT

The types of impacts would be the same as for the Proponent's Proposed Project, although Tularcitos Creek would not be impacted. The additional access route impact would occur under the Alternative 3:

Heavy equipment and some material delivery will be via Tassajara Road and the southern portion of Cachagua Road to the Jeep Trail. Improvements to Bridge 529 across Cachagua Creek would be needed to support heavy construction

equipment. Work in this area would disturb the creek and its banks and margins through clearing of riparian vegetation, installation of cofferdams (see Issue FI-2), partial dewatering, and the installation of up to three footings (buried approximately 2 feet below the streambed) to support 9, 3-foot diameter columns. Construction in the creek would result in increase in turbidity, and loss of approximately 0.001 acres of potential juvenile steelhead rearing habitat would occur. Structures in the creek will be designed to minimize interference with the natural flow of the creek, and so would not impede fish passage.

MITIGATION

Except as described otherwise below, mitigation would be the same as the Proponent's Proposed Project with the addition of the following measures during construction on Cachagua Creek at Bridge 529:

Potential water quality impacts would be mitigated to a less than significant level through implementation of measures identified in the SWPPP (Appendix K). CAW has incorporated mitigation measures as part of the *Specifications Section 01560 Environmental Protection and Special Controls, Sections 1.02 and 1.06* (Woodward Clyde, December 1998). The specifications will be amended to require the contractor to submit BMPs that meet the measures specified in the SWPPP and the BMPs will also include requirements of CDFG's 1601 and 1602 permits.

The measures will include, as a minimum, the following erosion control methods and procedures; installation of small catch basins, filter fabrics, tarps, or straw bale barriers to prevent sediment from entering Cachagua Creek. The erosion control measures will be monitored for effectiveness, and will be maintained throughout the construction period. The detailed measures are described in Section 3, of the SWPPP (Appendix K).

The specifications will be amended to require the contractor to submit BMPs that meet the measures specified in the SWPPP and the BMPs will also include requirements of CDFG's 1601 and 1602 permits. The SWPPP may be further modified during consultation with the CCRWQCB, the CDFG, and other permitting agencies to include additional provisions to prevent impacts due to erosion and sediment input to streams from construction activities.

Stream margins would be revegetated with native species as designated in the Botanical Resources Management Plan (Appendix U) when construction is complete.

Issue FI-2: Dewatering River Channels for Construction Purposes

Short-term loss of aquatic habitat
Determination: less than significant with mitigation, short-term

IMPACT

Impacts would be the same as Alternative 2, with the addition that approximately 100 feet of Cachagua Creek would be dewatered during construction for up to three months for the retrofit of the existing Bridge 529. A cofferdam would be installed to divert water to one side of the channel so construction can occur in the dewatered section of streambed. Once work is complete on the first side of the bridge, the cofferdam will be removed and reinstalled to divert water to the other side of the channel so work can be conducted in the dewatered side of the streambed.

The reach of Cachagua Creek containing Bridge 529 provides rearing habitat for juvenile steelhead. Since one construction season will be required to complete work on one side of the bridge, loss of rearing habitat would occur over a portion of two construction seasons. This would be a potentially significant impact because rearing habitat could not be replaced during the construction phase.

MITIGATION

Except as described otherwise below, fish rescue measures to minimize this impact would be the same as the mitigation for FI-2 under the Proponent's Proposed Project, with those measures applied to Cachagua Creek and not Tularcitos Creek.

Although implementation of these measures cannot guarantee the survival of all fish, adoption of measures approved by NMFS for the benefit of steelhead will reduce the overall impact to that species to less than significant. Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant.

Issue FI-4: Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes

Short-term loss of aquatic habitat
Determination: ***less than significant with mitigation*** ~~*significant, unavoidable*~~ **short-term**

IMPACT

Impacts would be similar to those described for Alternative 2 Issue FI-4 except the Carmel River would be diverted out of its channel for about 3,300 feet upstream of the Dam and about 1,350 feet for San Clemente Creek. Both stream channels would be out of production for two years. This would be a **potentially** significant~~, *unavoidable*~~ impact because of the loss of seasonal rearing habitat.

Loss of habitat would affect an unknown number of juvenile steelhead rearing in the reservoir. This loss of habitat would occur for three construction seasons and would be a **potentially** significant impact.

MITIGATION

Except as described otherwise below ~~*M*~~ **m**itigation for Issue FI-4 would be the same as Alternative 2 except it would occur for about 3,300 feet in the Carmel River for 1,350 feet of San Clemente Creek and would occur for two years during the construction season.

Implementation of these mitigation measures, combined with any measures required by NMFS for the benefit of steelhead, will reduce the overall impact to that species to less than significant.

~~*While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead for two construction year cannot be fully mitigated and would be significant.*~~

Issue FI-5: Reservoir Dewatering

Short-term loss of aquatic habitat
Determination: less than significant with mitigation short-term

IMPACT

The reservoir surface and ground water levels must be drawn down each construction season for Project construction at the dam site. Reservoir dewatering would be conducted in the first, second, and third construction seasons. During the first construction season, reservoir surface and water levels would be drawn down at about 0.5 feet or less per day, which is similar to the rate currently used for the annual drawdown. However, during the subsequent construction seasons, the contactor will need to draw down the surface and ground water in the reservoir more quickly so construction equipment can excavate the sediment behind the dam and transport it to the sediment disposal area. Drawdown will be accelerated to a rate great enough to ensure that the water level in the reservoir remains 2 feet or more below the excavated sediment surface to prevent equipment from sinking into the sediment. The estimated drawdown rate could exceed 4 feet per day, and would be achieved by pumping the reservoir water from well points installed in the sediment or from the reservoir water surface. The pumped water will be discharged into a settling pond constructed downstream of the dam before the water is pumped into the Carmel River.

Reservoir surface and ground water drawdown would be required each construction season until construction is complete. This would be a potentially

significant, short-term impact because of the loss of seasonal rearing habitat in the reservoir as it is dewatered and the potential for stranding fish during the dewatering process.

MITIGATION

Except as described otherwise below, mitigation measures would be the same as for the Proponent's Proposed Project Mitigation Measure FI-5, but they would occur for three construction years. Operating traps at the inflowing channels to the reservoir would mitigate downstream passage.

Nets would be installed across the channels leading into the reservoir to prevent fish from swimming downstream into the Carmel River and San Clemente Creek. A fish rescue would occur in the reservoir during drawdown. Large and small seines, dip nets, fyke nets or other NMFS approved methods would be utilized to capture as many fish as feasible from the isolated waters of the reservoir. Backpack electrofishing units would be used if needed. Electrofishing would follow guidelines established by NMFS. Rescued fish will be relocated to other suitable habitat downstream of OCRD in the Carmel River or at a another release point designated by NMFS.

Although implementation of these measures cannot guarantee the survival of all fish, adoption of measures approved by NMFS for the benefit of steelhead will reduce the overall impact to that species to less than significant. Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant.

~~***Issue FI-5: Reservoir Dewatering***~~

~~*Short-term loss of aquatic habitat*~~
~~*Determination:* ***significant, unavoidable, short-term***~~

~~*IMPACT*~~
~~*Reservoir dewatering in CY 4 and 5 would be similar to the Proponent's Proposed Project Issue FI-5, except that the sediments would be dewatered to near the original elevation of the river bed of the river to allow for complete sediment removal in the San Clemente Creek arm of the reservoir and in the Carmel River immediately upstream of the Dam. Dewatering would occur for two construction seasons. This would be a significant, short-term impact.*~~

~~*MITIGATION*~~
~~*Mitigation measures would be the same as for the Proponent's Proposed Project Mitigation Measure FI-5, except they would occur for three construction years. Operating traps at the inflowing channels to the reservoir would mitigate downstream passage.*~~

~~*While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead for three construction years cannot be fully mitigated and would be significant.*~~

Issue FI-9a: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream

Long-term loss of aquatic habitat
Determination: short-term **less than significant; beneficial, long-term**

IMPACT

Alternative 3 would remove the Dam and the sediment in the San Clemente Arm of the reservoir. Fish in the river downstream of the Dam would be exposed to some sedimentation during the winter following ~~*CY 4 and 5*~~ **construction**. Most potential sediment impacts would occur after storm flows following dam removal. Sediment transport rates would be restored to about 75 percent of the pre-dam levels in the river downstream of the dam site. At the end of the 41-year simulation, deposited sediment would increase bed elevation, sediment volume and gravel volume in all sub**r**eaches except subreaches 6.3, 8.3, and 8.7. This would improve habitat for fish and aquatic invertebrates throughout the Carmel River from the Dam downstream through Subreach 5, 7.3, and 7.7.

There would be some fine sediment released from the exposed former inundation area in the San Clemente arm of the reservoir. Suspended sediment modeling indicated this alternative would not change the effects levels from Sublethal in subreaches downstream of SCD. This would be a less than significant impact.

Compared to the existing conditions with a Sublethal Effects Level for suspended sediment concentrations in all subreaches, Alternative 3 would result in the same Sublethal Effects Levels for all subreaches downstream of SCD. Compared to the 2030 Baseline, Alternative 3 would result in the same Sublethal Effects Levels in subreaches downstream of SCD.

Fishery Reaches 6 and 7 support about 33,943 juvenile steelhead representing about 43 percent of the total juvenile steelhead and about 26 percent of the rearing habitat in the river downstream of LPD. This would be a less than significant impact in the short-term and beneficial in the long-term. No mitigation is required.

Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration

Long-term reduction of aquatic habitat, short-term alteration of aquatic habitat
Determination: ***less than significant with mitigation*** ~~***significant, unavoidable***~~ **in the short-term; beneficial in the long-term**

IMPACT

Rock material from the diversion channel cut through the ridge separating the Carmel River from San Clemente Creek would be used to construct a cutoff wall across the Carmel River arm upstream of the diversion channel. Excess rock and concrete blocks from dam removal would be used to buttress the toe of the sediment storage area on the Carmel River arm. The Carmel River and San Clemente Creek would not support conditions for rearing steelhead ~~*during*~~ **throughout project construction.** ~~*CY 4.*~~

Accumulated sediment would be excavated from about 800 feet of the existing San Clemente Creek channel. About 3,600 feet of the present Carmel River channel upstream of the Dam would be permanently lost to sediment storage.

About 2,200 feet of San Clemente Creek would become the Carmel River including about 850 feet of channel now under the reservoir in the San Clemente arm. The Carmel River would change from about 3,000 feet to 2,650 feet, a reduction of about 350 feet. San Clemente Creek would lose 1,350 feet of channel from the reservoir upstream to the confluence with the realigned Carmel River channel. There would be a net loss of about 1,700 feet of channel (Table 4.4-11) – a combination of shortening the Carmel River and moving the confluence of the Carmel River and San Clemente Creek upstream about 2,200 feet. There would be temporary loss of habitat for steelhead and other aquatic species in the reservoir and both channels during construction. There would be a permanent loss of about 1,700 feet of channel length under this alternative (Table 4.4-11). This would be a long-term significant impact.

MITIGATION

A new channel for the Carmel River would be constructed through the diversion bypass channel between the Carmel River and San Clemente Creek, and down the San Clemente Creek arm. The new configuration would include about 300 feet of constructed channel through the bypass, and about 2,200 feet of newly constructed channel in the existing San Clemente Creek arm. Channel restoration activities would include excavation and placement of gravel, cobble, and boulder materials salvaged during sediment removal. Construction of the new Carmel River channel would be geomorphically designed based upon flow capacity requirements, gradient, and valley width of the Carmel River. Habitat in restored channels would be re-vegetated with native trees and shrubs.

The Dam would be removed, restoring unimpaired fish access past the SCD site to the upper watershed and substantially restoring sediment transport to the lower river. The loss of 1,700 feet of channel would significant, but the long-term improvement to habitat conditions in the restored channels and removal of the Dam as a fish barrier would be a benefit. Even though there is a long-term benefit, there are significant short-term impacts that cannot be mitigated.

Implementation of these mitigation measures, combined with any measures required by NMFS for the benefit of steelhead, will reduce the overall impact to

that species to less than significant. Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant.

Alternative 4 (No Project)

Aquatic and fisheries impacts and mitigation for Issues FI-1 (Access Route Improvements), FI-2 (Dewatering River Channels for Construction Purposes), FI-3 (Operation of a Trap and Truck Facility at the ORCD), FI-4 (Diversion of Carmel River and San Clemente Creek Around San Clemente Dam for Construction Purposes), FI-6 (Water Quality Effects on Fish), FI-7 (Fish Ladder Closure), FI-9a (Sediment Impacts to Downstream channels from Sluicing, Dredging or Sediment Transport Downstream), FI-9b (Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage), FI-10 (Relocate CAW Water Diversion Upstream), FI-11 (Fish Screen Installation), FI-13 (Stream Sediment Removal, Storage and Associated Restoration) FI-14 (Notching Old Carmel River Dam) and FI-15 (Sleepy Hollow Steelhead Rearing Facility) would not apply to this alternative.

Issue FI-5: Reservoir Dewatering

Long-term loss of aquatic habitat
Determination: **significant, unavoidable, long-term**

IMPACT
The Interim Seismic Safety Measures Annual Reservoir Drawdown required by DSOD would continue as an interim method to provide dam safety. Drawdown would occur on May 31 each year when flows are at or below 30 cfs at the Sleepy Hollow gage. The Annual Drawdown would continue to occur until the reservoir is filled with sediment or when there is less than 50 acre feet of storage remaining in the reservoir.

While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along with the short-term loss of habitat for steelhead each season cannot be fully mitigated and would be significant. This would be a significant long-term impact.

MITIGATION
No mitigation would be provided under the No Project Alternative. The Annual Drawdown is covered under a NMFS Biological Opinion and the CDFG Streambed Alteration Agreement both address operations from 2007 through 2012.

Issue FI-8: Upstream Fish Passage

Long-term impact to fish migrating to upstream spawning and rearing habitat
Determination: **significant, unavoidable, long-term**

IMPACT
The existing ladder would remain in place and continue to provide impaired upstream passage to adult steelhead. No ladder improvements would occur and the SOMP would not be implemented. This would be a significant long-term impact.

MITIGATION
No mitigation would be provided under the No Project Alternative.

Issue FI-12: Downstream Fish Passage over SCD

Long-term impacts to adult fish passing over San Clemente Dam
Determination: ***significant, unavoidable,*** **long-term**

IMPACT
The No Project Alternative would retain the Dam with no improvements and the SOMP would not be implemented. Adult fish would continue to be exposed to injury or death as they pass over the spillway and fall the 65 feet into the plunge pool. This would be a significant long-term impact.

MITIGATION
No mitigation would be provided under the No Project Alternative.

Issue FI-15: Sleepy Hollow Steelhead Rearing Facility

Loss or degradation of water supply
Determination: **significant, unavoidable, long-term**

IMPACT
The SHSRF depends on Carmel River water from SCD to operate from early summer to winter or early spring. The No Project would result in the reservoir filling with sediment, blocking the intake for water and degrading reservoir and downstream water quality. This would be a significant long-term impact.

MITIGATION
No mitigation would be provided under the No Project Alternative.

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4.5 VEGETATION AND WILDLIFE

This section describes the potential impacts of the San Clemente Seismic Safety Project on the terrestrial biological resources of the Project Area. Vegetation and wildlife resources include all vegetation and wildlife influenced by the project, except for fisheries, which is covered in Section 4.4. Wetlands are covered in Section 4.6. Additional information provided in ~~this~~ **the** Final EIR/EIS clarifies and amplifies the information included in the Draft EIR/EIS. The following environmental setting section was prepared using information developed from the documents provided by the RDEIR (Denise Duffy & Associates 2000), which was initiated in 1997. Additional data were acquired during studies in 2005 for alternatives not considered in the RDEIR, or for modifications to previously considered alternatives **and through studies by URS Corporation in 2011**. Appendix T contains the botanical report for the sediment disposal options. Appendices U and V contain the Botanical Resources Management Plan and Protection Measures for Special-Status Species.

Revisions to the Vegetation and Wildlife section were made to disclose and analyze potential impacts associated with access road improvements, nighttime excavation work at the dam site, and to incorporate updated state species listing statuses and species protection measures.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.5.1 ENVIRONMENTAL SETTING

Vegetation Communities

Based on literature review and field surveys, fifteen plant communities (habitat types) dominated primarily by native species were identified in the Project Vicinity. Six of these communities are riparian, four communities are upland forest or woodland types, and three communities are upland shrub-dominated types. The remaining two native plant communities are herbaceous. A number of sites within the Project Vicinity were mapped as intermediate between two recognized community types. Generally, these communities correspond to Sawyer and Keeler-Wolf's vegetation series (Sawyer & Keeler-Wolf 1995). Mixed stands may be described by Holland's vegetation classifications (Holland 1986), and these classifications have also been provided where they correlate with the series categories.

In addition to the native plant communities, sites that are classified as developed or disturbed/ruderal occur in the Project Area. On these sites, human activity controls the vegetation present.

Brief descriptions of the vegetation types occurring within the Project Area are presented below. The distributions of the habitat types within the Project Area are shown in Figure 4.5-1**, Figure 4.5-1a, and Figure 4.5-1b**. A list of vascular plant species observed in the Project Area **during the 2005 surveys** is presented in Appendix T.

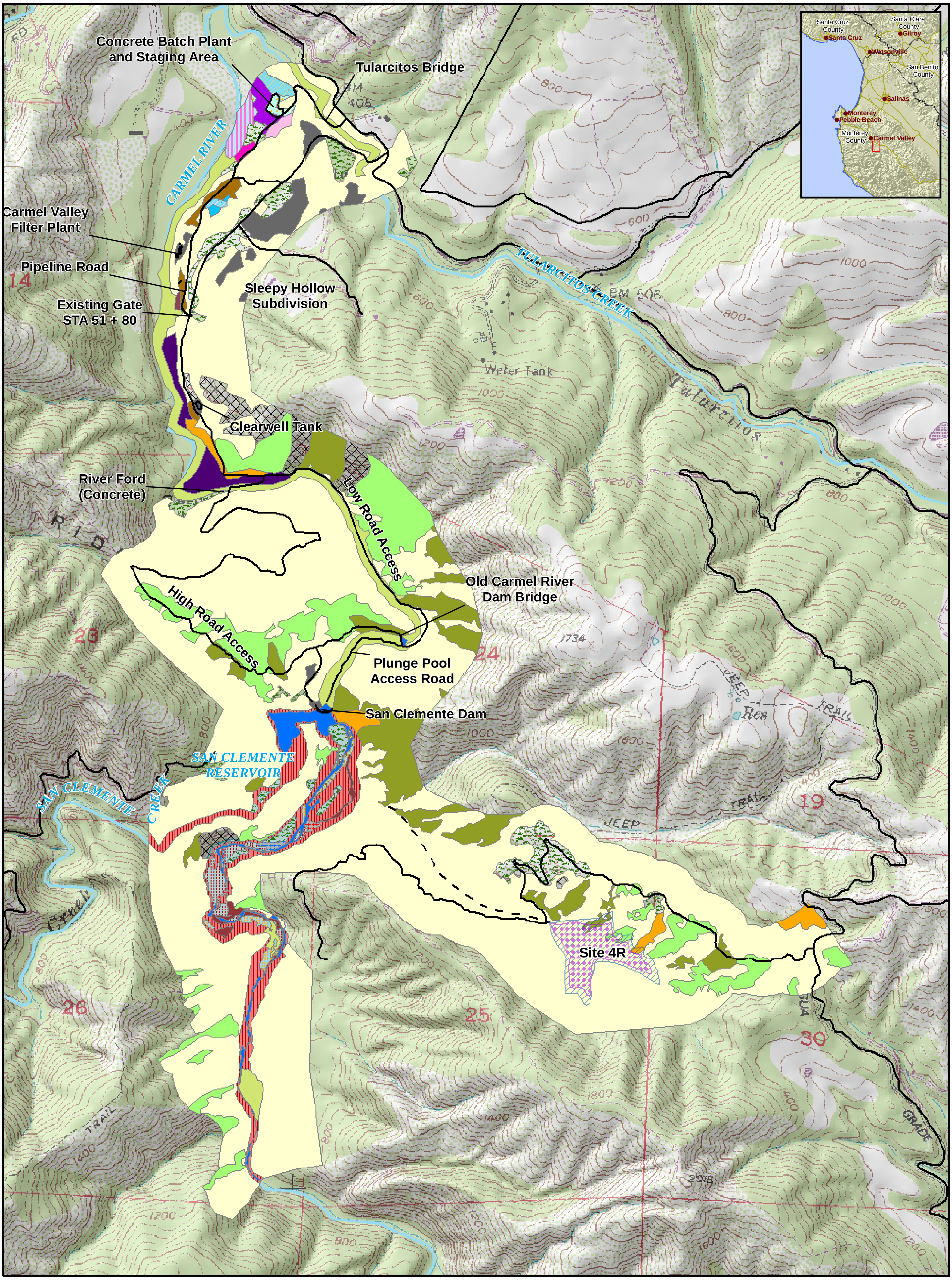
In 2005, the riparian habitat types were divided into six series: cottonwood-sycamore riparian forest, white alder riparian forest, arroyo willow riparian forest, California sycamore alluvial woodland, riparian scrub, and mulefat scrub (Figure 4.5-1). In 2011, the vegetation habitat types were combined and mapped together by URS (Figure 4.5.1b).

The following sections of the SEIR summarize information about the various habitat types described in the 2005 surveys.

Riparian Vegetation

CENTRAL COAST COTTONWOOD-SYCAMORE RIPARIAN FOREST

This community is the predominant riparian type on the flood plains of the Carmel River and Tularcitos Creek. The dominant species are large trees, including black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), California sycamore (*Platanus racemosa*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and white alder (*Alnus rhombifolia*).



Legend

- Stream
- Existing Road
- Proposed Road

Sediment Disposal Site

- Alternative 1 (16 Acres)
- Alternative 2 (22 Acres)

Vegetation

- Annual grassland
- Arroyo willow series
- Bulrush-cattail series
- Blue oak series
- Black sage series
- Coast live oak series
- California sagebrush series
- California sagebrush-black sage series
- Chamise series
- Chamise-black sage series
- Developed
- Emergent wetland
- Mock heather scrub
- Mulefat-willow riparian
- Mulefat series
- Narrowleaf willow series
- Ruderal
- Sandbar
- Water
- Sandbar annuals
- Central Coast cottonwood-sycamore riparian forest
- White alder riparian
- White alder-willow riparian
- Willow riparian
- California sycamore riparian-arroyo willow
- California sycamore riparian-coast live oak
- California sycamore riparian-mock heather scrub
- California sycamore savanna
- California sycamore series

San Clemente Dam EIS/EIR

Figure 4.5-1

Vegetation/Habitat Types in the Study Area

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N

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

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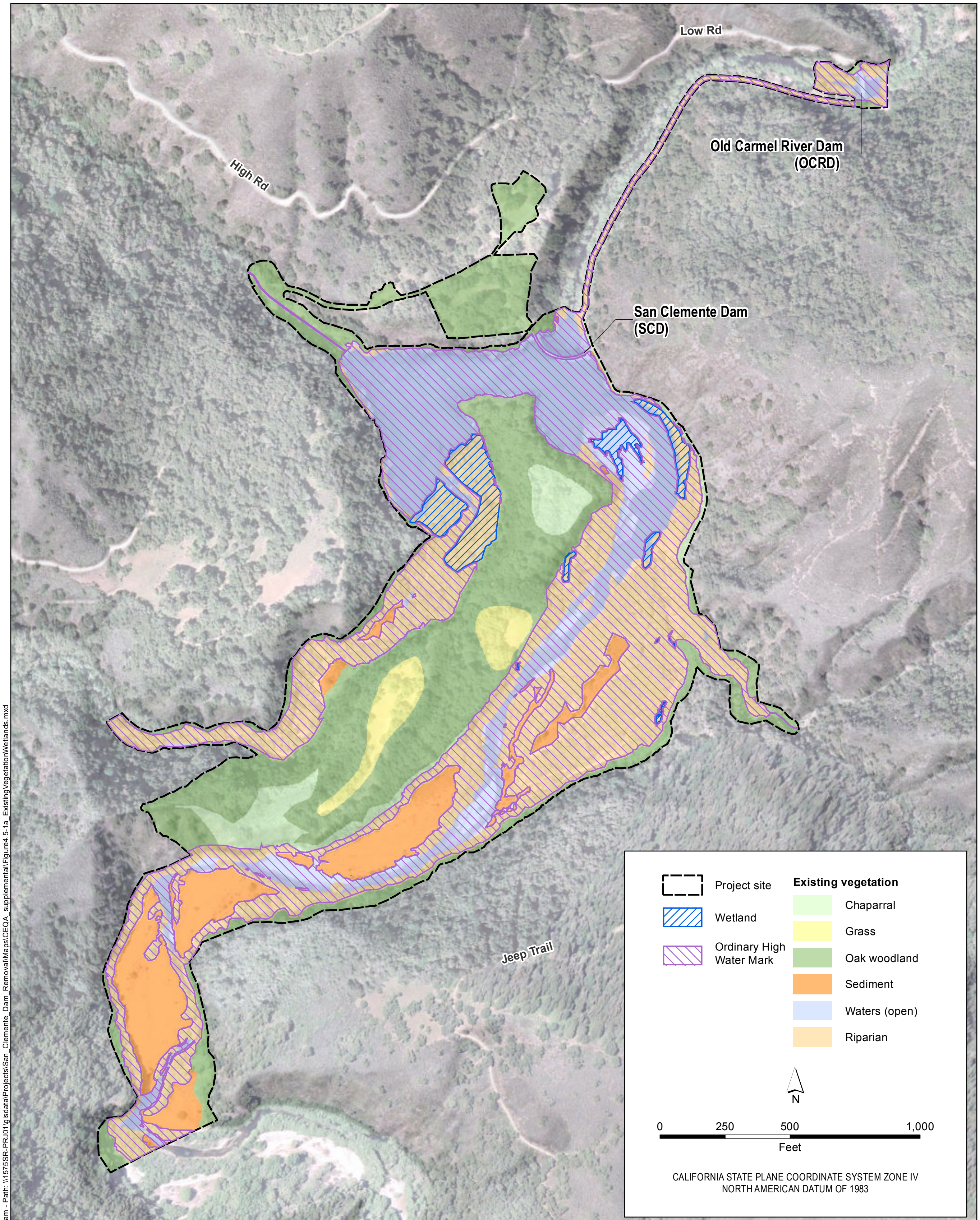

URS Oakland CA - C. Statham - Path: \\1575SR-PRJ01\gisdata\Projects\San_Clemente_Dam_Removal\Maps\CEQA_supplemental\Figure4.5-1a_ExistingVegetationWetlands.mxd

	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/7/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 4.5-1a** VEGETATION / HABITAT TYPES IN THE STUDY AREA (RESERVOIR)

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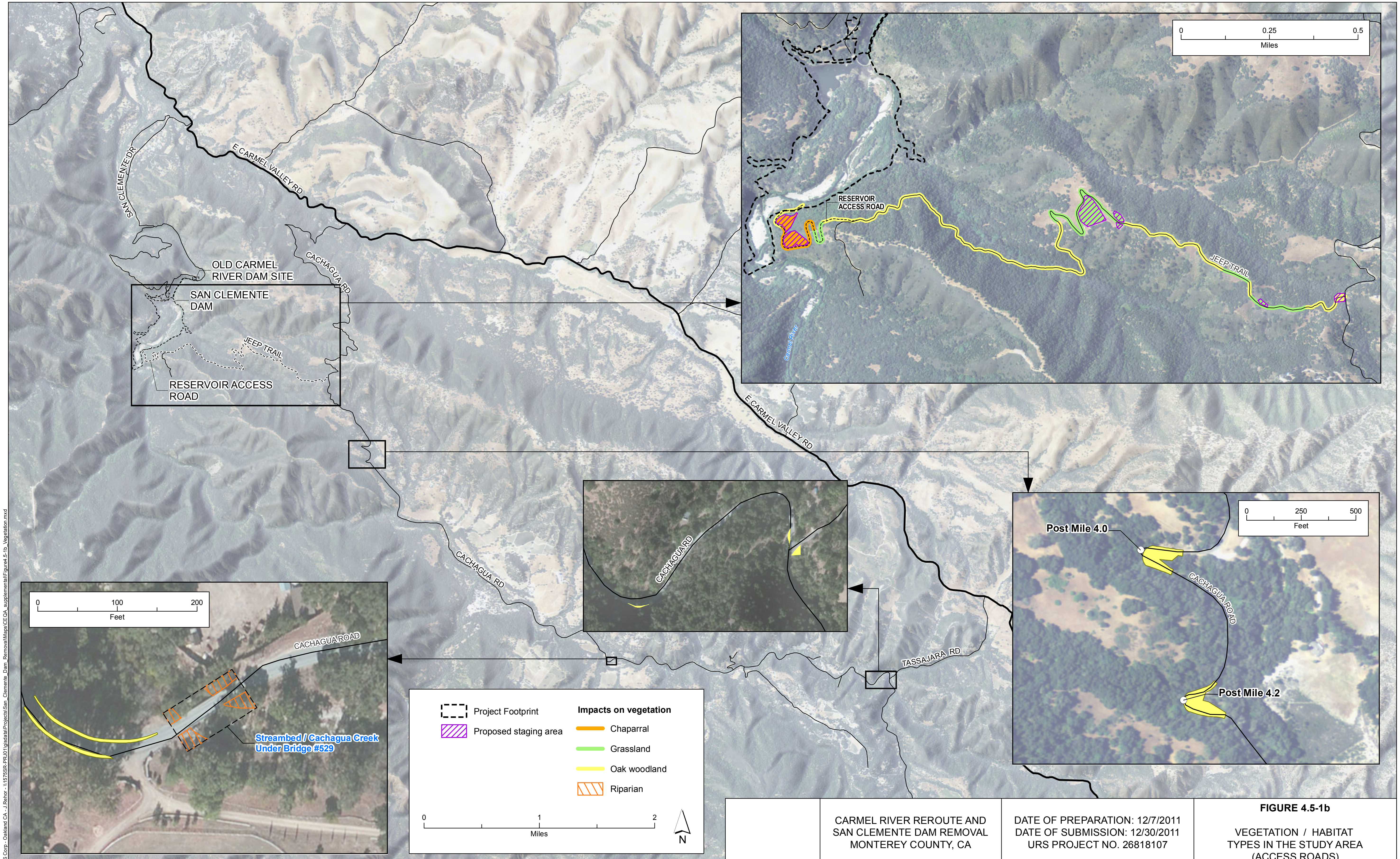

FIGURE 4.5-1b

VEGETATION / HABITAT TYPES IN THE STUDY AREA (ACCESS ROADS)

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Coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and California bay (*Umbellularia californica*) are also found in this riparian forest. Characteristic shrub species in areas of infrequent flooding include common snowberry (*Symphoricarpos albus* var. *laevigatus*), poison-oak (*Toxicodendron diversilobium*), and red-osier dogwood (*Cornus sericea*). Vines such as Pacific blackberry (*Rubus ursinus*) and virgin's bower (*Clematis ligusticifolia*) also may be abundant locally. The herb layer is generally sparse, but herb species such as slough sedge (*Carex barbarae*), stinging nettle (*Urtica dioica* ssp. *holosericea*), and Douglas' mugwort (*Artemisia douglasiana*) occur locally in the understory.

WHITE ALDER RIPARIAN FOREST

In areas within and adjacent to the Carmel River and San Clemente Creek channels that are subject to more frequent or more intense flooding, the tree canopy is sparser and less developed. Trees, primarily white alder and red willow, are interspersed with large shrubs such as narrow-leaved willow (*Salix exigua*), mule fat (*Baccharis salicifolia*), shrubby arroyo willow, and redosier dogwood (*Cornus sericea*). Shrubs and small trees may form dense thickets. A wide variety of herb species occurs in the more open areas. Stands of this community that occupy the edge of the previous high-water line of the reservoir around the reservoir pool have died since the maximum elevation of the reservoir has been lowered by the permanent removal of the flashboards.

ARROYO WILLOW SERIES (CENTRAL COAST ARROYO WILLOW RIPARIAN FOREST)

This community is dominated by the shrub arroyo willow, with red willow an associated species. The arroyo willow series occurs in two places in the northern portion of the Project Vicinity. The canopy of the arroyo willow forest is typically dense, with few understory plants. In the Project Vicinity, a few other shrubs such as coyote brush (*Baccharis pilularis*), poison-oak and vines such as Pacific blackberry may be present. The relatively sparse herbaceous understory includes Douglas' mugwort, California bee-plant (*Scrophularia californica*), and stinging nettle. The relatively large stand of the arroyo willow series near the northern end of the Project Vicinity consists of a dense willow canopy interspersed with open areas dominated by a dense, often impenetrable, cover of coyote brush.

CALIFORNIA SYCAMORE SERIES (SYCAMORE ALLUVIAL WOODLAND)

Only one stand of this community occurs in the Project Vicinity. It is located on the Carmel River floodplain, just south of the mouth of Tularcitos Creek. This community is savanna-like riparian woodland with widely spaced trees and a relatively dense, grass-dominated herbaceous understory. California sycamore is the dominant tree, with valley oak (*Quercus lobata*) and coast live oak as associated species. Many of the trees are quite large. The vegetation in understory and open areas between the trees is dominated by grasses and herbs, including ripgut brome (*Bromus diandrus*), long-beaked filaree (*Erodium botrys*) and valley lessingia (*Lessingia glandulifera* var. *pectinata*).

NARROWLEAF WILLOW SERIES (CENTRAL COAST RIPARIAN SCRUB)

This community occurs in one segment of the Carmel River channel, south of the mouth of Tularcitos Creek. This series is dominated by large shrubs, particularly narrow-leaved willow. Associated shrub species include shrubby arroyo willow, mule fat, poison-oak, and Spanish broom (*Spartium junceum*). Saplings and small trees of California sycamore, black cottonwood, and white alder are also frequent, but large trees are few and widely scattered. In areas where shrub cover is sparse or absent, a wide variety of herb species occur, including common horsetail (*Equisetum arvense*), horseweed (*Conyza canadensis*), western goldenrod (*Euthamia occidentalis*), Mexican tea (*Chenopodium ambrosioides*), and Durango root (*Datisca glomerata*).

MULEFAT SERIES (MULEFAT SCRUB)

This community occurs in scattered patches in the Carmel River floodplain, upstream of the Dam. It is found on the sandbars, and intergrades with the willow-dominated series. This series is dominated by mulefat (*Baccharis salicifolius* = *B. vimenea*). Herbaceous understory is sparse to non-existent. Associated species include young plants of arroyo willow, sandbar willow, and occasionally, white alder.

Upland Forest and Woodland Vegetation

COAST LIVE OAK SERIES (COAST LIVE OAK FOREST)

In the Project Vicinity, this community is the most widespread type on relatively moist slopes with moderately deep soils, particularly on slopes west of the Carmel River. The tree canopy is typically dense, generally exceeding 80 percent (Ecosystems West 1997). Coast live oak is the dominant tree species. Associated tree species in more diverse stands include California bay, California buckeye, madrone (*Arbutus menziesii*), and valley oak. Due to the dense canopy, the understory shrub layer of the coast live oak forest is typically poorly developed. Shrubs and woody vines frequently occurring locally in the understory include creeping snowberry (*Symphoricarpos mollis*), poison-oak, and Pacific blackberry. Herb cover also is generally sparse to moderate, but includes wood fern (*Dryopteris arguta*), yerba buena (*Satureja douglasii*), and western rye grass (*Elymus glaucus*).

CALIFORNIA BAY SERIES (CALIFORNIA BAY FOREST)

One small stand of this community occurs in the Project Vicinity, located on the lowermost slope on the west side of the reservoir's main arm. This is a dense, closed-canopy forest habitat. California bay is the dominant tree species, with madrone a common associate.

BLUE OAK SERIES (BLUE OAK WOODLAND)

In the Project Vicinity, there is one small stand of this community on the north side of Osborne Ridge north of San Clemente Reservoir, along the existing "high road." This community forms an open, savanna-like tree canopy dominated by blue oak (*Quercus douglasii*). In the Osborne Ridge stand, coast live oak is associated with blue oak, with tree cover around 50 percent (Ecosystems West 1997). Few shrubs occur in this stand. The grass and herb layer is well-developed and relatively dense. Dominant or characteristic grasses and herbs include ripgut brome, soft chess (*Bromus hordeaceus*), western rye grass, tarplant (*Madia* sp.), and shooting star (*Dodecatheon* sp.).

REDWOOD SERIES (UPLAND REDWOOD FOREST)
A very small stand of coast redwood (*Sequoia sempervirens*) is located just below the SCD on the west side, along the canyon bottom. The understory of this stand mostly consists of poison-oak. This small stand, the only occurrence of coast redwood in the Project Area, is at the inland limit for coast redwood in the project region.

Upland Shrub Vegetation

COASTAL SCRUB (CENTRAL LUCIAN COASTAL SCRUB)
In the Project Vicinity, coastal scrub is widespread on the slopes bordering the Carmel River canyon, and is most widespread east of the Carmel River in the southern portion of the area. Coastal scrub typically occupies slopes that are drier than those occupied by coast live oak forest, although not as dry as those occupied by chaparral. The coastal scrub in this area is characterized by a dense and often impenetrable shrub layer. Coastal scrub is typically variable in its dominant shrubs, but two species, California sagebrush (*Artemisia californica*) and black sage (*Salvia mellifera*), are the most widespread dominant shrubs in this community in the Project Vicinity. The herb layer is poorly developed or absent except where more open patches exist. Grass and herb species associated with this habitat type include small-flowered needlegrass (*Nassella lepida*), California cudweed (*Gnaphalium californicum*), prickly cryptantha (*Cryptantha muricata* var. *jonesii*), and the vine pipestem clematis (*Clematis lasiantha*). Three intergrading subtypes of coastal scrub occur in this area, and are described below.

California Sagebrush Series. California sagebrush is the dominant shrub in this series. Associated shrub species include coyote brush, black sage, sticky monkeyflower (*Mimulus aurantiacus*), poison-oak, chamise (*Adenostoma fasciculatum*), California buckwheat (*Eriogonum fasciculatum*), and deerweed (*Lotus scoparius*). In the Project Vicinity, the California sagebrush series is found on dry, rocky, east- and south-facing slopes. It is sometimes associated with road cuts or similar disturbances. In this area, it is more limited in extent than black sage-dominated coastal scrub and typically occurs on lower, more sheltered slopes (Ecosystems West 1997).

Black Sage Series. Stands of the black sage series are usually overwhelmingly dominated by black sage. Associated species include California sagebrush, coyote brush, sticky monkeyflower, poison oak, chamise, and California buckwheat. Small and medium-sized coast live oaks are frequent in this community in the Project Vicinity. The herb layer in this phase of coastal scrub is typically even sparser and less diverse than in the California sagebrush series. In the Project Vicinity, this series tends to occur on more exposed east- and south-facing slopes (Ecosystems West 1997).

California Sagebrush-Black Sage Series. The California sagebrush-black sage series is intermediate between the California sagebrush and black sage series. California sagebrush and black sage are equally dominant in this series. Other shrub species include coyote brush, sticky monkeyflower, poison-oak, California buckwheat, chamise, and deerweed. The shrub composition of this subtype tends to be more diverse than in either of the other two subtypes of coastal scrub. The herb layer, where present, is similar to that in the California sagebrush series. In the Project Vicinity, this series occurs on lower west- and south-facing slopes (Ecosystems West 1997).

CHAPARRAL (CHAMISE CHAPARRAL)

This community occurs on the driest, most exposed slopes in the Project Area, typically forming a dense, often impenetrable scrub that is three to ten feet in height. Herbs are generally sparse or absent except in localized openings. Two intergrading subtypes of chaparral occur in the Project Area, and are described below.

Chamise Series. Chamise is the major dominant species in this subtype, and often forms pure stands. Other shrub species sometimes found in this series include black sage, jimbrush (*Ceanothus oliganthus* var. *sorediatus*), California buckwheat, and poison oak. Chamise chaparral is widespread on exposed south- and west-facing slopes in the southern half of the Project Vicinity (Ecosystems West 1997).

Chamise-black sage series. This series is intermediate between the chamise series and the black sage subtype of the coastal scrub communities. Black sage and chamise share dominance in this series. Other shrub species commonly found in this community include California buckwheat, jimbrush, and California sagebrush. In the Project Vicinity, the chamise-black sage series is commonly found on south-facing slopes in the southern half of the Project Vicinity. This series is frequently found growing adjacent to road cuts and similar disturbances (Ecosystems West 1997).

MOCK-HEATHER SCRUB

This scrub type is developed locally on the floodplain of the Carmel River just south of the mouth of Tularcitos Creek in the northern portion of the Project Vicinity. In the area occupied by mock-heather shrub, the alluvial substrate consists primarily of fine sand. The mock-heather scrub is a moderately dense scrub type dominated by mock-heather (*Ericameria ericoides*), a species that is restricted to sandy soils. Coyote brush is the most common shrub associate. Small amounts of poison-oak and scattered small coast live oaks also occur in this habitat type. The herb layer is sparse, but includes Douglas's mugwort and creeping wildrye (*Leymus triticoides*). Rattail fescue (*Vulpia myuros*) is locally abundant (Ecosystems West 1997).

Herbaceous Vegetation

CALIFORNIA ANNUAL GRASSLAND SERIES (NON-NATIVE GRASSLAND)

Annual grassland communities occur on a number of localized sites throughout the Project Vicinity, including the Carmel River floodplain as well as in the uplands. These grasslands are generally dominated by non-native annual grasses and native and non-native herbs, including ripgut brome, soft chess, slender wild oat (*Avena barbata*), long-beaked filaree, and valley lessingia. Some stands of this community have been subject to obvious disturbances such as brush clearing and grading, and intergrade with the disturbed/ruderal habitat type in the Project Vicinity.

BULRUSH-CATTAIL SERIES (COASTAL AND VALLEY FRESHWATER MARSH)

There are two retention ponds in the Project Vicinity north of the existing water treatment facility. These retention ponds are seasonally flooded. During the period in which the surveys were conducted for the 2000 RDEIR, one of the retention ponds was flooded and created a freshwater marsh or pond habitat referable to the bulrush-cattail series. Viscid bulrush (*Scirpus acutus* var. *occidentalis*) and broad-leaved cattail (*Typha latifolia*) dominated this artificially created marsh habitat (Ecosystems West 1997).

DEVELOPED/DISTURBED/RUDERAL HABITAT TYPES

These habitat types encompass a variety of sites with vegetation that is primarily the result of human activity and disturbance, and include sites that are occupied by buildings and other developed facilities and associated landscaped areas. They also include sites that have been subject to relatively recent, often repeated, heavy disturbance such as grading, excavating, or brush clearing. The species of vegetation in these habitats vary greatly, depending on micro-habitat conditions and disturbance and planting history. These sites are typically dominated by an assortment of weedy, mostly non-native annual and perennial grasses and herbs, unless they are occupied by developed facilities or landscaping. Some native species can also persist in or colonize ruderal sites. Any of these sites may have considerable bare ground.

Vegetation Communities Traversed by Access Routes

The access routes traverse a series of vegetation communities, as described below:

THE TULARCITOS ACCESS ROUTE

The Tularcitos Access Route for the Proponent's Proposed Project begins at the Carmel Valley Road and joins the dam access road. It begins in coast live oak woodland and passes through Central Coast cottonwood-sycamore riparian forest, coast live oak woodland, arroyo willow series, mock heather scrub, California sycamore riparian-mock heather scrub, annual grassland, coast live oak woodland, California sycamore riparian-coast live oak, annual grassland, coast live oak woodland, ruderal vegetation, coast live oak woodland, ruderal habitat, coast live oak woodland, and annual grassland.

THE CACHAGUA ACCESS ROUTE

The Cachagua Access Route (Alternatives 1, 2, and 3) consists of the Jeep Trail from Cachagua Road to the sediment disposal site. **Alternative 3 would also use Tassajara Road and Cachagua Road, including the portion of Cachagua Road between Tassajara Road and the Jeep Trail for heavy equipment mobilization, but would not access sediment disposal site 4R (see Figure 3.2-2a). The access route** ~~It~~ begins in coast live oak woodland, and passes through chamise series, chamise-black sage series, coast live oak woodland, chamise series, coast live oak woodland, annual grassland, coast live oak woodland, annual grassland, chamise-black sage series, and ends in coast live oak woodland.

The conveyor route, which is part of the access route for Alternatives **1 and 2,** ~~1, 2, and 3,~~ begins at the Jeep Trail at Site 4R and ends at the reservoir. Although it passes primarily through coast live oak woodland, two short sections intercept or partly intercept chamise-black sage series. This route ultimately ends in white alder-willow riparian vegetation at the reservoir, but this last is considered part of the construction area, not part of the access route.

The Reservoir Access Route for Alternative 3 begins at the Jeep Trail (approximately 3,800 feet farther down the Jeep Trail than for Alternatives 1 and 2) and ends at the reservoir. It passes through roughly equal areas of coast live oak woodland and chamise-black sage series (referred to as chaparral in the 2011 surveys). This route ultimately ends in white alder-willow riparian vegetation at the reservoir; for purposes of the SEIR evaluation, the terminus is considered part of the construction area, not part of the access route.

SAN CLEMENTE DRIVE

San Clemente Drive begins at the Carmel Valley Road and continues through the Sleepy Hollow community up to the intersection with the Tularcitos Access Route. The road through Sleepy Hollow begins in coast live oak woodland, passes through Central Coast cottonwood-sycamore riparian forest and back into coast live oak woodland, then through annual grassland, coast live oak woodland, annual grassland, coast live oak woodland, annual grassland, coast live oak woodland, annual grassland, and meets the Tularcitos route in coast live oak woodland/annual grassland. The Proponent's Proposed Project would only use this section until the Tularcitos Access Route is completed. The other action alternatives would use it for access to the base of the Dam.

San Clemente Drive and its various subsidiary roads extend from the Tularcitos road junction to the Dam and back for all project alternatives. The main road passes through coast live oak woodland, ruderal and developed habitat, coast live oak woodland, chamise-black sage series, chamise series, chamise-black sage series, partially intercepts an area of California sycamore series, passes through more chamise-black sage series and a more extensive area of California sycamore series, between chamise-black sage series and Central Coast cottonwood-sycamore riparian forest, then through coast live oak woodland, Central Coast cottonwood-sycamore riparian forest, chamise-black sage series, coast live oak woodland. At the OCRD, the eastern access route extends southwest through Central Coast cottonwood-sycamore riparian forest to the foot of the Dam. The western access route crosses the Carmel River via the bridge and passes through chamise-black sage series, chamise series, and coast live oak woodland, and several small developed areas associated with the Dam facilities. Another unnamed road extends over the hill from the dam facility back to the main access road, crossing the Carmel River at the ford. This road begins in coast live oak woodland near the Dam and passes through chamise-black sage series, coast live oak woodland, chamise series, a combination of chamise-black sage series and coast live oak woodland, coast live oak woodland, chamise series, a long stretch of coast live oak woodland, an area with blue oak series, another long stretch of coast live oak woodland, annual grassland, more coast live oak woodland, Central Coast cottonwood-sycamore riparian forest, and joins the main road in California sycamore series vegetation.

Wildlife

Valley and Foothill Riparian (Central Coast cottonwood-sycamore riparian forest, white alder riparian forest, arroyo willow series, California sycamore series, narrowleaf willow series, mulefat series): Valley-foothill riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. At least 50 amphibians and reptiles occur in lowland riparian systems. Many are permanent residents; others are transient or temporal visitors. Typical species include western pond turtle (*Emys* [*Clemmys] marmorata*), garter snakes, swallows, vireos, flycatchers, bats, and raccoon (*Procyon lotor*).

Montane Hardwood (California Bay series): Bird and animal species characteristic of the Montane Hardwood habitat include scrub jay (*Aphelocoma californica*), Steller's jay (*Cyanocitta stelleri*), acorn woodpecker (*Melanerpes formicivorus*), western gray squirrel (*Sciurus griseus*), wild turkey (*Meleagris gallopavo*), mountain quail (*Oreortyx pictus*), band-tailed pigeon (*Columba fasciata*), California ground squirrel (*Spermophilus beecheyi*), dusky-footed woodrat (*Neotoma fuscipes*), black bear (*Ursus americanus*), and mule deer (*Odocoileus hemionus*) (Mayer & Laudenslayer 1988). Deer also use the foliage of several hardwoods to a moderate extent. Many amphibians and reptiles are found on the forest floor in this habitat. Among them are ensatina (*Ensatina eschscholtzii*) and western fence lizard (*Sceloporus occidentalis*), rubber boa (*Charina bottae*), western rattlesnake (*Crotalus viridis*), California mountain kingsnake (*Lampropeltis zonata*), and sharp tailed snake (*Contia tenuis*).

Blue oak woodland (blue oak series): This plant community provides breeding habitats for a large variety of species. For example, in the western Sierra Nevada, 29 species of amphibians and reptiles, 79 species of birds, and 22 species of mammals utilize this habitat for breeding (Mayer & Laudenslayer 1988). Wildlife species characteristic of oak habitats include western fence lizard, western rattlesnake, western scrub jay, acorn woodpecker, Botta’s pocket gopher (*Thomomys bottae*), and California ground squirrel.

Coastal Oak Woodland (coast live oak series): Coastal oak woodlands provide habitat for a variety of wildlife species. At least 60 species of mammals are reported to use oaks in some way. As many as 110 species of birds have been observed during the breeding season in California habitats where oaks form an important part of the canopy or subcanopy. Quail, turkeys, squirrels, and deer may be so dependent on acorns in fall and early winter that a poor acorn year can result in substantial declines in their populations (Mayer & Laudenslayer 1988). Species commonly found in this habitat are similar to those in blue oak woodland.

Coastal Scrub (California sagebrush series, black sage series, California sagebrush-black sage series, mock-heather scrub): Though vegetation productivity is lower in Coastal Scrub than in adjacent chaparral habitats associated with it, Coastal Scrub appears to support numbers of vertebrate species roughly equivalent to those in surrounding habitats (Mayer & Laudenslayer 1988). Species typical of this habitat are similar to those described below for chamise-redshank chaparral.

Chamise-Redshank Chaparral (chamise series, chamise-black sage series): A wide variety of wildlife use chaparral habitat. Wildlife that commonly may be found in this habitat type includes common kingsnake (*Lampropeltis getula*), California quail (*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), Anna's hummingbird (*Calypte anna*), greater roadrunner (*Geococcyx californianus*), black-tailed jackrabbit (*Lepus californicus*), and coyote (*Canis latrans*).

Annual grassland (California annual grassland series): Common wildlife species typical of this habitat include western fence lizard, western rattlesnake, turkey vulture (*Cathartes aura*), American kestrel (*Falco sparverius*), California ground squirrel, Botta's pocket gopher, western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), black-tailed jackrabbit, and coyote.

Fresh emergent wetlands (bulrush-cattail series): These habitats are among the most productive wildlife habitats in California and are important to wildlife for water and food. Common wildlife species in this habitat include Pacific chorus frog (*Pseudacris regilla*), western aquatic garter snake (*Thamnophis couchii*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), ornate shrew (*Sorex ornatus*), deer mouse, and muskrat (*Ondatra zibethicus*).

Riverine habitat in the Project Area is found along the Carmel River and its tributaries. Riverine habitat can provide resting and escape cover for waterfowl. Several gulls and terns forage in open water. Near-shore waters provide food for waterfowl, herons, shorebirds, and belted kingfisher (*Ceryle alcyon*). Many species of insectivores (e.g., swallows, swifts, and flycatchers) forage over the water.

Lacustrine habitat in the Project Area is supplied by the reservoir. This habitat is used by 18 mammal, 101 bird, nine reptile, and 22 amphibian species. Open water habitat provides resting and foraging habitat for several waterbirds, including the American coot (*Fulica americana*), common merganser (*Mergus merganser*), and great blue heron. Other characteristic species found in open water habitats include the eared grebe (*Podiceps nigricollis*), pied-billed grebe (*Podilymbus podiceps*), common goldeneye (*Bucephala clangula*), cliff swallow (*Petrochelidon pyrrhonota*), tree-swallow (*Tachycineta bicolor*), and several bat species (Mayer and Laudenslayer 1988). Open water also provides a water source for many common mammal species.

In addition, several species of wildlife have adapted to developed habitat. These include rock dove (*Columba livia*), western scrub jay, northern mockingbird (*Mimus ployglottos*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), opossum (*Didelphis marsupialis*), raccoon, and striped skunk (*Mephitis mephitis*).

Sensitive Habitats

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species and CDFG species of special concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive in this analysis were based on those listed on the California Natural Diversity Database's (CNDDB) working list of "high priority" habitats (i.e., those habitats that are rare or endangered within the borders of California). In September, 2000, critical habitat was proposed in the Federal Register for the California red-legged frog (CRLF). The proposed designation was revised November 3, 2005 and includes 51 habitat units, including Monterey County. A final designation is still under consideration. On September 2, 2005, the final designation of critical habitat for steelhead was listed in the Federal Register. The designation includes Monterey County. Habitat types dominated by oaks (*Quercus* spp.) are also considered sensitive under the provisions of Title 16, Chapter 16.60, Monterey County Code, which provides for preservation of oaks and other protected tree species.

In addition, ten of the fifteen native plant communities occurring in the Project Area are recognized as sensitive habitats. Eight of these communities are recognized as "high priority" habitats by the CNDDB, as follows: the central coast cottonwood-sycamore riparian forest, the arroyo willow series (central coast arroyo willow riparian forest), the California sycamore series (sycamore alluvial woodland), the narrow-leaf willow series (central coast riparian scrub), the white alder riparian forest, the California bay series (California bay forest), mulefat scrub, and the bulrush-cattail series (coastal and valley freshwater marsh). The two remaining sensitive habitats are the coast live oak series (coast live oak forest) and the blue oak series (blue oak woodland), which are considered sensitive habitats under the provisions of Title 16, Chapter 16.60, Monterey County Code. A brief description of these sensitive habitats on the Project Site is provided below. The distribution and extent of the sensitive habitats in the Project Vicinity is shown in Figure 4.5-1.

Riparian Habitats

Riparian habitats are sensitive because they are ecologically specialized habitats of limited distribution, have high value for wildlife, and have declined greatly in California due to large-scale disturbances such as urbanization, stream channelization, and agricultural conversion (Warner and Hendrix 1984).

CENTRAL COAST COTTONWOOD-SYCAMORE RIPARIAN FOREST

This is a CNDDB "high priority" habitat type that is found along the Carmel River in the Project Vicinity (including the narrowleaf willow series, which intergrades with the central coast cottonwood-sycamore riparian forest. This forest is a diverse, well-developed, high-quality, native riparian complex. The hydrology of this riparian habitat is artificially controlled by the upstream dams, but the riparian habitat has experienced little direct human disturbance. It is composed almost entirely of native species, with little invasion of non-natives, except for localized colonies of Spanish broom. The biological diversity of the riparian forest and scrub habitat in the Project Vicinity makes it especially valuable to wildlife by providing a variety of microhabitats.

The riparian forest is more limited in extent along Tularcitos Creek than along the Carmel River. This forest is similar to the cottonwood-sycamore riparian forest along the Carmel River, but is more uniformly a dense closed-canopy forest, reflecting the much lower frequency and intensity of flooding along Tularcitos Creek (Ecosystems West 1997).

ARROYO WILLOW SERIES (CENTRAL COAST ARROYO WILLOW RIPARIAN FOREST)

This is a CNDDB "high priority" habitat type that is of high value for wildlife. This habitat has been greatly reduced in regional extent by the same large-scale disturbances as other riparian types. This habitat type occurs in two locations in the northern portion of the Project Vicinity. It lies within the floodplain of the Carmel River, but is away from the main channel.

CALIFORNIA SYCAMORE SERIES (SYCAMORE ALLUVIAL WOODLAND)

This is a CNDDB "high priority" habitat type. This habitat type is sensitive because it is limited in extent and because it has been reduced by the same large-scale disturbances as other riparian types. The only example of this habitat type in the Project Vicinity is on the east bank of the Carmel River, south of the mouth of Tularcitos Creek.

NARROWLEAF WILLOW SERIES (CENTRAL COAST RIPARIAN SCRUB)

This is a CNDDB "high priority" habitat type. This habitat occurs in and immediately adjacent to the Carmel River channel in the northern portion of the Project Vicinity, forming part of the complex of riparian habitats along the Carmel River. The heterogeneity of the riparian habitats along the river increases their importance as sensitive habitats. Like other riparian habitat types, the narrowleaf willow series is considered a sensitive habitat type because of its high value for wildlife and because it has been reduced by large-scale disturbances to riparian corridors.

COAST LIVE OAK SERIES (COAST LIVE OAK FOREST)

Coast live oak forest is widespread on upland slopes throughout the Project Vicinity. This habitat type is considered sensitive under the provisions of Title 16, Chapter 16.60, Monterey County Code and is subject to Section 21083.4 of the California Public Resources Code (2004), relating to oak woodlands conservation. The CDFG has also been directed by the state legislature under State Senate Concurrent Resolution No. 17 (California Resolution Chapter 100) to conserve oak woodlands where CDFG has direct permit or licensing authority. Oaks are important to wildlife for shelter and food (acorns).

In addition, they are of general public interest and high scenic value. Oak forests and woodlands are also considered sensitive due to the considerable recent loss of oak-dominated habitats state-wide and the decline in regeneration of many oak species.

BLUE OAK SERIES (BLUE OAK WOODLAND)
This oak-dominated habitat type is also considered sensitive under the provisions of Title 16, Chapter 16.60, Monterey County Code and is subject to Section 21083.4 of the California Public Resources Code (2004), relating to oak woodlands conservation. Blue oak woodland is a widespread habitat type in the dry interior of Northern and Central California. The Project Vicinity is relatively close to the coast for this habitat type, and only one small stand occurs within the Project Vicinity, on the north side of Osborne Ridge north of SCD.

CALIFORNIA BAY SERIES (CALIFORNIA BAY FOREST)
This is a CNDDB "high priority" habitat type. The only stand of this habitat type in the Project Vicinity occurs on the lower slope adjacent to the eastern shore of San Clemente Reservoir.

BULRUSH-CATTAIL SERIES (COASTAL AND VALLEY FRESHWATER MARSH)
This is a CNDDB "high priority" habitat type. Freshwater marshes are sensitive habitats because they are limited in extent, are highly dependent on specialized ecological conditions, have high value for wildlife, and are easily degraded by disturbances such as alteration of hydrology. The only stand of this habitat type in the Project Vicinity is artificial in origin, occurring in Settling Pond Number 1 northeast of the Filter Plant. It is, however, ecologically similar to a naturally occurring freshwater marsh.

Special-status Species

Special-status species include plant and wildlife species listed by the USFWS as Threatened or Endangered under provisions of the Federal ESA of 1973 United States Code (16 USC 1531 et. seq., as amended) as well as Proposed and Candidate species for listing (USFWS 2007). Critical habitat for federally listed special-status species may also be designated. Special-status species also include wildlife species listed as threatened or endangered by the CDFG under provisions of the 1984 California Endangered Species Act (CESA) (CDFG 2005a, 2005b), and plant species listed as Rare, Threatened, or endangered by CDFG under provisions of CESA and the 1977 Native Plant Protection Act (NPPA) (CDFG 2005a). Wildlife species listed by CDFG as species of special concern (CDFG 2005b) are also special-status species.

Special-status species also include plant species included on List 1A (Plants Presumed Extinct in California), List 1B (plants rare, threatened, or endangered in California and elsewhere), or List 2 (plants rare, threatened, or endangered in California, but more common elsewhere) of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). These species are subject to State regulatory authority under CEQA. Plant species included on Lists 3 and 4 of the CNPS Inventory could be also considered special-status species. These species are considered to be of lower sensitivity. They generally do not fall under specific State or federal regulatory authority, and specific mitigation considerations are generally not required for these species.

Special-status Plant Species

The potential special-status plant species that may occur in the Project Vicinity were determined based on a review of literature and special-status species data bases, including previous botanical surveys conducted for the Proponent's Proposed Project elsewhere in the vicinity of the project, and on previous knowledge of the regional flora by the biological consultant's botanists. This list is presented in Appendix T. Surveys for special-status species were conducted in 1997 and 2005, and were scheduled to coincide with the periods during which all potential special-status species would be identifiable.

Only two special-status plant species, virgate eriastrum (*Eriastrum virgatum*) and Lewis's clarkia (*Clarkia lewisii*) were found in the Project Vicinity. One small population of virgate eriastrum (an annual species), consisting of 20 to 30 plants in 1997, was found to occur in the Project Vicinity. This population is located at the eastern edge of the floodplain of the Carmel River in the northern portion of the Project Vicinity (Ecosystems West 1997). The plants were found in an old roadbed consisting of sandy alluvium in an open area separating a central coast cottonwood-sycamore riparian forest from coast live oak forest. This species flowers from May to July and is found in sandy chaparral and coastal dune habitats (CNPS 2001) at elevations below 500 meters (Hickman 1993). Virgate eriastrum is on List 4 of the CNPS Inventory, and does not fall under specific state or federal regulatory authority.

Lewis's clarkia was found along the Jeep Trail that is a proposed access route for Alternatives 1, 2, and 3, as well as the proposed sediment disposal site for Alternatives 1 and 2, and the diversion dike area for Alternative 3. This species is also a CNPS List 4 taxon. Lewis's clarkia is an annual species that typically flowers from May to July (CNPS 2001). This plant is usually found in chaparral, cismontane woodland, or coastal scrub communities at elevations below 300 meters (Hickman 1993).

Special-status Wildlife Species

Special-status wildlife species documented as occurring in the study area include: the federally listed CRLF, western pond turtle, foothill yellow-legged frog, two striped garter snake, Monterey dusky-footed wood rat, Cooper's hawk, osprey, and yellow warbler. A nonbreeding single willow flycatcher was reported in May 1997 in riparian habitat considered suboptimal for the species, but no other federal or state listed threatened or endangered bird species were found in the Project Area.

Potentially suitable habitat for other special-status species also exists in or near the Project Area, including: the federally **and state** listed California tiger salamander, Coast Range newt, coast horned lizard, Townsend's big-eared bat, California mastiff bat, pallid bat, double-crested cormorant, sharp-shinned hawk, bald eagle, golden eagle, and yellow-breasted chat. No Smith's blue butterflies, suitable habitat or preferred host plants were detected during the surveys. Each special-status wildlife species known or with potential to occur in the study area is discussed below, including a discussion of the quality of habitat and likelihood of occurrence for those species with potential to occur.

AMPHIBIANS AND REPTILES

California red-legged frog (CRLF) (Rana draytonii).[2] The CRLF is listed as threatened under the Federal Endangered Species Act, and is a California species of special concern (Jennings and Hayes 1994; CDFG 2005a). CRLFs spawn in marshes, springs, natural and artificial ponds, slack water pools of rivers and streams (Jennings and Hayes 1994; Hayes and Jennings 1988, Stebbins 2003), and tidally influenced freshwater marshes (Smith and Reis 1996). Typical spawning pool habitat includes moderately deep water (to 1.25 meter in depth), dense bordering and emergent vegetation (e.g., tules, (*Scirpus*), cattails (*Typha*), sedges and rushes (*Carex* and *Juncus*), and willows (*Salix*)), mud or silt substratum, nearly full to full sun exposure, and abundant forage for adults and tadpoles including benthic and suspended algae, benthic macroinvertebrates, and small terrestrial vertebrates such as tree frogs and mice (Jennings and Hayes 1994). CRLF tadpoles are typically found within dense aquatic vegetation, where they are cryptic and also readily find forage (Weins 1970). Hayes and Jennings (1988) noted that tadpoles also forage or hide in muddy substrata. Ranid tadpoles, presumably including CRLF tadpoles, generally consume benthic and suspended algae. CRLFs can use seasonal ponds for spawning, so long as water persists through August (Hayes and Jennings 1988; S. Barry, pers. obs.).

Adult CRLFs may remain nearly all year along the margins of suitable spawning habitat, but during the summer in many regions adult frogs may move from sunlit spawning pools to well-shaded streams with bank undercuts and exposed root masses, so-called “summer habitat” (USFWS 2002). Stream corridors are often considered to be potential “dispersal habitat” for this species (USFWS 2002), but these frogs may use virtually any vegetated non-saline habitat to move among spawning and summer sites (S. Barry, pers. obs.). These frogs typically enter hibernation sites beginning in late October and emerge by mid-January or somewhat later depending on region (USFWS 2002).

CRLFs have declined in the southern part of the state due to habitat loss (Jennings and Hayes 1994). The reasons for declines elsewhere are less clear. The recovery plan for this subspecies (USFWS 2002) states that “Habitat loss and alteration are the primary factors that have affected the CRLF negatively throughout its range.” Exotic aquatic predators (bullfrogs, crayfish, and fish), habitat degradation from agricultural and grazing practices, and decreased water quality due to human manipulation of habitats and from water diversion all have been suggested as factors that may explain the

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[2] Most earlier references use the scientific name *Rana aurora draytonii* for the California red-legged frog, but as of August 2004 this frog is regarded as a full species known as *Rana draytonii* (Shaffer et al. 2004)

decline of this species. However, the effects of these factors are not well documented. Although predation and competition by bullfrogs (*Rana catesbeiana)* is frequently postulated to explain declining CRLF populations, bullfrog control or eradication programs have not always proven effective. Bullfrogs and CRLFs co-occur in seemingly stable relative numbers at many ponds in coastal California (Barry 1999; USFWS 2002). The recovery plan for the CRLF (USFWS 2002, p. 24) states that introduced bullfrogs, crayfish, and species of fish have been a significant factor in the decline of the CRLF. The plan acknowledges that “Changes in habitat that are unfavorable to CRLFs tend to be favorable to a suite of introduced non-native aquatic predators, making it difficult to identify detrimental effects of specific introduced species on CRLFs.”

The USFWS has indicated that proliferation of bullfrog populations along the central California coast (e.g. Monterey County) is a substantial threat to the persistence of the CRLF in this area. Insufficient data are available to conclusively determine the extent or mechanism of potential negative impacts of bullfrog populations on coastal CRLF populations in Monterey County or specifically in the Carmel River watershed. However, both species share habitat along the Carmel River and the evidence presented by Hayes and Jennings (1988) suggests that the coexistence is over 100 years old. It is not known whether populations of either species are relatively stable or variable within the watershed under baseline conditions, and monitoring would be needed to determine population trends if habitat conditions change. The current San Clemente drawdown monitoring and rescue program is not designed to identify causal factors responsible for changes in frog populations.

Surveys during the annual drawdowns pursuant to the Interim Seismic Safety Measures for SCD found CRLFs and bullfrogs co-occurring throughout San Clemente Reservoir. Predation has been documented; CRLFs have been found in the stomachs of bullfrogs collected in the Project Area, although other reports indicate that crayfish are a primary food source for bullfrogs. Since 2003, numbers for both species have fluctuated and shifted among locations, possibly as a result of management activities. Bullfrogs consistently outnumber CRLFs at the reservoir pool where specific habitat conditions favor that species. CRLFs are doing well upstream and downstream; and bullfrogs are less numerous than native species downstream.

Upstream of the reservoir pool, USFWS and CAW have collaboratively devised an enhancement program for CRLF. The program involves extensive bullfrog eradication in riparian stream and small pool settings. Enhancement sites have been monitored and improved, and bullfrog eradication has been implemented at these sites. Implementation of the program since 2003 appears to have benefited CRLF recruitment and overall numbers are benefiting markedly (Froke 2004, 2005, 2007). In and around management sites, CRLF numbers have benefited by releases and natural recruitment has taken place; simultaneously bullfrog numbers have been diminished. Furthermore, downstream of the reservoir, from the Dam to Highway 1, CAW is in the seventh year of intensively monitoring and managing for CRLF reproduction; management that includes rescue and relocation of hundreds of tadpoles each summer (i.e., from stranding conditions), and capture and sacrifice of every bullfrog encountered. The monitoring program is designed to detect and ultimately predict environmental stress to natal populations caused by changes to water level and temperature.

Dispersal of individual CRLFs plays an important role in metapopulation dynamics and therefore, the persistence of populations. SCD was built within a steep, confined reach of the river valley. Although dispersal of individual CRLFs in the Project Area has not been rigorously studied, the SCD may pose a barrier to dispersal.

Site Occurrence. CRLFs had been found frequently during previous surveys in suitable riparian habitat within and near the project site. CRLF “rescues” have been carried out annually since 2003 as part of the mitigation program for the annual drawdown for Interim Seismic Safety Measures for SCD. These operations have resulted in the capture and relocation of hundreds of adults, juveniles, and tadpoles from the reservoir headwaters and isolated pools in the sediment beds along both reservoir arms to more secure pools upstream (as well as the culling of hundreds of bullfrogs) (Froke 2005, 2007).

CRLFs also occur upstream and downstream of the project site on the Carmel River. Numerous observations of CRLFs have been made, documenting a wide distribution of the species throughout the Carmel River Basin (these are cited in the 2000 RDEIR by Denise Duffy & Associates as MPWMD, EIR Associates (Dr. David Mullen), Dr. Jeffery Froke, Zander and Associates, and ENTRIX). The plunge pool and spill-influenced downstream channel below SCD is believed to be unsuitable for this species (none were found during the 1997 surveys) but the species is well-documented further downstream in the Carmel Valley (Museum of Vertebrate Zoology 2005).

These surveys and rescues indicate that CRLFs are nearly ubiquitous wherever bordering cover and low gradient slope is contiguous with the waterway within San Clemente Reservoir and the Carmel River arm upstream of the reservoir, at least to the upstream edge of the deposited sediment bed. Surveys by ENTRIX in July 2005 confirmed that pond habitat within the Carmel River arm occurs up to the upstream end of the reservoir sediment bed, but spawning pools outside of the main river channel are absent further upstream within the surveyed reach, which extended upstream of the sediment bed. Systematic annual surveys conducted between 2002 and 2006 have documented CRLF reproduction in side-channel and off-channel pools up to 1.5 miles upstream of San Clemente Reservoir. As the reservoir levels decline during the summer (and during the annual reservoir drawdown), frogs and tadpoles tend to concentrate in some of the isolated pools in the sediment bed, particularly in densely vegetated areas. The sediment bed is clearly the most important habitat feature of the reservoir during that period.

These frogs also occur, but somewhat less widely, in the San Clemente Creek arm of the reservoir and upstream into the creek. During 1997 surveys, three adult red-legged frogs (including at least one male) were observed by EcoSystems West at the upper extreme of the San Clemente Reservoir along the creek. Surveys further upstream along both the San Clemente Creek and Carmel River arms of the reservoir yielded no additional red-legged frog observations in 1997. However, ten CRLFs were observed (nine captured) in San Clemente Creek in 2004 (Froke 2004), and five CRLFs were observed (five captured) in 2005 (Froke 2005). ENTRIX biologists recorded one probable sighting in July 2005 along San Clemente Creek approximately one mile upstream of San Clemente reservoir, and found that much of San Clemente creek upstream of the reservoir is potentially suitable summer habitat. This area is probably suitable spawning habitat only in the slack water reach just upstream of the reservoir. No CRLF tadpoles were observed in San Clemente Creek in 2004 and 2005, but tadpole, juvenile, and adult bullfrogs were observed and removed in 2004, 2005 and 2006 (Froke 2005 and 2007).

Approximately 1.5 kilometers of the lower portion of Tularcitos Creek was surveyed during 1997, and no CRLFs were observed in this area. In 2000, an adult CRLF was observed in Tularcitos Creek downstream of San Clemente Drive.

Foothill yellow-legged frog (Rana boylii). The foothill yellow-legged frog is a California species of special concern. Low-gradient rocky creeks and streams with dappled shade bordered by mixed chaparral or deciduous and evergreen woodlands constitute the primary habitat for this frog (Zweifel 1955).

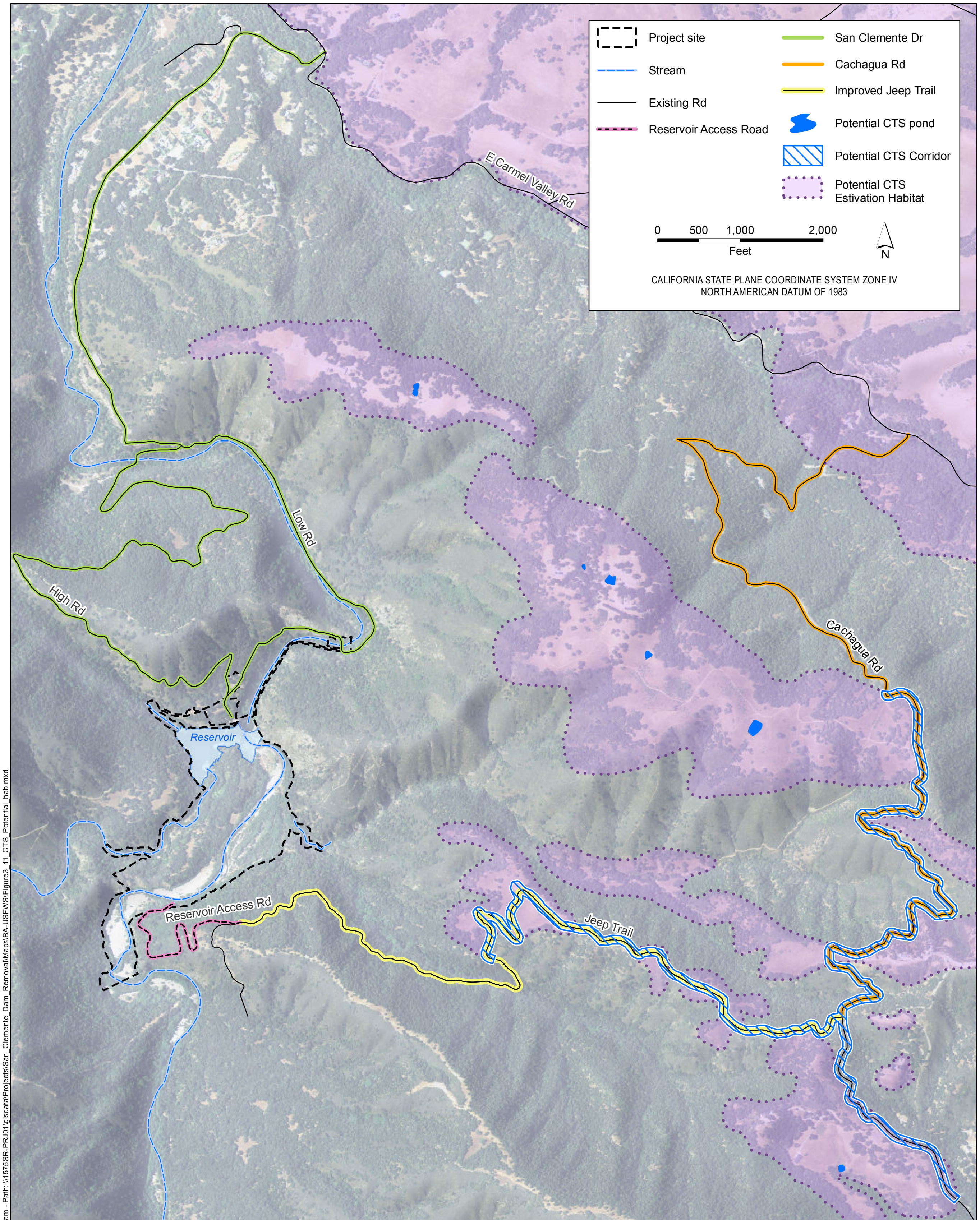
Site Occurrence. This species has been documented previously from the Carmel River (California Academy of Sciences 2005) and from San Clemente Creek (Museum of Vertebrate Zoology 2005). No frogs of this species were found during earlier surveys for this project, but an ENTRIX biologist observed one specimen along San Clemente Creek within one mile of SCD in July 2005. The available habitat along this reach of San Clemente Creek is considered marginal for this species, but the stream habitat along this reach may be the best available along San Clemente Creek because of its relatively low gradient relative to upstream reaches. Bullfrogs were abundant along San Clemente Creek during these surveys, but they seemed to favor pool habitat and to avoid the long shallow riffle/runs favored by foothill yellow-legged frogs.

California tiger salamander (Ambystoma californiense). The California tiger salamander ~~*(Ambystoma californiense)*~~ *(CTS)* is listed as threatened under the Federal ESA and **under the California Endangered Species Act (CESA).** ~~is a California species of special concern.~~ The California tiger salamander is a terrestrial species that spawns for a few days in water but spends the rest of the year aestivating **(a state of dormancy or torpor especially during hot or dry periods)** in subterranean habitat, using the burrows of California ground squirrel (*Spermophilus beecheyi*) and valley (Botta) pocket gopher (*Thomomys bottae*) (Storer 1925, Stebbins 2003). These salamanders emerge with the first fall rains and move at night to pools when they have impounded enough water to support spawning (Stebbins 1951, Barry and Shaffer 1994). Spawning habitat includes rain pools and ditches and other still water such as stock ponds, small lakes, and ~~(rarely)~~ vernal pools (Barry and Shaffer 1994). After a spawning period that may last as little as a day or two, the adult salamanders leave the spawning pool and return to aestivation habitat. They may re-emerge and revisit spawning pools if late-season rains occur (Stebbins 1951).

Site Specific Occurrence. ~~Although p~~ **P**otentially suitable aquatic spawning habitat for the California tiger salamander occurs near the Project Area**.**~~, this species has not been recorded during field surveys conducted there.~~ California tiger salamanders are well documented from the Carmel Valley, especially the vicinity immediately adjacent to the Hastings Reservation upstream of San Clemente reservoir where life history and demographic variation in the species have been studied since the early 1990's through the year 2000 (Barry and Shaffer 1994, Trenham et al. 2000). Potentially suitable spawning habitat occurs in the Project Vicinity along the Carmel River in the form of two seasonal ponds downstream of the CVFP. No specialized techniques designed to detect California tiger salamanders adults or larvae in terrestrial or aquatic habitat (e.g., seining, drift-fence/live trap) were conducted during 1997 surveys. **Several small ponds near the project area, between Cachagua Road and the Jeep Trail have the potential to support CTS (see Figure 4.5-2). The closest recorded occurrence of CTS was a 1953 record located in a pond between the Jeep Trail and Cachagua Road, approximately 0.35 mile from the Jeep Trail.**

USFWS staff recorded a more recent occurrence of a breeding population near the project area. The location of this population is separated from the project area by a steep ridge with dense scrub and woodland habitat. The occurrence was not reported to the CNDDB.

Suitable aestivation and breeding habitat occurs along the ridge top immediately to the west of Cachagua Road and north of the Jeep Trail (see Figure 4.5-2). Portions of the Jeep Trail also contain habitat suitable for aestivation. There is potential for California tiger salamander to migrate across portions of Cachagua Road and the Jeep Trail during periods of wet weather in the winter and spring. The remainder of the project footprint and action area is isolated from these locations due to steep terrain and dense coastal scrub habitat. Elsewhere within the project area, topography and dense scrub and woodland habitat may not be suitable for California tiger salamander aestivation.



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	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 1/18/2012 DATE OF SUBMISSION: 1/30/2012 URS PROJECT NO. 26818107	**FIGURE 4.5-2** CALIFORNIA TIGER SALAMANDER POTENTIAL HABITAT

Coast Range newt (Taricha torosa torosa). The Coast Range (western or California) newt is a California Species of Concern where it occurs from Monterey County south (CDFG 2005b). This status was originally only from south of the Salinas River in Monterey County (Jennings & Hayes 1994), but has been extended to cover the species throughout Monterey County. Adults are found in terrestrial habitats, but they breed in slow-moving streams, ponds, and reservoirs.

Site Occurrence. Numerous records for the Coast Range newt exist from the Carmel Valley (Museum of Vertebrate Zoology 2005). No Coast Range newts were observed in the Project Area during the surveys, but suitable habitat occurs along the Carmel River and San Clemente Creek.

Western pond turtle (Actinemys [=Clemmys] marmorata). The western pond turtle is a California species of special concern. It occurs in small lakes, ponds, creeks, rivers, and streams across most of the state, except in the Sierra Nevada above about 5000 feet in elevation and in the desert regions. The western pond turtle is most commonly associated with permanent or nearly permanent water within a wide variety of habitat types. Areas of dense turtle populations are typically associated with logs or large rocks used for basking. Pond turtles also require terrestrial habitats for egg laying sites and winter hibernation (Holland 1994).

Site Occurrence. In conjunction with CRLF surveys, observations of pond turtles were recorded and mapped. Western pond turtles were frequently observed along the Carmel River downstream from SCD. Observations of pond turtles were made 11 times with at least six individuals present. Employees of CAW and MPWMD observed groups of 10 or more western pond turtles on the river (Denise Duffy & Associates 2000*).* Many basking sites exist along the river and reservoir, and potential habitat for nest building and hibernation is available on the site.

Coast horned lizard (Phrynosoma coronatum). The coast horned lizard originally included two subspecies (both classified as species of special concern by Jennings and Hayes (1994) but most authors (e.g., Stebbins 2003) no longer recognize these as valid subspecies. The entire species within California is now considered a species of special concern. The California horned lizard occurs primarily in open grassland or chaparral (sometimes in forested areas) with large sunlit areas for basking.

Site Occurrence. Numerous records for the coast horned lizard exist from the Carmel Valley and especially from the coastal dunes of Monterey County (California Academy of Sciences 2005, Museum of Vertebrate Zoology 2005). No coast horned lizards were observed in the Project Vicinity during the surveys, but suitable habitat seemingly occurs along the roads that parallel the Carmel River and along the Carmel River downstream from the CVFP.

California legless lizard (Anniella pulchra). The California legless lizard is a California species of special concern. It occupies sand dune and streamside habitat throughout coastal California as far north as Watsonville, Monterey County, but it is spottily distributed and occurs only where soil and forage conditions are suitable (Miller 1943). The presence of bush lupine often indicates that habitat conditions are suitable for legless lizards (Stebbins 2003).

Site Occurrence. California legless lizards are abundant in Monterey County. The black form of this distinctive lizard (formerly *Anniella pulchra nigra*, no longer taxonomically recognized) is well known from the Monterey Peninsula and the coastal dunes north to Watsonville, but does not appear to range inland into the Salinas, Pajarro, or Carmel River basins (Jennings and Hayes 1994). The "silvery" form (formerly *Anniella pulchra pulchra*) is known from several sites along the Salinas River in Monterey County but is not currently known from the Carmel Valley. The absence of sandy dune or loamy streamside habitat along the Carmel River may preclude its occurrence in the valley. No California legless lizards were observed during the surveys for this project, but specialized techniques for finding them, such as raking through plant litter under bush lupine, were not employed.

Two-striped garter snake (Thamnophis hammondii). The two-striped garter snake is a California species of special concern. This distinctive snake is so-named because it possesses a lateral stripe on each side of the body but is lacking the distinct mid-dorsal stripe that many other garter snake species possess (Rossman et al. 1996). It occupies the margins of sunlit rocky streams and feeds primarily on small fish (Stebbins 2003), and can be distinguished from other garter snake species that occur in the same region by its absence of red lateral coloration and mid-dorsal stripe (Stebbins 2003; S. Barry, pers. obs.).

Site Occurrence. Jennings and Hayes (1994) indicate that the two-striped garter snake still occurred along much of the Carmel River (in 1994), which is near the northern limit of the species' range. Two-striped garter snakes were observed in the Carmel River arm of San Clemente Reservoir during the 2003 and 2005 drawdowns, and much of San Clemente Creek and the Carmel River above San Clemente Reservoir appears to offer suitable habitat and forage for this species.

Birds

Bald eagle (Haliaeetus leucocephalus). The bald eagle **is a fully protected species under California law. The bald eagle was added to the Federal list of endangered species in 1967, and to the California list of endangered species in 1971.** ~~is a California Endangered Species,~~ **The Fish and Wildlife Service removed the bald eagle from the federal list of threatened and endangered species in August 8, 2007, but the bald eagle continues to be protected under federal law by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Both laws prohibit killing, selling or otherwise harming eagles, their nests, or eggs. The eagle remains listed as endangered in California under CESA and remains fully protected.** ~~Formerly listed as threatened under the ESA, the species was publicly announced as delisted on June 28, 2007.~~ Bald eagles require relatively large bodies of water containing standing populations of suitable-sized fish, and waterfowl supplement their diet. Nests, typically in large conifers in relatively secluded locations, are usually located within one mile of key foraging areas. Bald eagles are resident in California. They begin nesting (incubating) in late February through March, and young fledge by July. The California bald eagle breeding population now exceeds 115 breeding pairs, primarily concentrated in the north. Many more bald eagles visit California as winter migrants.

Site occurrence. No bald eagles were found during visual surveys in the Project Area. San Clemente Reservoir may not be large enough to provide breeding habitat for bald eagles; however, eagles may use several smaller reservoirs or river reaches within their territory, often covering distances exceeding 10 miles. Therefore, San Clemente Reservoir is potential foraging habitat and low suitability breeding habitat for bald eagles. The nearest known bald eagle nest occurs on the Nacimiento River in southern Monterey County (K. Sorenson, Ventana Wilderness Sanctuary, unpub. Report cited in Denise Duffy & Associates 2000). Bald eagles are more likely to utilize San Clemente Reservoir as winter migrants.

Golden eagle (Aquila chrysaetos). **The golden eagle is listed as a fully protected species in California** *and is protected under federal law by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act*. ~~The golden eagle is a California species of special concern.~~ **Most golden eagles in California are resident (e.g. they stay in the state yearlong), but some migrate into California for winter. Those that stay yearlong may move downslope for the winter, or upslope after breeding season. Golden eagles inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. The golden eagle breeds from late January through August and produces 1-3 eggs. Nests are constructed on platforms on steep cliffs or in large trees. The main prey species for the golden eagle are rabbits, hares and rodents; but eagles will also takes other mammals, birds, and reptiles. Carrion (e.g. carcasses found on the landscape) is also a part of the eagle diet, especially during winter months.** ~~These large birds nest on high (>30 ft.), vertical cliffs and in trees. They hunt mostly mammals over open habitats such as savanna or desert scrub, usually in mountainous or canyon country.~~ Industrial, agricultural, and residential development is increasing in golden eagle foraging and nesting habitat, and the status and trends of the California golden eagle populations is currently tracked.

Site occurrence. The Carmel River canyon in the vicinity of the Project Area is predominately woodland or chaparral-type habitat. ~~and, therefore, contains only marginal habitat for golden eagles, which prefer to hunt in open grasslands or oak savanna.~~ Golden eagles may nest in woodland areas if open areas are located nearby for foraging; potential nesting substrate does occur in the Project Area. The nearest reported golden eagle nest was found in Canada Canyon in 1991 (BioSystems Analysis 1991). Abundant foraging habitat occurs elsewhere on the hills surrounding Carmel Valley.

Cooper's hawk (Accipiter cooperi). The Cooper's hawk is a California species of special concern. Cooper's hawk nesting habitats include riparian deciduous, live oak, or second-growth conifers, usually near stream courses in dense stands with relatively high crown closure and open understory. Accipiters partition food on the basis of size and prey type: Cooper's hawks prey on equal proportions of medium-sized birds and small mammals. Although the Cooper's hawk once commonly nested throughout California, loss of riparian woodlands by logging and stream modification has resulted in a steep decline of nesting birds (Small 1994). Egg laying typically occurs in late April or early May, and young fledge in July.

Site occurrence. Suitable breeding and foraging habitat occurs in the Project Area in oak and riparian woodlands. One active Cooper's hawk nest was observed near the Carmel River, just north of the CVFP adjacent to Settling Pond Number 1. The nest was located approximately 15 meters southeast of the pond near the forest edge in a 20 meters tall live oak. It was active and contained two young in 1997. This nest was again observed in July of 1998 and was found to be active with two to three young birds near the nest. No other Cooper's hawk nests were found in the Project Area.

Osprey (Pandion haliaetus). The osprey is a California species of special concern. Osprey require relatively large bodies of water containing standing populations of suitable-sized fish. For nesting, they utilize snags or snag-top conifers, and tolerate a greater human presence near their nests than do bald eagles. Osprey nesting populations are concentrated in the northern coastal and mountain regions of California. The coastal breeding range of osprey extended north of San Francisco Bay in the 1980's, and was reportedly expanding at that time (Henny and Anthony 1989).

Site occurrence. A single osprey was observed hunting in the open water of San Clemente Reservoir in May 1997. The osprey also carried a stick into a live oak tree, but no nest was found. No other subsequent observations were made of osprey in the Project Area. San Clemente Reservoir may be a portion of the foraging range for osprey breeding at some unknown location in the area and should be considered suitable foraging habitat and potential nesting habitat.

Yellow warbler (Dendroica petechia brewsten). The yellow warbler is a California species of special concern. A common to uncommon summer resident, yellow warblers breed in a variety of habitats, but primarily occur in riparian deciduous woodlands and shrub habitats. They have experienced sharp declines in lowland portions of the state, largely due to loss of riparian habitat and from nest parasitism by brown-headed cowbirds.

Site occurrence. Evidence of yellow warbler breeding activity was found at two sites in the Project Area: 1) near the CVFP, in deciduous trees surrounding Settling Pond Number 1 and 2) in riparian trees along the Carmel River downstream of the proposed batch plant location. Yellow warblers were detected singing during both May and July site visits and assumed nesting, although no actual nests were seen. No other yellow warblers were found in the Project Area, although suitable habitat occurred in riparian habitats along the Carmel River upstream of the CVFP.

Double-crested cormorant (Phalacrocorax auritus). The double-crested cormorant is a California species of special concern. This species is found along the coast and at larger freshwater lakes and reservoirs, rivers, and marshes; it nests on offshore islands, and inland on the margins of lakes, sloughs, and large rivers. Nests are located on cliffs and tall trees or snags. Double-crested cormorants no longer breed in the Sacramento or San Joaquin Valleys, and they have declined along the central and southern California coast. Their decline is attributed to habitat loss and human disturbance of nesting sites, especially by boats.

Site occurrence. Because of its small size, San Clemente Reservoir is probably marginal nesting habitat for double-crested cormorants. The reservoir may provide foraging habitat for wintering cormorants.

Sharp-shinned hawk (Accipiter striatus). The sharp-shinned hawk is a California species of special concern. Sharp-shinned hawks nest in a variety of habitats including deciduous riparian forest but are more commonly associated with dense stands of smaller conifers. They often hunt near openings, using adjacent woodland for cover. The sharp-shinned hawk formerly bred only in small numbers in California. Although their breeding population appears to be greatly reduced, data are lacking or old (Remsen 1978). Larger numbers of migrant sharp-shinned hawks winter in the state.

Site occurrence. Sharp-shinned hawks were formerly a common summer resident in adjacent Santa Cruz County, and there are historical nesting records along the river bottom of the Carmel River (Grinnell and Miller 1944). There is suitable nesting habitat for sharp-shinned hawks in the Project Area; however, they are more likely to be present as winter migrants.

Yellow-breasted chat (Icteria virens). The yellow-breasted chat is a California species of special concern. Yellow-breasted chats use riparian thickets and other brushy habitats near water when breeding. They have experienced sharp declines throughout much of California, largely due to loss of riparian habitat and nest parasitism by brown-headed cowbirds.

Site occurrence. No yellow-breasted chats were detected during field surveys but suitable breeding thickets occur along the Carmel River downstream of the CVFP.

***White-tailed kite (Elanus leucurus)*. The white-tailed kite is a California fully protected species. White-tailed kite are yearlong residents in coastal and valley lowlands, but are rarely found away from agricultural areas. White-tailed kite inhabit herbaceous and open stages of most habitats, and have extended range and increased in numbers in recent decades. White-tailed kite mostly prey on voles and other small, diurnal mammals, and occasionally on birds, insects, and**

amphibians. White-tailed kite forage in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands, typically soar less than 30m (100 ft) above the ground in search of prey, and rarely dives into tall cover. White-tailed kite uses dense stands of trees such as oaks and willow for nesting and cover. Nests are typically located near open foraging areas(CDFG, 2005).

Site occurrence. **The project area may provide nesting habitat for the white-tailed kite, but because of the absence of agricultural land, the project area would likely provide marginal foraging habitat (CDFG, 2005).**

Smith's blue butterfly (Euphilotes enoptes smithi). Smith's blue butterfly is federally listed as endangered. This species typically occurs in coastal locations but can also occur on inland sites. Two species of buckwheat, dune buckwheat *(Eriogonum parvifolium)* and seaside buckwheat *(E. latifolium),* are the preferred host plants for this butterfly.

Site occurrence. Dr. Richard Arnold conducted a survey of the study area for Smith's blue butterfly in June 1997. On the date of the survey, Smith's blue butterflies were observed and found to be active at previously known locations in Sand City and in western Carmel Valley. The survey was also timed to coincide with the flowering period of dune buckwheat and seaside buckwheat. No Smith's blue butterflies were observed during the project site survey. Neither host buckwheat occurs within the study area. Two related butterfly species, Acmor blue *(Plebejus acmon)* and Tilden's blue *(Euphilotes enoptes tildeni,* were observed in the study area. Based on the lack of preferred host plants in the study area, and the presence of related species that generally do not occur with Smith's blue butterfly, it is unlikely that Smith's blue butterfly occurs in the study area.

Monterey dusky-footed wood rat (Neotoma fuscipes luciana). This subspecies of the dusky-footed wood rat is a California species of special concern. It is common to abundant in deciduous and evergreen woodland habitats that provide dense overstory and understory cover. It can also be commonly found in chaparral, coastal scrub, and riparian habitats. Wood rats build houses of sticks, bark, leaves, and other forest debris at the base of, or within the canopy of a shrub, tree, or other structure.

Site Occurrence. A single Monterey dusky-footed wood rat nest was observed (Ecosystems West 1997) along the lower portion of Tularcitos Creek. The nest appeared to be recently occupied, with fresh plant material placed in the nest. A second nest was observed above the unpaved portion of Center Court Drive near Settling Pond Number 2. Suitable habitat is available for wood rats throughout the project site, including woodland, chaparral, and riparian habitats.

Townsend's big-eared bat (Plecotus townsendii townsendii). The Townsend's big-eared bat is a California species of special concern. It is widely distributed throughout California; its habitats include coastal forests and woodlands. Big-eared bats primarily use caves, but are also known to use mines, tunnels, barns, attics, and abandoned buildings that mimic cave environments. This species is most common in moist habitats.

Site Occurrence. Appropriate roosting sites do not occur on the project site. However, there are structures on the project site that might become suitable if abandoned and left standing. The valve house atop SCD is believed to harbor a day roost of at least one unidentified bat species.

California mastiff bat (Eumops perotis californicus). The California mastiff bat is a California species of special concern. This large bat is uncommon in much of California. The mastiff bat occurs in semiarid to arid habitats including deciduous and evergreen forest, coastal scrub, chaparral, grasslands, and urban areas.

Site Occurrence. This species may roost with other bat species, and according to CNDDB records for elsewhere in California it commonly roosts in anthropogenic structures such as houses and out buildings. Among two areas where roosting bats were identified during 1997, none of the individuals was a mastiff bat. The valve house atop SCD is believed to harbor a day roost of at least one unidentified bat species.

Pallid bat (Antrozous pallidus). The pallid bat is a California species of special concern. Pallid bats are very widely distributed across the lower elevations of California. The pallid bat occurs in habitats ranging from mixed conifer forest to arid desert regions. Rock outcrops and large hollow trees, for roosting appear to be an important part of the habitat structure.

Site Specific Occurrence. Appropriate roosting locations on the project site occur adjacent to the existing low road and potentially in anthropogenic structures within and near the Project Area, possibly including the valve house atop SCD. The rocky surface upslope of the road is the most appropriate place for pallid bats to roost on the site and bats may be present in this area. However, this species was not observed among two areas where other roosting bats were identified.

2030 Baseline Conditions

If current conditions at San Clemente Reservoir persist through 2030, San Clemente Reservoir, San Clemente Creek, and the Carmel River would continue to change through this period. San Clemente Reservoir would fill with sediment within 6 to 10 years and annual drawdowns would cease at that time (see Sections 4.2 Hydrology and Water Resources and 4.4 Fisheries). The reservoir would eventually become a floodplain stabilized by riparian vegetation. The riparian growth that is currently inhibited by the annual drawdown would stabilize and shift boundaries only as flood events periodically alter the floodplain. Increasingly dense riparian growth would probably increase the population densities of special-status riparian bird species including Cooper’s hawk, yellow warbler, and yellow-breasted chat. However, complete sedimentation of the reservoir would render the site uninhabitable for open-water birds such as double-crested cormorant, bald eagle, and osprey. If current anthropogenic structures in the vicinity of SCD remain intact and unaltered through 2030, the local bat population, potentially including special-status bat species, would probably remain unchanged, although age-related anthropogenic structure changes might affect bat colony size and roost function. If current conditions remain through 2030, the local population of Monterey dusky footed wood rats seems unlikely to change because floodplain stabilization within the reservoir would affect wood rat habitat minimally. The greatest changes that would result from stabilization of current conditions through 2030 would be to amphibian and reptile populations. The floodplain would probably incorporate overflow pools and backwaters that would tend to favor CRLF population growth and bullfrog population would decline. Western pond turtles would also benefit from floodplain stabilization because the stream courses of the Carmel River and San Clemente Creek would remain wide and deep enough to offer sufficient forage and cover. Flood events would scour the streams periodically and renew vegetation-growing surfaces, which would foster forage development. Habitat for the two-striped garter snake would increase over the current availability in the reservoir, but foothill yellow-legged frog rocky stream habitat availability would probably not change.

Should existing conditions persist through 2030, the plunge pool downstream of SCD would probably decline substantially in diameter and depth and become a naturally leveed channel stabilized by new riparian growth. Such a channel might offer improved potential spawning or summer habitat for CRLFs, but only if summertime flows decline sufficiently to preclude scouring. Habitat availability downstream for all of the other special-status species discussed in this section would probably remain unchanged downstream of the Dam.

In the San Clemente Reservoir sediment plain (Reach 3) gentle incision of the meandering channel into the coarse sands would probably allow for the development of young riparian communities. This is already being observed on the San Clemente sediment plain since the gates have been permanently lowered since 1995. Much of the San Clemente arm and the much larger Carmel River arm of the sediment plain already have fairly extensive areas of localized riparian scrub, very young riparian forest, willow clumps and islands, sedge meadow, isolated seasonal and perennial ponds, and fringe growth of alders and emergent riparian wetland vegetation. Larger floods, like the 1998 flood, would continue to scour large portions of the young riparian growth. Therefore the sediment plain is likely to remain patchy and dynamic. However, as increasingly coarse sediment and large woody debris are deposited on the terraces and help to stabilize them and as channel patterns develop into more incised meanders (less braided) an increased number of large patches of more mature riparian woodland and forest habitat would develop (Denise Duffy & Associates 2000).

Reach 4 (downstream of the SCD) has hard banks and the upper portion of Reach 5 has relatively hard banks and moderate gradients that would experience sediment accumulation on bars, benches, and low overflow channels. Based on the observed deposition of sediment in these areas from the 1982, 1986, 1995 and 1996 flood years, the effect of finer substrate deposition should be positive. These lower fluvial landforms are supporting different but relatively even-aged stands of riparian vegetation. These vary from little complexes of cottonwood-sycamore-willow-alder on the older deposits, to even-aged stands of alder and willow, to young herbaceous growth on the youngest bars. Even-aged alders and river sedge were observed lining the banks at localized bank failures, which could be dated to major 1982 flood years. Locations where the coarse sand and sediment was not deposited were often cobbly and relatively devoid of cover. Large episodic floods and deposits of sand could scour, bury, and kill recently established riparian and brushy habitats near water. These habitats may support riparian birds like the yellow warbler and yellow breasted chat. Since these reaches are hard and have a steeper gradient, they are less subject to bank failure and loss of mature riparian vegetation, even in smaller episodic events (Denise Duffy and Associates 2000)

Softer banks occur in the lower portion of Reach 5 in the Robles del Rio area and increasingly downstream through reaches 6 and 7 and the upper portion of Reach 8. In areas with softer banks, the river channel would become wider and shallower. Deposition and low flow channel migration would be likely to smother or remove young herbaceous and riparian scrub communities on the less stable bars, benches and terraces. Localized losses of older, higher riparian woodland and forest habitat could occur where historically incised soft banks are subject to channel widening and bank loss, especially the outside bends of sandy soil terraces with discontinuous riparian cover and root stabilization (Denise Duffy & Associates 2000).

Extensive areas of bare sandy flood plain and braided channels would be created when episodic events deposit large to very large amounts of material especially if they occur early in the project life. This could be particularly adverse if the widening occurs in places where there are only remnant riparian woodland/forest strips that would be totally lost (such as the lower and middle portions of Reach 6). However, less destructive, smaller and later-occurring episodic events could result in the development of extensive bars, benches, overflow channels, and low terraces that could become wooded during long periods of normal flows. As this riparian woodland and forest becomes more established and develops strong root systems, future episodic events would have less destructive effect. A complex depositional and erosion pattern with blowouts, terrace scour holes, and trapping of large woody debris could lead to a complex of riparian and wetland habitats of different ages. Increased habitat complexity and diversity could support an associated variety of riparian reptiles, amphibians, and birds (Denise Duffy & Associates 2000).

Reach 8 (especially the lower two thirds) and the upper portion of Reach 9 have finer grained alluvial soils, with more extensive riparian forest and root stabilized banks. These conditions are combined in numerous locations with hardened banks and a relatively straight and narrow river channel with good conveyance. Therefore, there would be less likely to be significant bank migration and loss of riparian vegetation in this reach. Substantial filling of the active channel would bury or create habitat favorable for growth of a succession of complex of riparian habitats. Minor changes that do occur are more likely to be due to localized conditions (which are relatively short lived) as sediment transport through this reach is relatively efficient. The major sediment volume would be derived from tributaries and the bed and bank of the lower river itself, rather than being directly attributable to releases from SCD. Localized outside bend bank failures and toe of bank failures (more likely in the upper portions of Reach 8) may result in localized loss of thin strips of mature riparian woodland and forest vegetation in this relatively wider riparian corridor. This reach has only very localized opportunities for creation of smaller, more isolated and discontinuous bars and benches for seral herbaceous, shrub, willow scrub and woodland succession (Denise Duffy & Associates 2000).

The complex of riparian, wetland, and coastal dune habitats associated with the lagoon and the associated riparian forest above the lagoon would not be expected to change appreciably due to release of sediment over SCD. The dynamics of this area are controlled by other factors (Denise Duffy & Associates 2000).

4.5.2 ENVIRONMENTAL RESOURCES IMPACT STANDARDS AND METHODS

Standards of Significance

The following standards were obtained from the CEQA Appendix G Environmental Checklist Form for biological resources. An adverse impact on vegetation or wildlife would be significant and would require mitigation if construction or operation would:

- Have a substantial adverse effect either directly or through habitat modifications, on any species identified as a threatened or endangered, candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Permitting ~~Issues~~

Federal Permitting for Listed Species

One of the requirements for the Proponent's Proposed Project as well as for Alternatives 1, 2, and 3 is the issuance by the USACE of a Clean Water Act Section 404 permit to dredge or fill Waters of the U.S. The application for a Section 404 permit for the Proponent's Proposed Project has been filed with the USACE. Section 7 of the ESA requires the USACE to consult with USFWS and NMFS whenever listed species may be affected by the action to be permitted. In this case, USFWS will be consulted concerning the CRLF **and CTS**, and NMFS will be consulted concerning the California South Central Coast steelhead trout. During this process, the USACE will prepare Biological Assessments for the relevant species and submit them to the respective agency. USFWS, in turn, will prepare a BO for the CRLF **and CTS** and NMFS will prepare a BO for the steelhead. If the action is found not to jeopardize the continued existence of the species, each BO will provide for appropriate mitigation to be made conditions of the Section 404 permit. The USFWS and NMFS each will include an "incidental take" statement as part of their BO if it appears that some individuals of the listed species will be lost as a result of the permitted action. ~~This~~ **The** ESA consultation process will proceed in parallel with NEPA review. The final Section 404 permit mitigation conditions could be the same as or in addition to any required NEPA/CEQA mitigation; ultimate jurisdiction over the selection, implementation and monitoring of mitigation measures lies with the appropriate federal agency.

State Permitting for Listed Species

The CDFG will be consulted concerning all species listed under CESA including endangered, threatened, or species of special concern. Potential impacts to CTS could require a habitat assessment, completion of surveys, application for an Incidental Take Permit, or other measures as specified by CDFG. Protocol-level surveys for CTS must be completed to demonstrate a negative finding; otherwise CDFG must assume CTS presence (A. Ferranti, pers. comm.). CDFG will also be consulted regarding fully protected species, and the project will take such measures as are necessary to avoid take of those species.

Impact Assessment Methodology

Biotic resources surveys of the project study vicinity were conducted by Ecosystems West from April to August, 1997, with follow-up surveys during July 1998. Dr. Richard Arnold conducted a survey for Smith's blue butterfly in June 1997. ENTRIX, Inc. conducted additional field surveys from April to August 2005, including vegetation and special-status plant surveys. Special-status plant species surveys were conducted in May and July 2005. The 2005 plant survey report is provided in Appendix T. Surveys were conducted throughout the Project Area, including along the Tularcitos access road and existing access roads requiring improvements, at the concrete batch plant site, at the Dam itself (including the fish ladder), at the sediment disposal site, along the conveyor route to the sediment disposal site, and in those areas where sediment would be excavated.

Several special-status terrestrial wildlife species are known to occur or may occur in the Project Vicinity (MPWMD 1984). A list of special-status wildlife species with potential to occur in the Project Area was developed based on a review of literature and data sources that span over 90 years, including general wildlife references (Ingles 1965; Call 1978; Stebbins 2003; Small 1994); CDFG reports on special-status wildlife (Remsen 1978; Williams 1986; Jennings and Hayes 1994); California Wildlife Habitat Relationships (CWHR) species-habitat models (Zeiner et al. 1988, 1990a, 1990b), records from the CNDDB (CDFG 2005a), the catalogue records of the major northern California vertebrate museum collections (California Academy of Sciences 2005, Museum of Vertebrate Zoology 2005). Also used were records of known occurrences of special-status wildlife species and habitats in the region, previous wildlife studies conducted in the area, and consultant staff biologist's experience with the target species from the 2000 RDEIR.

Existing resource information and the results of the field studies conducted in 2005 were used to develop the description of the environmental setting. The resources described in that section were evaluated in conjunction with the activities associated with the Proponent's Proposed Project and the alternatives to determine potential impacts and develop mitigation measures.

Amphibian Surveys

ENTRIX biologists conducted amphibian surveys in 2005 to supplement those conducted earlier by other groups as specified in the section "Impact Assessment Methodology." The primary goals of the 2005 surveys were to determine the limits of pond and pool habitat upstream of San Clemente Reservoir along both major tributaries that could support CRLF spawning and to locate other special-status amphibian and reptile species in the same reaches. The biologists surveyed these reaches on 12 and 13 July 2005, from early morning through late afternoon. They used information from the USFWS (1996) site assessment guidance for CRLFs as a framework for determining habitat potential. The biologists waded upstream at least one mile from the perceived terminus of the reservoir influence and returned downstream along waterways, noted pond and pool habitat, using binoculars to search for reptiles and amphibians along the shoreline and in the water. Although the primary objective was to assess habitat rather than to find individual amphibian and reptile specimens, special-status species were noted and mapped wherever they were found. **Protocol-level surveys were not conducted for CTS.**

4.5.3 IMPACTS AND MITIGATION

The following impact issues, all related to construction, have been defined for Terrestrial Biology resources:

Impacts to Vegetation

- VE-1: Special-Status Plant Species (effects on virgate eriastrum or Lewis's clarkia populations)
- VE-2: Loss of Protected Oak Woodland (loss of oak woodlands)
- VE-3: Loss of other Native Vegetation (loss of native vegetation)
- VE-4: Indirect Effects on Native Vegetation (effects caused by increased erosion and sedimentation)

Impacts to Wildlife

- WI-1: Dam Strengthening (disruption of bat nesting habitat)
- WI-2: Removal of Ancillary Facilities (displacement of special-status bats)
- WI-3: Cofferdam Construction and Plunge Pool Dewatering (adverse effects to special-status species)
- WI-4: Notching Old Carmel River Dam (OCRD) (effects on spawning habitat and herpetofauna)
- WI-5: Concrete Batch Plant Construction and Operation (habitat for special-status species)
- WI-6: Tularcitos Access Road Construction (effects to special-status species)
- WI-7: Reservoir Drawdown (effects on California red-legged frog [CRLF] habitat)
- WI-8: Vegetation Removal (effects on special-status bird species and others protected by the Migratory Bird Treaty Act or raptor protections).
- WI-9: Pre-Existing Access Road Improvements (effects to special-status species)
- WI-10: Reservoir Drawdown or Elimination with Sediment Removal (effects on California red-legged frog [CRLF] habitat)
- WI-11: Sediment Removal (destruction of spawning habitat)
- WI-12: Sediment Transport and Disposal (adverse effects to special-status species)
- WI-13: Bypass Channel Excavation (loss of habitat for special-status species)
- **WI-14: Increased traffic on Cachagua/Jeep Trail (effects to special-status species)**

- **WI-15: Nighttime Work and Associated Lighting (effects to special status species)**

All of the above issues are construction-related impacts.

Endangered species are afforded the highest of priorities under state and federal law. Under CEQA, certain impacts to endangered, rare or threatened species trigger a mandatory finding of significance and require the preparation of an EIR. Significant impacts to state and federally listed endangered or threatened species must be mitigated in compliance with conditions imposed by the relevant resource agencies as a condition of incidental take authorization for the project. Reasonable and prudent measures recommended by those agencies, if beyond those mitigation measures described in this document, will be incorporated into the mitigation for the project. Compliance with measures that are part of any incidental take authorization will be a condition of undertaking the project. The project will not proceed without appropriate take authorization, and will adhere to all measures incorporated into that authorization. Because the resource agencies are given authority to determine such measures for the benefit of threatened or endangered species, compliance with such measures, combined with mitigation measures adopted for the project, will reduce the net impact to the listed species to less than significant.

Under California law, fully protected species may not be taken or possessed, and no state law may be construed to authorize the issuance of a license or permit for their take. CDFG will be consulted with regard to any fully protected species determined to be in the area, and will develop a plan acceptable to CDFG to avoid those species.

Proponent's Proposed Project (Dam Thickening)

Wildlife Impacts WI-2, WI-10, WI-11, WI-12, and WI-13 do not apply to the Proponent's Proposed Project.

Issue VE-1: Special-Status Plant Species

Effects on virgate eriastrum or Lewis's clarkia populations
Determination: **less than significant with mitigation, short-term**

IMPACT

Populations of one special-status species were found near the Tularcitos Access Route. Some direct loss of the virgate eriastrum population could occur near the edge of the batch plant footprint. However, virgate eriastrum is on List 4 of the CNPS Inventory, and does not fall under specific state or federal regulatory authority.

MITIGATION

To the extent possible, potential impacts from construction activities would be avoided by avoiding populations of CNPS List 4 species.

Issue VE-2: Loss of Protected Oak Woodland

Loss of oak woodlands
Determination: **less than significant with mitigation, long-term**

IMPACT

Construction activities could result in loss of 1 acre of oak woodlands protected by the Monterey County Oak Protection Ordinance. Construction of the Tularcitos Access Route would require the removal of coast live oak trees, and improvements to other access routes may also result in oak losses.

MITIGATION

Impacts to the stand of blue oak series would be avoided by confining the “high road” access improvement activity in the vicinity of this stand to the north side of the existing road. Fencing would be used to prevent construction activity from encroaching into the blue oak stand on the south side of the road.

The Botanical Resources Management Plan (Appendix U) would be finalized and implemented immediately following construction, with the following elements from the Monterey County Oak Protection Ordinance:

- Replace up to half the oak trees removed by access road and right abutment wall construction at a 3:1 ratio by planting seedlings or potted trees in appropriate habitat under the supervision of a qualified botanist;
- Derive all plant material from Carmel Valley area populations;
- Monitor plantings for at least five years after planting;
- Replant seedlings as necessary to replace seedlings that do not survive;
- Take other remedial action as necessary, including irrigation or protection from browsing animals such as deer, to ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code;
- Provide or acquire a conservation easement sufficient to mitigate at least half the loss of oak trees, per Monterey County Code. The conservation easement would consist of lands elsewhere in the Carmel River watershed that support undeveloped blue oak stands.

Monterey County would be the regulatory authority responsible for oversight.

Issue VE-3: Loss of Other Native Vegetation

Loss of native vegetation
Determination: **less than significant with mitigation, long-term**

IMPACT
Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat.

The acreage of vegetation cover type that would be lost as a result of the Proponent's Proposed Project implementation is provided in Table 4.5-1. The total acreage of vegetation that would be lost is 3.4 acres. This number includes only the small portion of the Project Area that would be displaced by a constructed structure (i.e., the dam thickening, construction of the concrete batch plant, construction of the Tularcitos route, and improvements to the OCRD Bridge and other access routes). In addition, an unquantified amount of riparian vegetation, as described in the sections below, could be lost due to de-watering and diversion.

Access Road Improvements

Improvement of existing roads for Proponent's Proposed Project access including access to the batch plant, plunge pool and upper dam face would result in some minor removal of native vegetation, including sensitive habitat due to widening and associated grading for large vehicles and construction equipment. The Project plans call for the access routes to be a 12-foot wide, one lane two-way road with radio traffic control. Widening would be required only in two segments totaling approximately 120 linear feet. The existing roads proposed for improvement pass through extensive areas of sensitive coast live oak series habitat that would likely be affected by the 120 linear foot widening.

The small area of sensitive blue oak series is located along the existing "high road" proposed for improvement and could also potentially be affected by road widening. Some sensitive central coast cottonwood-sycamore riparian forest habitat below SCD could be removed or disturbed by improvement of the plunge pool access road on the right (east) bank of the river; however, efforts would be made to minimize removal of trees. The pipeline access road would require widening of three narrow stretches and improvement to the switchback corner. Although the overall area to be disturbed and the number of trees potentially removed by the access road improvements are estimated to be relatively small, mature trees of coast live oak or riparian species would be removed.

Concrete Batch Plant

The proposed location of the batch plant is in open, disturbed grassland with scattered coast live oak, western sycamore, and mock-heather. Construction of the batch plant facility in this area would require some minor oak tree and mock-heather pruning and removal to access the site and incorporate the plant batching facilities and material stock piles. At least four oak trees in the open grassland would be removed to accommodate the batch plant and lay down area (Denise Duffy & Associates 2000).Other trees would be trimmed to provide access to the site. Mature trees of coast live oak or riparian species would be removed.

Table 4.5-1: Vegetation Type and Acreage Potentially Affected by Proponent's Proposed Project and Alternatives

Alternative	TOTAL	Annual grassland	Arroyo willow series	Blue oak series	Black sage series	Central Coast cottonwood-sycamore riparian forest	Chamise series	Chamise-black sage series	Coast live oak series	California sagebrush - black sage series	Developed	Emergent wetland	Mock heather scrub	Mulefat series	Mulefat-willow riparian	Ruderal	Sandbar	Sandbar annuals	California sycamore riparian-coast live oak	California sycamore riparian-mock heather scrub	California sycamore series	White alder riparian	White alder-willow riparian	Willow riparian
Proponent's Proposed Project	3.4	0.2	0.02	0.003	0.004	0.7	0.1	0.08	1.0	0.04	0.04	0	1.0	0	0	0.05	0	0	0.02	0.2	0.04	0	0	0
Alternative 1	41.8	3.8	0	0.003	0.004	1.3	0.6	0.6	20.1	0.1	0.2	0.02	0	0	0.02	0.01	0.4	1.8	0	0	0.04	0	11.9	1.0
Alternative 2	61.4	6.6	0	0.003	0.004	1.3	1.0	1.1	26.3	0.3	0.2	0.02	0	1.2	0.6	0.01	2.7	1.8	0	0	0.04	0.1	17.0	1.0
Alternative 3*	~~44.7~~	~~7.1~~	~~0~~	~~0.003~~	~~0.1~~	~~0.2~~	~~1.5~~	~~0.3~~	~~9.6~~	~~0.0~~	~~0.04~~	~~0.02~~	~~0~~	~~1.2~~	~~0.6~~	~~0.01~~	~~2.0~~	~~1.8~~	~~0~~	~~0~~	~~0.04~~	~~0.1~~	~~18.9~~	~~1.0~~
Alternative 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*** The amount of potentially affected acreage impacted under Alternative is superseded by Table 4.5-1a, below.**

During the 2011 vegetation surveys, URS aggregated each vegetation series into more general categories than were used during the 2005 surveys (see discussions under section 4.5.1, above). In addition to categorizing the vegetation types differently, URS also surveyed land that would be potentially affected by implementation of Alternative 3, but hadn't been evaluated during the 2005 surveys, and surveyed areas that would potentially be affected by the Alternative 3 project changes proposed in this SEIR.

Table 4.5-1a shows the aggregated vegetation types potentially affected by Alternative 3 as evaluated in the 2011 surveys. The additional amount of impacted acreage under Alternative 3 is due to the previously unevaluated access road improvements, the proposed Alternative 3 revisions to the access road improvements, and the need for staging areas.

The potentially affected acreage depicted in Table 4.5-1a includes construction activities in the project footprint, development of staging areas, and access road improvements specific to Alternative 3. The table only includes acreage of vegetated communities, and does not include sediment/sandbar or developed areas.

Table 4.5-1a: Vegetation Type and Acreage Potentially Affected by Alternative 3 (2011 Surveys)

Alternative	TOTAL	Annual grassland	Riparian	Chaparral	Wetlands	Oak Woodland
Alternative 3	60.2	7.0	24.9	7.0	2.9	18.4

Table 4.5-1a presents both temporary and permanent disturbances. It includes 15.7 acres along access roads and staging areas where habitats will be temporarily disturbed, but not permanently lost. In these areas, trees will be removed only as necessary to enable construction equipment to use the roads.

Plunge Pool Area

Removal of or disturbance to some sensitive central coast cottonwood-sycamore riparian forest habitat could occur due to construction activities in the plunge pool area. Although most construction activity would take place in the dewatered plunge pool area, some riparian forest habitat may be removed in order to improve the plunge pool access road (described previously). The extent of riparian vegetation that may have to be removed would be minimal because the access road would be maintained as one-lane with radio control and abandoned and restored to its previous state after construction.

Left Abutment Staging Area

Use of the proposed left abutment staging area would likely require removal of some native vegetation, including sensitive habitat, on the upland between the access road and the canyon wall. Impacts, including removal of oak trees, could occur to coast live oak series habitat in this area.

Right Abutment Wall

The extension of the new 30 to 40-foot wall along the right embankment to tie the Dam into bedrock may result in the removal of a few mature trees on and at the base of the slope immediately adjacent to the right abutment. These could include coast live oaks as well as riparian species (California sycamore, polished willow). A small amount of chamise-black sage series habitat may also be removed as a result of construction of the new wall.

Diversion of Carmel River and San Clemente Creek

In order to avoid high turbidity in water released downstream during construction, the Carmel River water would be diverted into a pipeline and conveyed downstream of the Dam. A similar diversion may be required for San Clemente Creek. These diversions would result in the dewatering of the bypassed area. Lowering of the reservoir could dewater stands of emerging alder currently sprouting around the reservoir fringe.

Diversion of water from the natural river channel below the Dam could result in local dewatering of riparian forest vegetation on adjacent banks.

MITIGATION

Appendix U, the Botanical Management Plan, includes provisions for restoration, mitigation, and monitoring of vegetation affected by the project. The USACE and CDFG would have regulatory authority over the measures in the Botanical Management Plan. The following mitigation activities have been summarized from Appendix U:

The proposed access road improvements, the batch plant and laydown areas, plunge pool access, and the abutment staging areas would be designed to minimize loss of native vegetation. Unnecessary clearing of, or disturbance to, native vegetation outside the road right-of-way would be avoided.

Fencing would be used to prevent any encroachment of vehicles or project activity into undisturbed native habitat or within the dripline of native trees outside the designated batch plant and laydown site, the plunge pool area and the left and right abutment areas.

Project outflows would be designed to diffuse water rather than allow it to flow out in a concentrated stream. Outflows would be placed so as to minimize bank erosion from altered flows. The temporary outflow below the plunge pool would be designed to minimize alterations of the hydrologic regime that support the riparian forest habitat on the adjacent floodplain.

Supplemental irrigation would be provided to alders around the reservoir fringe when the reservoir is dewatered and to riparian vegetation above the bypass outflow.

Disturbed areas or areas of annual grassland habitat between the left abutment and the existing residence would be used to the maximum extent available for the left abutment staging area.

Riparian forest would be revegetated at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below SCD at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall.

The CDFG would be the regulatory authority responsible for oversight of the riparian vegetation. Monterey County would be the regulatory authority responsible for oversight of the replacement of the oak trees.

Issue VE-4: Indirect Effects on Native Vegetation

Effects caused by increased erosion and sedimentation
Determination: ***less than significant with mitigation, short-term***

IMPACT

Project construction activities may result in indirect adverse impacts to vegetation, including increased erosion and sedimentation, damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species.

MITIGATION

Standard erosion and sedimentation control BMPs would be implemented for all grading, filling, clearing of vegetation, or excavating that occurs in site preparation (see Section 4.3 Water Quality and the Botanical Resources Management Plan (Appendix U) and SWPPP in Appendix K). Road widening would be designed to avoid placing fill above canyon walls.

With the assistance of a qualified hydrologist, all road widening and improvements would be designed to avoid or minimize alterations of existing drainage patterns that could lead to increased erosion and sedimentation. Appropriate erosion control technology (BMPs) would be employed during all phases of access road construction (see Section 4.3 Water Quality and the Botanical Resources Management Plan (Appendix U) and SWPPP in Appendix K). Construction work would be scheduled to occur during the dry season.

Excavation and operation of construction vehicles off of the right-of-way would be prohibited within the dripline of oak and other tree species.

To minimize dust, unpaved access roads would be frequently watered using a sprayer truck during periods when trucks and other construction vehicles are using the roads, except during periods when precipitation has dampened the soil enough to inhibit dust (see Section 4.7 Air Quality).

Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover would be removed outside the roadway would be revegetated with an appropriate seed mix. This seed mix would be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and would contain native species that are indigenous to the Project Area. If enough native seed is not available, and non-natives must be included in the seed mix, these would be species known not to be invasive or persistent. The seed mix would contain native species known to compete well against invasive non-native species.

Monitoring would be conducted by a qualified hydrologist and revegetation specialist of all revegetated areas and all areas identified as potential problem areas for erosion and sedimentation from access road construction. Remedial action would be implemented if revegetation were not successful or if significant erosion and sedimentation problems are observed during monitoring.

All revegetated or disturbed areas would be monitored annually for invasive non-native plant species, particularly French broom and pampas grass, for five years following completion of Phase 1 construction, with the assistance of a qualified botanist. If invasive species are becoming established on areas disturbed by project activities during the five-year period, invading species would be removed at times that preclude the plants from setting new seed.

Issue WI-1: Dam Strengthening

Disruption of bat nesting habitat
Determination: ***less than significant with mitigation, short-term***

IMPACT
Potential nesting or roosting habitat for bats (pallid bat, California mastiff bat, and Townsend's big-eared bat) occurs in rock crevices on the slope where the new right abutment wall would be constructed. This is a potentially significant, short-term impact.

MITIGATION
A preconstruction survey would be conducted for bat roosts in rock crevices in the right embankment area. If bats are observed nesting or roosting in the area, as set forth in Appendix V, Protection for Special Status Species, USFWS or CDFG would be notified (depending on the regulatory status of the species) and mitigation measures previously agreed-upon with the agency would be implemented. Such measures may include establishment of buffer zones or installation of exclusion barriers under the supervision of a qualified bat biologist. These mitigation measures would reduce the impact to a less than significant, short-term impact.

Issue WI-3: Cofferdam Construction and Plunge Pool Dewatering

Adverse effects to special-status species
Determination: **significant, unavoidable, short-term; long-term beneficial with mitigation**

IMPACT
The construction of a cofferdam and subsequent draining of the plunge pool could adversely affect any CRLFs, western pond turtles and other special-status species that may be present. These species typically inhabit freshwater pools and their margins (Stebbins 2003). Draining the pool could leave western pond turtles and adult CRLFs vulnerable to predation, and larval CRLFs vulnerable to predation and to desiccation. This is a potentially significant short-term impact.

MITIGATION
The Proponent's Proposed Project and Alternatives 1, 2, and 3 would require a agreements with CDFG. Such agreements may contain conditions requiring mitigation that could be the same as or in addition to the NEPA/CEQA mitigation outlined in this document. This section 4.5 addresses NEPA/CEQA mitigation for Vegetation and

Wildlife (other than fish). Fisheries resources are covered in Section 4.4 and Wetlands in Section 4.6.

See Appendix V for the Protection Measures for Special Status Species which address mitigation and monitoring of special status species affected by the project. The USFWS, NMFS and CDFG would have regulatory authority over the mitigation measures listed in Appendix V, but the Protection Measures would address the following activities:

Loss of California red-legged frogs and western pond turtles may occur during rescue operations associated with construction activities. Loss of California red-legged frogs may occur due to handling of frogs during relocation, and because some relocated frogs and tadpoles may fail to adjust to the new environment at the ponds used for relocation. Potential losses would be incorporated into the USFWS BO for the project.

Prior to the construction of the cofferdam and subsequent draining of the plunge pool, a preconstruction survey would be conducted for California red-legged frogs and western pond turtles at the plunge pool and downstream to the point at which the bypass pipeline would discharge water into the river.

The preconstruction survey for California red-legged frogs would be consistent with the most recent USFWS survey guidance (USFWS 2007). If California red-legged frogs are observed in the area, the USFWS would be notified and California red-legged frogs would be captured and relocated by a USFWS-approved biologist to nearby suitable habitat. Erosion control fencing or a similar barrier would minimize movement of frogs back into work areas. A biological monitor would accompany the crew during excavation and installation of the fence to prevent harm to frogs that may be active along the fence route. The survey and relocation program would be updated, if necessary, to be consistent with a mitigation plan to be developed in cooperation with the USFWS and to be consistent with any terms and conditions required in the BO to be developed as part of the ESA Section 7 consultation.

A California red-legged frog population monitoring and bullfrog eradication program (CRLF Program) would be developed and implemented as part of the Protection Measures (Appendix V), in consultation with the USFWS. During this consultation, the Protection Measures (Appendix V) would be finalized. The CDFG would also be consulted as part of its permitting process. The CRLF Program would assess and monitor the relative abundance of bullfrogs and CRLFs in the reservoir and its upper reaches. Relocation of CRLF would use techniques and procedures approved by USFWS and CDFG and would commence after April 15, to allow all CRLF eggs to hatch and the tadpoles to grow large enough to be easily identified and differentiated from bullfrog tadpoles.

The CRLF Program would include bullfrog eradication to remove adults, subadults, and egg masses from the reservoir and its upper reaches. Bullfrog eradication would be implemented to give the native frog species a “head start” within project-affected reaches and upstream enhancement/mitigation sites.

The bullfrog eradication program would be implemented during the construction and/or drawdown period between June and December. All methods and techniques would be lawful and in accordance with the CDFG Code. Only USFWS-approved biologists would be delegated to identify and destroy egg masses and larval forms of bullfrogs. The program would also include an assessment of bullfrog diet in order to determine the future need for any bullfrog control in the Project Area and areas nearby. Concurrent control and monitoring of other non-native predators (e.g., crayfish [*Pacifasticus leniusculus*] and centrarchid fishes) may be included in the program in order to minimize adverse impacts of the project on CRLFs and other aquatic species. The monitoring and bullfrog eradication program would be implemented for two to three years during project construction.

Monitoring of CRLF and bullfrog populations would be continued for two years following completion of the project. If monitoring conducted during and after construction activities indicate that bullfrog populations in enhancement and mitigation sites are increasing and CRLF populations are decreasing, the bullfrog eradication program may be continued for an additional two years. Annual reports would be submitted to the appropriate regulatory agencies, including but not limited to, USFWS, the USACE, and CDFG.

For a number of years, pursuant to an agreement with USFWS, CAW has implemented annual CRLF surveys of breeding and rearing sites and has conducted frog relocations along the Carmel River during the dry season in addition to constructing enhanced frog habitat in several locations. As part of the CRLF Program, additional CRLF habitat mitigation sites would be restored and monitored. Potential sites would be identified within the Carmel River and potentially in off-stream sites suitable for breeding. Qualified personnel would conduct periodic inspections of CRLF enhancement and mitigation sites to assure that habitat objectives for each site are sufficiently met, i.e., that physical conditions (e.g., basin sediment deposit and overhead vegetation) and bullfrog populations are conducive to CRLF reproduction. Mitigation monitoring would be conducted during construction and for an additional two years afterwards, for a total period of at least five years. Implementation and reporting would be concurrent with the CRLF Program described above.

If western pond turtles are observed in the area, attempts would be made by a CDFG approved biologist to capture (trap/net) and relocate western pond turtles. Western pond turtles are usually relocated to a nearby downstream pond or a pool reach of a stream. Construction fencing would be installed to prevent relocated frogs or turtles from returning to the area during the construction period.

Although potential capture and relocation of CRLF individuals could result in loss of an ESA-listed species, the measures described above, as well as compliance with future terms and conditions of the USFWS BO, would minimize the impact.

A biological monitor would be placed at the construction site for the duration of the cofferdam construction and the draining of the plunge pool. The biological monitor for amphibians and reptiles would coordinate with the fisheries biologist so that both are present during fish rescue operations. This would facilitate the safe removal and relocation of any remaining CRLFs and pond turtles. Two-striped garter snakes and common garter snakes (*Thamnophis sirtalis*) may congregate around the plunge pool as it recedes and could become a potentially serious source of predation on juvenile CRLFs and native fish. These snakes would be captured by a biologist qualified to handle special-status reptiles (two-striped garter snake) and released up to one-quarter mile downstream in the Carmel River. These measures, as well as implementation of any conditions that might be required by USFWS and DFG, including conditions that may be part of the USFWS BO, would minimize loss of special status species to the fullest extent practicable.

While it is difficult to determine whether the loss of CRLFs and other species that are not rescued or that are injured or die during rescue and relocation operations is significant, these losses along with the temporary loss of habitat for the red-legged frog cannot be fully mitigated and would be significant in the short- term. However, the CRLF Program, which is discussed in mitigation for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) would restore additional sites as mitigation habitat for CRLFs and other species. This mitigation would improve habitat and provide a long-term beneficial impact.

Issue WI-4: Notching Old Carmel River Dam (OCRD)

Effects on spawning habitat and herpetofauna
Determination: **less than significant with mitigation, short-term**

IMPACT

Instream work during the notching operation of the OCRD could damage CRLF summer habitat, and could possibly damage spawning habitat downstream of the Dam. It could also affect western pond turtle, two-striped garter snake, foothill yellow-legged frog, and Coast Range newt habitat or individuals. However, foothill yellow-legged frog has not been documented there. Sedimentation, elevated turbidity, and direct deposit of construction materials in the stream would be the most likely causes of impacts. This is a potentially significant short-term impact.

MITIGATION

Prior to dam notching operations, USFWS (2007) “protocol” surveys would be conducted for CRLFs along the Carmel River up to one-half mile downstream of OCRD. Other special-status aquatic species would be surveyed concurrently. If work on the Dam is interrupted for more than two weeks, protocol surveys would be repeated if the initial surveys indicated the presence of special-status species habitat or populations. CRLF populations are known to occur in this reach. The CRLF mitigation is provided in mitigation measures for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) and in the Protection Measures (Appendix V).

The area involved is localized to the notching area allowing flow in the river to continue downstream. The sheetpiling of the notching area would occur during one construction season. With the addition of these mitigation measures, the impact would be reduced to a less than significant, short-term impact.

Issue WI-5: Concrete Batch Plant Construction and Operation

Habitat for special-status species
Determination**: less than significant with mitigation, short-term**

IMPACT
Construction of the batch plant and associated facilities may temporarily impact available habitat for California horned lizard. Although lizards were not observed during field surveys, suitable open habitat for these lizards may occur along the Carmel River; MPWMD staff have reported seeing lizards on existing roads in the vicinity of the proposed batch plant.

CRLFs are known to occur in the Carmel River immediately adjacent to the proposed site for the concrete batch plant. CRLFs could be directly and indirectly impacted by construction and use of a concrete batch plant in this location. Constructing the concrete plant has the potential to result in destruction of upland habitat for the CRLF, and any inadvertent spill of materials could lead to contamination of the Carmel River downstream of the Project Area.

Operation of the proposed batch plant would not result in direct or indirect impacts to Cooper's hawk and yellow warblers, since the plant is more than 2,000 feet from the active Cooper's hawk nest and warbler nesting area. However, increased construction vehicle traffic from the batch plant to the dam site could cause increased noise and dust.

This is a potentially significant, short-term impact.

MITIGATION
A preconstruction survey would be conducted for California horned lizards and CRLFs. Results would be reported to the USFWS and CDFG. If horned lizards are found, standard mitigation measures would be implemented, including relocating horned lizards to a safe area outside of the area and installing erosion control fencing or a similar barrier to minimize movement of horned lizards back into work areas. The barrier would be buried at least 3 to 6 inches in the ground. Mesh size would not exceed one-half inch and material would be heavy gauge polybutylene or equivalent. A biological

monitor would accompany the crew during excavation and installation of the fence to prevent harm to horned lizards that may be active along the fence route.

If CRLFs are found, CRLF mitigation would be the same as the Mitigation Measure for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) and as specified in the Protection Measures (Appendix V).

Spill control measures would be implemented if the concrete batch plant were constructed. This measure would minimize the risk of contamination of the Carmel River downstream of the Project Area see preliminary SPCC Plan (Appendix R) .

A preconstruction survey would be conducted to determine if the Cooper's hawk nest is active at the onset of construction. If the nest is active, this would be reported to CDFG and a noise abatement program would be implemented for passing vehicles. The program would include standard mitigation measures, such as prohibiting the use of air horns or jake (engine) brakes. Construction vehicles would be prohibited from parking near the CVFP and traffic would be directed as far away from the nest as practical. Gravel or crushed rock would be placed to buffer noise and minimize dust generation in vicinity of nest (see Section 4.7 Air Quality for dust abatement measures). Existing native vegetation would be maintained between the nest and the existing road corridor, including the large valley oak tree west of Settling Pond Number 1.

These mitigation measures would reduce the impact to a less than significant, short-term impact.

Issue WI-6: Tularcitos Access Road Construction

Effects to special-status species
Determination: ***less than significant with mitigation, short-term***

IMPACT

Construction of the new Tularcitos access route could affect Monterey dusky-footed wood rat, coast horned lizard, pallid bat, CRLF, western pond turtle, two-striped garter snake, yellow warbler and other special-status wildlife species. Construction could damage or destroy a known Monterey dusky-footed wood rat nest located near Tularcitos Creek. Monterey dusky-footed wood rat habitat could be affected by vegetation and tree removal and by grading operations. Individual animals could be harmed by direct destruction of previously unknown nests. Damage to coast horned lizards could result from grading operations and direct injury or killing of individual animals. Potential impacts to special-status birds include potential disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Impacts could include direct loss of eggs or nestlings; indirect displacement from increased noise and human presence in the vicinity of the construction activity; and a reduction in foraging habitat. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity. Damage to potential pallid bat roosting habitat would result from the destruction of rock outcrops and other formations. The impacts associated with construction would be only during CY 3.

Damage to aquatic habitat could result from erosion and other sediment and rubble discharge into the Carmel River and possibly Tularcitos Creek. This increased sediment load could further degrade habitat for the CRLF downstream of the Project Area. Impacts associated with erosion would occur during the construction phase as well as operations. This would be a potentially significant impact.

MITIGATION

Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

A preconstruction survey would be conducted for Monterey dusky-footed wood rats and wood rat nests in areas of proposed access road widening or improvement. The access road width is expected to be 20 feet or less. If wood rat nests were found, they would be reported to CDFG and flagged for avoidance. Wood rats may use more than one nest and may move from nest to nest as they forage within their home range. Their nest serves as a place of residence to store food and bear their young (Laudenslayer 1999). Due to this dependency, nests are of particular importance to wood rats and disturbance to them should be avoided. Stakes, flags or plastic tape would be used to enforce avoidance. If any wood rat nests are found that cannot be avoided, trapping and relocation of the wood rat(s) upstream or to a suitable adjacent stream nearby will be implemented according to CDFG requirements.

To the extent possible with other construction constraints, vegetation removal will be accomplished between August 1 and March 1. If any vegetation removal must be conducted between March 1 and August 1, pre-construction surveys for breeding birds (either special-status or others protected by the Migratory Bird Treaty Act and the California Migratory Bird Act) would be conducted in these areas. If any active nests were found, they would be isolated by a species-specific buffer area (from 50 to 500 feet) and avoided until the eggs were hatched and the nestlings fledged.

Effects on special-status wildlife and their habitat would be mitigated through preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation based on the results of surveys. Erosion controls, including erosion control fencing, would minimize loss of construction material along existing roads that are cut into the slope of the Carmel River canyon, as well as along the plunge pool access road as specified (Section 4.1 Geology and Soils and Appendix K, SWPPP). This would minimize direct impacts to western pond turtles, two-striped garter snakes, CRLFs, and Coast Range newt from falling debris. These barriers also would keep California horned lizards and western pond turtles out of the construction and traffic corridor. Such barriers would be buried at least 3 to 6 inches in the ground.

Conducting pre-construction surveys of rock outcrops and other formations along the Tularcitos route would provide a basis for mitigating impacts to pallid bat roosts, if any are present. Surveys would be conducted by a biologist with expertise in bat biology who would use visual survey techniques and acoustic monitoring equipment to determine whether pallid bats are likely to use any of these structures. If evidence of pallid bat use is discovered, roost sites would be mapped by GPS and flagged in the field. Construction would be routed to avoid roost sites. Additional measures would be implemented at any roost site that cannot be avoided. Such measures may include establishment of buffer zones or installation of exclusion barriers under the supervision of a qualified bat biologist. More details are provided in the Preliminary Draft of the Protection Measure for Special-status Species (Appendix V).

These mitigation measures would reduce the impact to a less than significant, short-term impact.

Issue WI-7: Reservoir Drawdown without Sediment Removal

Effects on CRLF habitat
Determination: **significant, unavoidable, short-term; long-term beneficial with mitigation**

IMPACT

The Interim Seismic Safety Measures for SCD have been conducted for five years and the same successfully implemented procedures would be utilized during construction of the Proponent's Proposed Project. However, during construction, the target elevation would be lowered to 510 ft rather than the 515.5 ft designated in the Interim Seismic Safety Measures. The reservoir drawdown would be implemented during the low flow season but would result in short-term removal of CRLF habitat in this area during CY 4 from June through December. After construction the elevation would be returned to the current baseline elevation of 525 ft.

The upper reaches of the reservoir that are currently occupied by extensive sandy sediment plains could eventually become habitat for the CRLF. At the time they were surveyed, portions of these sediment plains provided substrate for cattail and bulrush colonization. CRLFs were found in this area during the 1997 surveys of the reservoir and during the Interim Seismic Safety Measures survey and rescue operations. Lowering the water elevation could leave western pond turtles and adult CRLFs vulnerable to predation, and larval CRLFs vulnerable to predation and to desiccation. This is a potentially significant short-term impact.

MITIGATION

During fish rescue operations (see Section 4.4 Fisheries), a USFWS-approved biologist would be present to relocate any CRLFs, including subadults and tadpoles. Frogs captured would be removed and either released or relocated according to a predetermined relocation plan. The CRLF mitigation would be the same as the

Mitigation Measure for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) and as specified in the Protection Measures (Appendix V).

While it is difficult to determine whether the loss of CRLFs and other species that are not rescued or that are injured or die during rescue and relocation operations is significant, these losses, along with the temporary loss of habitat for the red-legged frog, cannot be fully mitigated and would be significant in the short-term. However, the CRLF Program, which is discussed in mitigation for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) would restore additional sites as mitigation habitat for CRLFs and other species. This mitigation would improve habitat and provide a long-term beneficial impact.

Issue WI-8: Vegetation Removal and Construction-Related Disturbance

Effects on Special-Status Bird Species and Others Protected by the Migratory Bird Treaty Act or Raptor Protections
Determination: ***less than significant with mitigation, short-term***

IMPACT

Potential impacts to special-status birds from vegetation removal and other construction activities include potential disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Impacts could include direct loss of eggs or nestlings; indirect displacement from increased noise and human presence in the vicinity of the construction activity; and a reduction in foraging habitat. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity. These impacts are potentially significant short-term impacts.

MITIGATION

To the extent possible with other construction constraints, vegetation removal would be accomplished between August 1 and March 1. If any vegetation removal must be conducted between March 1 and August 1, pre-construction surveys for breeding birds (either special-status or others protected by the Migratory Bird Treaty Act and the California Migratory Bird Act) would be conducted in these areas. If any active nests were found, they would be isolated by a species-specific buffer area (from 50 to 500 feet) and avoided until the eggs were hatched and the nestlings fledged.

These mitigation measures would reduce the impact to a less than significant, short-term impact.

Issue WI-9: Pre-Existing Access Road Improvements

Effects to special-status species
Determination: ***less than significant with mitigation, short-term***

IMPACT

The only pre-existing access road improvements for the Proponent's Proposed Project are improvements to San Clemente Drive. Widening and improving existing access roads could potentially result in minor indirect impacts to Monterey dusky-footed wood rat, pallid bat, and other special-status wildlife species. Use of the Center Court Drive access road would reduce impacts affecting known Monterey dusky-footed wood rat nest located near Tularcitos Creek, but may indirectly impact a nest that was observed above the road in July 1998.

Widening of the existing access roads may disturb trees that provide nesting structures for Monterey dusky-footed wood rats. If large amounts of fill from construction were to enter into the Carmel River this could directly injure or kill western pond turtles, two-striped garter snakes, or CRLFs. Use of the left abutment staging area, as planned, should have less than significant impacts on special-status wildlife species in the area.

These impacts are potentially significant, short-term impacts

MITIGATION

Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Impacts to Monterey dusky-footed wood rat would be mitigated by using global positioning software (GPS) to indicate the location of the existing Monterey dusky-footed wood rat nest relative to the proposed route on project construction maps. A survey would be conducted to identify other active Monterey dusky footed wood rat nests along the proposed route. Any nests found would be mapped and flagged in the field, and construction routes and activities would be planned to avoid the nests. Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Conducting pre-construction surveys of rock outcrops and other formations along the access route would provide a basis for mitigating impacts to pallid bat roosts, if any are present. Surveys would be conducted by a biologist with expertise in bat biology who would use visual survey techniques and acoustic monitoring equipment to determine whether pallid bats are likely to use any of these structures. If evidence of pallid bat use is discovered, roost sites would be mapped by GPS and flagged in the field. Construction would be routed to avoid roost sites.

Impacts to CRLFs, foothill yellow-legged frogs, western pond turtles, and two-striped garter snakes along the Carmel River would be mitigated by erosion Best Management Practices (BMPs) to protect the Carmel River channels (see Section 4.3 Water Quality) and the SWPPP in Appendix K).

These mitigation measures would reduce the impact to a less than significant, short-term impact.

Alternative 1 (Dam Notching)

The Project Area for Alternative 1 encompasses vegetation and other terrestrial biological resources along existing access roads requiring improvements, and at the Dam itself (including the fish ladder). In addition, this alternative encompasses the sediment disposal site, the conveyor route to the sediment disposal site, and those resources currently occupying the sediment that would be excavated. The abutment work described for the Proponent's Proposed Project would not be included, nor would improvements to Tularcitos Road, but improvements to the existing Jeep Trail extending from the Cachagua Road to the sediment disposal site and from the Jeep Trail to the reservoir would be required for this alternative as well as Alternatives 2 and 3.

The transport and disposal of 1.5 million cubic yards of sediment would result in the removal of numerous coast live oak trees (see Issue VE-1 Special-Status Plant Species above). Riparian species also would be impacted at the reservoir end of the conveyor route. Removal of mature trees of coast live oak or riparian species would be a significant, mitigable impact.

Types of potential impacts to terrestrial botanical resources from Alternative 1 are similar to those described for the Proponent's Proposed Project above, but would impact 41.8 acres (see Table 4.5-1). There would be additional impacts at the sediment disposal site and access route described below in Issues WI-9 through WI-12.

Wildlife Issues WI-1 (Dam Strengthening), WI-5 (Concrete Batch Plant), WI-6 (Tularcitos Access Road Improvements), WI-7 (Reservoir Drawdown without Sediment Removal) and WI-13 (Bypass Channel Excavation) would not occur under Alternative 1. Impacts and mitigation for Issues WI-3 (Cofferdam Construction and Plunge Pool Dewatering), and WI-4 (Notching Old Carmel River Dam) would be the same as the Proponent's Proposed Project.

Issue VE-1: Special-Status Plant Species

Effects on virgate eriastrum or Lewis's clarkia populations
Determination: **less than significant with mitigation, short-term**

IMPACT

Populations of Lewis's clarkia were found along the existing access road from Cachagua Road and at the sediment disposal site. Improvements made to this road for construction access could result in additional impacts to this species. However, both virgate eriastrum and Lewis's clarkia are on List 4 of the CNPS Inventory, and do not fall under specific state or federal regulatory authority.

MITIGATION

To the extent possible, potential impacts from construction activities would be avoided by avoiding populations of CNPS List 4 species.

Issue VE-2: Loss of Protected Oak Woodland

Loss of oak woodlands
Determination: **less than significant with mitigation, long-term**

IMPACT

Construction activities could result in loss of 20.1 acres of oak woodlands protected by the Monterey County Oak Protection Ordinance. Improvements to access routes may also result in oak losses. Most of the loss of oak woodland would occur at the sediment disposal site and the conveyor route to this site.

MITIGATION

The Proponent's Proposed Project Mitigation Measure VE-2 (Loss of Protected Oak Woodland) would be implemented. Mitigation would be more extensive than for the Proponent's Proposed Project because the amount of oak woodlands is greater for Alternative 1 as shown in Table 4.5-1.

Issue VE-3: Loss of Other Native Vegetation

Loss of native vegetation
Determination: **less than significant with mitigation, long-term**

IMPACT

Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat. This would be a significant, mitigable, impact.

The acreage of vegetation cover type that would be lost as a result of Alternative 1 is provided in Table 4.5-1. The total acreage of vegetation that would be lost is 41.8 acres. The impact characterization would be the same as described for Impact VE-3 (*Loss of Other Native Vegetation*) under the Proponent's Proposed Project but the quantum of impact would be greater. It would be a less than significant impact as described under Impact Issue VE-3 for the Proponent's Proposed Project.

MITIGATION

The Proponent's Proposed Project Mitigation Measure VE-3 (Loss of Other Native Vegetation) would be implemented. Mitigation would be more extensive than for the Proponent's Proposed Project because the amount of oak woodlands is greater for Alternative 1 as shown in Table 4.5-1.

Issue VE-4: Indirect Effects on Native Vegetation

Effects caused by increased erosion and sedimentation
Determination: **less than significant with mitigation, short-term**

IMPACT

Project activities may result in indirect impacts to vegetation, including increased erosion and sedimentation, damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species. This would be a significant, mitigable impact.

MITIGATION

The Proponent's Proposed Project Mitigation Measure VE-4 (Indirect Effects on Native Vegetation) would be implemented.

Issue WI-2: Removal of Ancillary Facilities

Displacement of special-status bats
Determination: **less than significant with mitigation, short-term**

IMPACT

Removing the valve house from atop SCD and removing other anthropogenic structures from near the Dam may displace special-status bat species from traditional roosts.

Unidentified species of bats use the valve house and other nearby buildings as day roosts. Removing those structures would displace roosting bats and may increase mortality if the structures are removed when newborn or very young bats are present in the roosting colonies. This could be a potentially significant short-term impact.

MITIGATION

Proponent's Proposed Project Mitigation Measure Issue WI-1 (Dam Strengthening) would be implemented. If possible, structure removal would be scheduled after juvenile bats are weaned and capable of flight, as determined by a biologist with expertise in bat biology. These mitigation measures would reduce the impact to a less than significant, short-term impact.

Issue WI-8: Vegetation Removal and Construction-Related Disturbance

Effects on Special-Status Bird Species and Others Protected by the Migratory Bird Treaty Act or Raptor Protections.
Determination: ***less*** **than significant with mitigation, short-term**

IMPACT

Potential impacts to special-status birds from vegetation removal and other construction activities, including potential disturbance to breeding individuals during the nesting season, would be similar to those for the Proponent's Proposed Project, but a greater extent of vegetation and potential habitat for breeding birds would be affected.

MITIGATION

Proponent's Proposed Project Mitigation Measure WI-8 (*Vegetation Removal and Construction-Related Disturbance*) would be implemented.

Issue WI-9: Pre-Existing Access Road Improvements

Effects to special-status species
Determination: **less than significant with mitigation, short-term**

IMPACT

Improvements to the existing Jeep Trail extending from the Cachagua Road to the sediment disposal site and the construction of the conveyor route from the Jeep Trail to the reservoir would be required for Alternative 1, 2 and 3. Widening and improving this road could potentially result in minor indirect impacts to Monterey dusky-footed wood rat and other special-status wildlife species using vegetation in the construction zone, including oak woodlands.

Potential impacts to special-status birds include potential disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Impacts could include direct loss of eggs or nestlings; indirect displacement from increased noise and human presence in the vicinity of the construction activity; and a reduction in foraging habitat. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, and breeding phenology. The impact associated with construction would be only during CY 3.

MITIGATION

Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Pre-construction surveys of the Jeep Trail would be conducted by qualified wildlife biologists, to assess the likely presence or habitat use by any special-status wildlife species. If listed species habitat or individuals could be harmed, Best Management Practices, included in the Protection Measures for Special Status Species Plan (Appendix V), would be developed to avoid or mitigate impacts to special-status wildlife species habitat or individuals.

Issue WI-10: Reservoir Drawdown or Elimination with Sediment Removal

Effects on California red-legged frog (CRLF) habitat
Determination: ***significant, unavoidable, short-term; long-term beneficial with mitigation***

IMPACT

Reservoir drawdown may strand CRLF tadpoles away from pool habitat and may also isolate transformed and adult CRLFs far enough from moisture sources to cause desiccation and death. As pools decline, CRLFs and tadpoles may also become increasingly vulnerable to predation and to inter- and intraspecific competition, as well as to weather extremes. The drawdown may also isolate western pond turtles and potentially impact juveniles by severely limiting available cover and forage. Adult western pond turtles can disperse safely independently of moisture and most weather conditions, but juveniles and hatchlings may be killed or injured during the drawdown.

This could be a potentially significant, short-term impact.

MITIGATION

A biologist permitted and approved by the USFWS to relocate California red-legged frogs and western pond turtles would monitor and oversee all terrestrial wildlife-related activities associated with the drawdown and subsequent activities in the reservoir bed.

As the drawdown commences and the reservoir water level declines, the USFWS-approved biologist and crew would rescue CRLFs and tadpoles and western pond turtle juveniles and hatchlings from the inlet streams and pools in the sediment bed, and relocate them to appropriate aquatic habitat at previously selected secure sites within one mile of San Clemente reservoir. The detailed relocation program for CRLFs is discussed under the mitigation measure for the Proponent's Proposed Project Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) and in the Protection Measures for Special Status Species (Appendix V). Other native wildlife taken incidentally during these operations would be transported to secure habitat (which may be the same sites selected for relocation of CRLFs and tadpoles and western pond turtle juveniles and hatchlings). This operation would continue throughout the reservoir drawdown, vegetation clearing, and sediment excavation operations (see Mitigation Measure WI-11 (Sediment Removal); hand vegetation clearing, as detailed in Mitigation Measure WI-11, would commence immediately after the drawdown begins).

While it is difficult to determine whether the loss of CRLFs and other species that are not rescued or that are injured or die during the rescue and relocation operations is significant, these losses along with the temporary loss of habitat for the red-legged frog cannot be fully mitigated and would be significant in the short-term. However, the CRLF Program, which is discussed in mitigation for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) would restore additional sites as mitigation habitat for CRLFs and other species. This mitigation would improve habitat and provide a long-term, beneficial impact.

Issue WI-11: Sediment Removal

Destruction of spawning habitat
Determination: **significant, unavoidable, short-term; long-term beneficial with mitigation**

IMPACT

Removing the sediment from San Clemente Reservoir to a level below the dam notch would adversely affect nearly all extant CRLF spawning and summer habitat within the reservoir. Spawning habitat would regenerate and become suitable in perhaps as little as a few months. Some loss would occur either during removal of CRLFs and tadpoles, Coast Range newt larvae, and western pond turtle juveniles and hatchlings from the sediment bed before commencing vegetation removal or sediment excavation, or if individuals are missed in the rescue operation. These impacts are potentially significant short-term impacts.

MITIGATION

Mitigation Measure WI-3 (Cofferdam Construction and Plunge Pool Dewatering) would be implemented. The monitoring biologist and crew would capture and relocate all CRLFs. Prior to any sediment excavation and before CRLFs have been cleared completely from the reservoir bed, vegetation on the sediment bed would be removed with chainsaws and other handheld cutting devices (except "weedwhackers"). Vegetation removed with hand tools would be limited to no lower than 12 inches above grade, to protect CRLFs. Cleared vegetation would be removed from the reservoir bed immediately, and taken to an off-site location. After hand clearing is completed, the monitoring biologist would resurvey the reservoir bed to determine if any CRLFs or tadpoles remain within the reservoir sediment bed. After ten days pass in which no further CRLFs or tadpoles, Coast Range newt larvae, or western pond turtle juveniles or hatchlings are found in aquatic habitat in the reservoir bed, machine operations including mechanical vegetation removal and sediment excavation would be allowed to commence in the reservoir bed. Grubbing and mechanical stump removal would be performed only after hand clearance is completed and after the monitoring biologist has confirmed that the reservoir sediment bed is free of CRLFs and tadpoles.

After all vegetation is removed, the monitoring biologist would re-survey the reservoir sediment bed a final time to ascertain that CRLF, Coast Range newt larvae, and western pond turtle juveniles and hatchlings are absent from the site. Sediment excavation to the desired level, including all removal, grading and reshaping of the sediment bed, would then commence. If sediment excavation is not accomplished within one season, these procedures would be repeated at the initiation of each construction season to relocate sensitive species that may have re-colonized the reservoir bed.

While it is difficult to determine whether the loss of CRLFs and other species that are not rescued or that are injured or die during the rescue and relocation operations is significant, these losses along with the temporary loss of habitat for the red-legged frog cannot be fully mitigated and would be significant in the short-term. However, the CRLF Program, which is discussed in mitigation for Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) would restore additional sites as mitigation habitat for CRLFs and other species. This mitigation would improve habitat and provide a long-term beneficial impact.

Issue WI-12: Sediment Transport and Disposal

Adverse effects to special-status species
Determination: **less than significant with mitigation, long-term**

IMPACT

The proposed sediment disposal site (4R) may include habitat for some of the special-status wildlife species discussed above. Deposition of large volumes of sediment at this site could destroy habitat and may also injure or kill special-status wildlife species. Species most likely to be affected include coast horned lizard, Monterey dusky footed wood rat, and perhaps California tiger salamander or Coast Range newt. Installation and operation of the conveyor system from the Carmel River canyon to Site 4R may result in substantial habitat loss for special-status wildlife species, including oak woodland. Because these sites include oak woodland, this is a potentially significant long-term impact.

MITIGATION

The mitigation would be the same as WI-9 (Pre-Existing Access Road Improvements)

These mitigation measures would reduce the impact to a less than significant, short-term impact.

Alternative 2 (Dam Removal)

The Project Area for Alternative 2 encompasses vegetation and other terrestrial biological resources along the existing San Clemente Road, along existing access roads requiring minor improvements, at the Dam itself, at the sediment disposal site, along the conveyor route to the sediment disposal site, and those resources currently occupying the sediment that would be excavated. The acreage of vegetation by cover type that would be lost as a result of Alternative 2 is provided in Table 4.5-1. The total acreage of vegetation that would be lost is 61.4 acres. The abutment work and fish ladder described for the Proponent's Proposed Project would not be included, as the Dam and the fish ladder would be removed, but improvements to the existing Jeep Trail extending from the Cachagua Road to the sediment disposal site would be required for this alternative, as well as Alternatives 1 and 3.

Mitigation measures for Issues VE-1 (Special-Status Plant Species), VE-2 (Loss of Protected Oak Woodland), VE-3 (Loss of Other Native Vegetation), VE-4 (Indirect Effects on Native Vegetation) would be the same as the Proponent's Proposed Project; however, the mitigation required for Alternative 2 under VE-2 is greater than the mitigation required for the Proponent's Proposed Project because the acreage of vegetation affected would be greater.

Impacts and mitigation for issues WI-3 (Cofferdam Construction and Plunge Pool Dewatering), and WI-4 (Notching Old Carmel River Dam) would be the same as the Proponent's Proposed Project. Mitigation for Issue WI-8 (Vegetation Removal and Construction-Related Disturbance) would be the same as the Proponent's Proposed Project.

Impacts and mitigation for Issues WI-2 (Removal of Ancillary Facilities), WI-9 (Pre-Existing Access Road Improvements), WI-11 (Sediment Removal), and WI-12

(Sediment Transport and Disposal) would be the same as described for Alternative 1. Mitigation for Issue WI-10 (Reservoir Drawdown or Elimination with Sediment Removal, would be the same as described for Alternative 1.

Wildlife Issues WI-1 (Dam Strengthening), WI-5 (Concrete Batch Plant Construction and Operation), WI-6 (Tularcitos Access Road Improvements); WI-7 (Reservoir Drawdown Without Sediment Removal), and WI-13 (Bypass Channel Excavation) would not occur under Alternative 2.

Issue VE-1: Special-Status Plant Species

Effects on virgate eriastrum or Lewis's clarkia populations
Determination: **less than significant, less than significant with mitigation, short-term**

IMPACT
Populations of Lewis's clarkia were found along the existing access road from Cachagua Road and at the sediment disposal site. Improvements made to this road for construction access could result in additional impacts to this species. However, Lewis's clarkia is on List 4 of the CNPS Inventory, and does not fall under specific state or federal regulatory authority.

MITIGATION
Mitigation for impacts resulting from Issue VE-1 would be the same as the Proponent's Proposed Project.

Issue VE-2: Loss of Protected Oak Woodland

Loss of oak woodlands
Determination: ***less*** **than significant with mitigation, long-term**

IMPACT
Construction activities could result in loss of 26.3 acres of oak woodlands protected by the Monterey County Oak Protection Ordinance in the area mapped in 2005. Improvements to access routes may also result in oak losses. Most of the loss of oak woodland would occur at the sediment disposal site and the conveyor route to this site.

MITIGATION
Mitigation measures for impacts resulting from Issue VE-2 would be the same as the Proponent's Proposed Project, but would be more extensive because the total impacted acreage would be greater.

Issue VE-3: Loss of Other Native Vegetation

Loss of native vegetation
Determination: **less than significant with mitigation, long-term**

IMPACT

Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat.

The acreage of vegetation cover type that would be lost as a result of Alternative 2 implementation is provided in Table 4.5-1. The total acreage of vegetation that would be lost in the area mapped in 2005 is 61.4 acres. The impact characterization would be the same as described for Impact VE-3 (*Loss of Other Native Vegetation*) under the Proponent's Proposed Project. It would be a less than significant impact.

MITIGATION

Mitigation measures for impacts resulting from Issue VE-3 would be the same as the Proponent's Proposed Project, but would be more extensive because the total impacted acreage would be greater.

Issue VE-4: Indirect Effects on Native Vegetation

Effects caused by increased erosion and sedimentation
Determination: **less than significant with mitigation, short-term**

IMPACT

Project activities may result in indirect adverse impacts to vegetation, including increased erosion and sedimentation, damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species. This would be a significant, mitigable impact.

MITIGATION

Mitigation for impacts resulting from Issue VE-4 would be the same as the Proponent's Proposed Project.

Issue WI-8: Vegetation Removal and Construction-Related Disturbance

Effects on Special-Status Bird Species and Others Protected by the Migratory Bird Treaty Act or Raptor Protections.
Determination: **less than significant with mitigation, short-term**

IMPACT

Potential impacts to special-status birds from vegetation removal and other construction activities include potential disturbance to breeding individuals during the nesting season would be similar to those for the Proponent's Proposed Project and Alternative 1, but a greater extent of vegetation and potential habitat for breeding birds would be affected during the construction phase.

MITIGATION

Proponent's Proposed Project Mitigation Measure WI-8 (*Vegetation Removal and Construction-Related Disturbance*) would be implemented.

Alternative 3 (Carmel River Reroute and Dam Removal)

Mitigation measures for Vegetation and Wildlife issues VE-1 (Special-Status Plant Species), VE-2 (Loss of Protected Oak Woodland), VE-3 (Loss of Other Native Vegetation), and VE-4 (Indirect Effects on Native Vegetation) would be the same as the Proponent's Proposed Project**, although a greater amount of habitat would be impacted.** ~~However, fewer acres of oak woodland would be impacted.~~

Impacts and mitigation for WI-3 (Cofferdam Construction and Plunge Pool Dewatering), and WI-4 (Notching Old Carmel River Dam) would be the same as the Proponent's Proposed Project**, except that for the reasons discussed on page 4.5-43, WI-3 under Alternative 3 is determined to be less than significant with mitigation**.

Wildlife Issues WI-1 (Dam Strengthening), WI-5 (Concrete Batch Plant Construction and Operation), WI-6 (Tularcitos Access Road Improvements), WI-7 (Reservoir Drawdown or Elimination), and WI-12 (Sediment Transport and Disposal) would not occur under Alternative 3. Impacts and mitigation for WI-2 (Removal of Ancillary Facilities), ~~WI-9 (Pre-Existing Access Road Improvements) except for any impacts caused by road improvements from the Jeep Trail to the sediment disposal site,~~ WI-10, (Reservoir Drawdown or Elimination with Sediment Removal), and WI-11 (Sediment Removal) would be the same as described for Alternative 1 **except that for the reasons discussed on page 4.5-43, WI-10 and WI-11 under Alternative 3 are determined to be less than significant with mitigation**.

The Project Area for Alternative 3 encompasses vegetation and other terrestrial biological resources along the existing San Clemente Road, along existing access roads requiring minor improvements, at the Dam itself, along the Cachagua Access Route to the reservoir **via the Jeep Trail and Reservoir Access Road**, and those resources currently occupying the area of the bypass channel and the diversion dike, as well as the areas that would be excavated or dewatered. The abutment work and fish ladder described for the Proponent's Proposed Project would not be included, because the Dam and the fish ladder would be removed, but improvements to extend access from the Cachagua Road to the reservoir would be required for this alternative, as well as Alternatives 1 and 2.

Potential impacts to terrestrial botanical resources from Alternative 3 are similar to those described for the Proponent's Proposed Project, with the additional loss of vegetation at the diversion channel site. However, ~~substantially~~ less coast live oak woodland would be affected than Alternative 1 or 2, because neither the new Tularcitos Access Route nor the sediment disposal site would be included in Alternative 3.

~~*Impact*~~ *Issue* VE-1: Special-Status Plant Species

Effects on virgate eriastrum population
Determination: **less than significant with mitigation, short-term**

IMPACT

Populations of Lewis's clarkia were found along the existing **Jeep Trail** access road from Cachagua Road and at the sediment disposal site **4R for Alternatives 1 and 2, and the diversion dike area for Alternative 3**. Improvements made to ~~this road~~ **the Jeep Trail** for construction access could result in additional impacts to this species. However, Lewis's clarkia is on List 4 of the CNPS Inventory, and does not fall under specific state or federal regulatory authority.

MITIGATION

Mitigation for impacts resulting from Issue VE-1 would be the same as the Proponent's Proposed Project.

Issue VE-2: Loss of Protected Oak Woodland

Loss of oak woodlands

Determination: **less than significant with mitigation, long-term**

IMPACT

Construction activities could result in loss of **approximately** ~~9.6~~ **18** acres of oak woodlands protected by the Monterey County Oak Protection Ordinance. **Approximately 6 of these acres would be lost due to temporary access road impacts, including road widening and staging.** ~~Improvements to other access routes may also result in oak losses. Most of the loss of oak woodland would occur at the new access route from the Jeep Trail to the construction site.~~

MITIGATION

Mitigation for impacts resulting from Issue VE-2 would be the same as the Proponent's Proposed Project, but would be more extensive because the total acreage would be greater.

Issue VE-3: Loss of Other Native Vegetation

Loss of native vegetation
Determination: **less than significant with mitigation, long-term**

IMPACT

Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat. This would be a significant, mitigable impact.

The acreage of vegetation cover type that would be ~~lost~~ **affected** as a result of Project implementation is provided in Table 4.5-1**a**. **These impacts are also shown on Figures 4.5-1a and 4.5-1b**. The total acreage of vegetation that would be ~~lost~~ **affected** is **approximately** ~~44.7~~ **58** acres**, including the oak woodland habitat in VE-2**. ~~The impact characterization would be the same as described for Impact VE-3 (*Loss of Other Native Vegetation*) under the Proponent's Proposed Project. It would be a less than significant impact.~~

Specific impacts would be similar to the Proponent's Proposed Project with the following exceptions:

The alignment of the proposed Reservoir Access Road has been revised to reduce impacts to oak woodland habitat and individual trees. The new alignment includes switchbacks; the point at which the Reservoir Access Road intersects with the Jeep Trail has been revised since the EIR/EIS. While the new alignment would be roughly the same length as the original alignment, the acreage impacted is slightly higher due to grading associated with creating switchbacks on the steep slopes. The new alignment would result in impacts to approximately 1.1 acres of chaparral, 1.2 acres of oak woodland, and 0.4 acres of annual grassland (Figure 4.5-1a).

Widening of the Jeep Trail would continue to the intersection with Cachagua Road which would widening of the Jeep Trail extend approximately 3,850 feet further than originally planned. Access improvements on the Jeep Trail would impact approximately 4.1 acres of oak woodland and 1.7 acres of grassland.

Improvements along Cachagua Road, including two switchback locations, and construction at Bridge 529, will result in impacts to approximately 0.5 acres of oak woodland and .05 acres of and riparian habitat.

MITIGATION

Mitigation for impacts resulting from Issue VE-3 would be the same as the Proponent's Proposed Project, but would be more extensive because the total acreage would be greater.

Issue VE-4: Indirect Effects on Native Vegetation

Effects caused by increased erosion and sedimentation
Determination: **less than significant with mitigation, short-term**

IMPACT

Project activities may result in indirect adverse impacts to vegetation, including increased erosion and sedimentation, of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species.

MITIGATION

Mitigation measures for impacts resulting from Issue VE-4 would be the same as the Proponent's Proposed Project.

Issue WI-8: Vegetation Removal and Construction-Related Disturbance

Effects on special-status bird species and others protected by the Migratory Bird Treaty Act or Raptor Protections.
Determination: **less than significant with mitigation, short-term**

IMPACT

~~Potential impacts to special-status birds from vegetation removal and other construction activities include potential disturbance to breeding individuals during the nesting season would be similar to those for Alternative 1, but less oak woodland would be affected. These disturbances to habitat would be less than those for Alternative 2.~~

MITIGATION

~~Proponent's Proposed Project Mitigation Measure WI-8 (*Vegetation Removal and Construction-Related Disturbance*) would be implemented.~~

Potential impacts to special-status birds (including those listed as fully protected, endangered, threatened, species of special concern, or those protected under the Migratory Bird Treaty Act) could occur during vegetation removal and other construction activities. Potential impacts include disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Impacts could entail direct loss of eggs or nestlings; indirect displacement from increased noise and human presence in the vicinity of the construction activity; and a reduction in foraging habitat. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity. These impacts are potentially significant short-term impacts.

MITIGATION

Vegetation removal would be accomplished outside of the nesting season between September 15 and February 1. If any vegetation removal must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. *The project applicant and the qualified wildlife biologist will coordinate specific survey details with CDFG and the USFWS before any vegetation removal or construction occurs.* **If active nests are found, CDFG, and the USFWS will be contacted. Nests will be protected by a one-half mile no disturbance buffer and the nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.**

If California fully protected species, such as bald eagle, golden eagle, or white-tailed kite, is identified, CDFG would be consulted. The project would not proceed until mitigation and monitoring measures recommended to avoid the take of such species had been incorporated into the project.

If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the eggs the nestlings are fledged and no longer dependent on parental care for survival.

In addition to these mitigation measures, additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Issue WI-9: Pre-Existing Access Road Improvements

Effects to special-status species
Determination: less than significant with mitigation, short-term

IMPACT

The majority of the access road improvements on pre-existing roads would be the same as for Alternative 1. However, in addition to the impacts described for Alternative 1, there would be potential impacts to special-status species due to bridge improvements at Bridge 529 at Cachagua Creek and at four other locations along Tassajarra Road/ Cachagua Road that would be improved to provide heavy equipment access.

Three concrete bridge footings will be placed in Cachagua Creek in order to support construction traffic on Bridge 529, located on Cachagua Road between Tassajara Road and the Jeep Trail. During construction, the creek will be dewatered a portion at a time, and aquatic species relocation may be required. This could result in a short-term disturbance to special-status species such as CRLF, steelhead, western pond turtle, *and* **two-striped garter snake. In addition, the work will result in the permanent loss of approximately 0.001 acres of habitat where the bridge footings are placed, and there would be a short-term loss of the riparian habitat that currently shades Cachagua Creek when vegetation is cleared for equipment access.**

Other improvements to the Jeep Trail and Cachagua Road would have impacts similar to those described for Alternative 1, and could potentially result in minor indirect impacts to Monterey dusky-footed wood rat, pallid bat, and special-status bird species. Jeep Trail improvements potentially could impact CTS especially in areas designated as potential CTS aestivation habitat (see Figure 4.5-2). Impacts to CTS associated with the increased traffic on Cachagua Road and the Jeep Trail through migratory habitat are described in WI-14.

MITIGATION

Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Impacts to Monterey dusky-footed wood rat would be mitigated by using global positioning software (GPS) to indicate the location of the existing Monterey dusky-footed wood rat nest relative to the proposed route on project construction maps. A survey would be conducted to identify other active Monterey dusky footed wood rat nests along the proposed route. Any nests found would be mapped and flagged in the field, and construction routes and activities would be planned to avoid the nests. Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Pre-construction surveys of rock outcrops and other formations along the access route would be conducted to provide a basis for mitigating impacts to pallid bat roosts, if any are present. Surveys would be conducted by a biologist with expertise in bat biology who would use visual survey techniques and acoustic monitoring equipment to determine whether pallid bats are likely to use any of these structures. If evidence of pallid bat use is discovered, roost sites would be mapped by GPS and flagged in the field. Construction would be routed to avoid roost sites.

Impacts to CRLFs, foothill yellow-legged frogs, western pond turtles, and two-striped garter snakes along the Carmel River would be mitigated by erosion Best Management Practices (BMPs) to protect the Carmel River channels (see Section 4.3 Water Quality) and the SWPPP in Appendix K).

In addition, a USFWS*, *~~**/**~~**NMFS***, and CDFG* **approved biologist will conduct pre-construction surveys of the area prior to the start of work at Bridge 529 on Cachagua to assess the site for potentially impacted wildlife species.** *During wet weather conditions, prior to the start of work each day, clearance surveys will be conducted at Bridge 529 and at all other drainage crossings.* **Any identified CRLF will be moved to a suitable location outside of the construction area. Fish will also be relocated from the dewatered area to suitable habitat outside of the construction area (see FI-2). Rescue and relocation will be conducted in accordance with pre-approved agency protocols.**

The following measures would be implemented to mitigate potential impacts to CTS:

- **A qualified biologist will conduct training for all construction and monitoring personnel concerning CTS, including identification of the species and habitat, and the implementation protection measures.**
- **Protocol-level surveys will be conducted to demonstrate a negative finding concerning the presence of CTS in the areas where access road improvements will be made.**
- **If surveys are not conducted, then CDFG would assume presence of CTS,**
- **50-foot no disturbance zones will be established around all potential small animal burrows that could serve as CTS refugia/aestivation habitat.**

- **If burrow avoidance is not possible, then acquisition of an Incidental Take Permit may be warranted before initiating ground disturbing activities.**
- **During rainy or wet conditions, all project-related vehicle travel will occur during daylight hours; if construction-related travel must occur at night, a qualified biological monitor will conduct surveys to ensure no migrating CTS are on the route. The monitor will escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions.**
- **A qualified environmental inspector will be on-site each construction season to ensure compliance with all environmental BMPs, permits, and other conditions.**

In addition to these mitigation measures, additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Issue WI-10: Reservoir Drawdown or Elimination with Sediment Removal

Effects on California red-legged frog (CRLF) habitat
Determination: less than significant with mitigation

IMPACT

Except as described below, the impacts associated with the reservoir drawdown or elimination with sediment removal would be the same as described in Alternative 1. The only difference is that under Alternative 3, the rate of drawdown may be increased, however this would not change overall impact or mitigation as described in Alternative 1.

Adoption of measures approved by USFWS for the protection of CRLF populations will reduce the overall impact to that species to less than significant.

MITIGATION

The mitigation for WI-10 under Alternative 3 would be the same as described for Alternative 1.

Issue WI-13: Bypass Channel Excavation

Loss of habitat for special-status species
Determination: ***less than significant with mitigation*** ~~*significant, unavoidable, long-term*~~

IMPACT

Brushland and riparian habitat clearing and channel excavation would remove some habitat for aquatic species including the CRLF, Coast Range newt and the western pond turtle. In addition, these activities may also affect other special-status terrestrial wildlife species, particularly the Monterey dusky-footed wood rat.

This alternative would reduce the amount of lucustrine habitat in the Project Area which may reduce the amount of bullfrog habitat which, in turn, may benefit the CRLF population.

MITIGATION

A CRLF adult and tadpole and western pond turtle juvenile and hatchling relocation program would be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction. Presence of terrestrial special-status species would be assessed by preconstruction surveys and flagging of special-status species habitat for avoidance. The details of the CRLF relocation program and habitat enhancement are discussed in the mitigation measures for the Proponent's Proposed Project Issue WI-3 (Cofferdam Construction and Plunge Pool Dewatering) and in the Protection Measures (Appendix V). **However, adoption of measures approved by USFWS for the protection of CRLF populations will reduce the overall impact to that species to less than significant.**

Individuals of listed species not discovered during the rescue and relocation effort could be desiccated. More details are provided in the Protection Measures for Special-status Species (Appendix V).

ISSUE WI-14: Increased traffic on Cachagua/Jeep Trail

Effects to special-status species
***Determination:* less than significant with mitigation, short-term**

IMPACT

During construction, vehicle traffic along Cachagua Road could increase by approximately 13-20 round trips per day. Increased traffic could lead to increased mortality of species, such as CTS, that may be crossing the roadway. CTS, like many wildlife species migrate at night. CTS migration typically occurs in the rainy season, primarily October-April.

MITIGATION

Nighttime construction-related vehicle traffic would be avoided during the months of October-April along the portion of Cachagua Road that is located closest to potential suitable habitat for CTS (see Figure 4.5-2). This portion of Cachagua Road lies north and south of the intersection of Cachagua Road and the Jeep Trail. If construction-related travel must occur at night during rainy or wet conditions, a qualified biological monitor would conduct surveys to ensure no migrating CTS are on the route. The monitor would escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions. No restrictions on vehicle traffic for the protection of

migrating CTS would be necessary outside of the period October-April or during daylight hours (half-hour before sunrise or after sunset). With the implementation of these measures, this short-term impact would be reduced to less than significant.

In addition to these mitigation measures, additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

ISSUE WI-15: Nighttime Work and Associated Lighting

Effects to special-status species
Determination: **less than significant, with mitigation, short term**

IMPACTS

Sediment excavation in San Clemente Creek and work in the sediment stockpile area would occur at night, requiring lighting of the work area. Night work would occur in the area from SCD, upstream to the Diversion Dike and Bypass Channel areas. Although, lighting would be directed down at the work areas to the extent possible and would be shielded to direct light where needed to reduce sky glow and spillover, it is possible that nighttime lighting of the work area may illuminate adjacent habitat nesting sites used by wildlife.

Nocturnal and crepuscular species may be less able to forage in lit areas. Special-status species that this could affect include the fully-protected ringtail cat and state species of special concern including the Monterey dusky-footed woodrat, the American badger, and the Monterey vagrant shrew. In addition, nocturnal birds protected under the Migratory Bird Treaty Act, such as owls, could also be temporarily impacted in habitats near the work area.

MITIGATION

The area in which night work would occur is bordered by the Garland Regional Park to the west, and the San Clemente Open Space to the east. The Los Padres National Forest is located approximately two miles south of the project area and encompasses 1.75 million acres of protected open space. Species unable to forage in the immediate area of the dam site due to construction activities would be able to find suitable foraging habitat near the project area.

Nighttime work would be conducted outside of the nesting season between September 15 and February 1, if possible. However, if nighttime work must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. If active nests are found, CDFG, and the USFWS will be contacted. Nests of California fully protected species, such as bald eagle, golden eagle, or white-

tailed kite will be protected by a one-half mile no disturbance buffer and the nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.

If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the eggs the nestlings are fledged and no longer dependent on parental care for survival.

In addition, lighting will be directed downward and shielded to reduce light spillover onto adjacent wildlife habitats. With implementation of these mitigation measures, the impacts will be less than significant.

In addition to these mitigation measures, additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Alternative 4 (No Project)

No improvements would be made to the roads and the Dam would remain in its current condition. There would be no construction impacts associated with this alternative.

Under this alternative, the reservoir would eventually reach a point where sediment is no longer captured by the Dam. Resulting changes in sediment effects would be most prominent in the reservoir and in the reaches immediately downstream of the SCD.

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4.6 WETLANDS

This section describes the potential impacts of the San Clemente Seismic Safety Project on the wetland resources of the Project Area. Wetland resources include all wetland vegetation, non jurisdictional areas with wetland vegetation and Other Waters of the U.S. influenced by the project. Riparian vegetation is discussed in Section 4.5. Additional information is provided in ~~this~~ **the** Final EIR/EIS which clarifies and amplifies the information included in ~~this~~ **the Draft** EIR/EIS.

Revisions to the Wetlands section were made to identify resources not delineated in the final EIR/EIS, to analyze impacts to wetlands and Other Waters of the U.S. not previously addressed, and to disclose potential impacts associated with access road improvements.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged.

This environmental setting section was prepared using information developed from the documents provided by the Recirculated Draft Environmental Impact Report (Denise Duffy & Associates 2000), which in turn was originally developed for the New San Clemente Project (MPWMD 1984). Wetlands delineations for the Proponent's Proposed Project were conducted by Wetland Research Associates, Inc. in 1994 and Olberding and Associates in 1998 (Denise Duffy & Associates 2000). ENTRIX scientists re-delineated the wetlands in July and August 2005 and February 2006 for the Proponent's Proposed Project and the alternatives under consideration. ~~This~~ **The** Final EIR/EIS contains the 2005 wetland delineation report in Appendix W. **This delineation was not verified by the USACE.**

In May, August, and October of 2011, URS scientists delineated wetlands and Other Waters of the U.S. During these surveys, USACE jurisdictional wetlands were mapped using the USACE Wetland Delineation Manual (Environmental Laboratory 1987). The ordinary high water mark (OHWM) of Other Waters of the U.S. near SCD reservoir was determined to be at an elevation of 527 feet based on reservoir discharge elevation data from 2002-2008. This elevation was plotted onto a base map created from light detection and ranging (LIDAR) data flown April 26, 2011. The OHWM of Other Waters of the U.S. beyond the extent of the reservoir were mapped with GPS using definitions from the Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States (Lichvar and McColley 2008). See Appendix AA for the 2011 wetland delineation report. The 2011 delineation has been verified by the USACE (H. Costa, pers. comm).

2030 Baseline Conditions

As described in Section 4.2, the natural sediment transport into the reservoir is estimated to average 16.5 AF/year (MEI 2003). At this rate, the reservoir would reach capacity in approximately 6 to 10 years and begin to pass this sediment load downstream.

In the San Clemente Reservoir sediment plain (Reach 3), a gentle incision of the meandering planform into the coarse sands would allow for the development of young riparian communities. Much of the San Clemente arm and the much larger Carmel River arm of the sediment plain already have fairly extensive areas of localized riparian vegetation, including sedge meadow, isolated seasonal and perennial ponds, and emergent riparian wetland vegetation. Larger floods, such as the 1998 flood, would continue to scour large portions of the young riparian growth, maintaining a dynamic sediment plain. However, as deposition of coarse sediment and large woody debris helps to stabilize the terraces and channel patterns develop into more incised meanders, an increased number of large patches of more mature riparian woodland and forest habitat would develop (Denise Duffy & Associates 2000).

Reach 4 (downstream of SCD) has hard banks and the upper portion of Reach 5 has relatively hard banks and moderate gradients that could experience sediment accumulation on bars, benches, and low overflow channels as the reservoir fills and begins to pass sediment downstream. Figure 4.6-1 included in this report identifies the River Reaches that would be affected by the Proponent’s Proposed Project and its alternatives. These lower fluvial landforms are supporting different but relatively even-aged stands of riparian vegetation. These vary from small complexes of cottonwood-sycamore-willow-alder on the older deposits, to even-aged stands of alder and willow, to young herbaceous growth on the youngest bars.

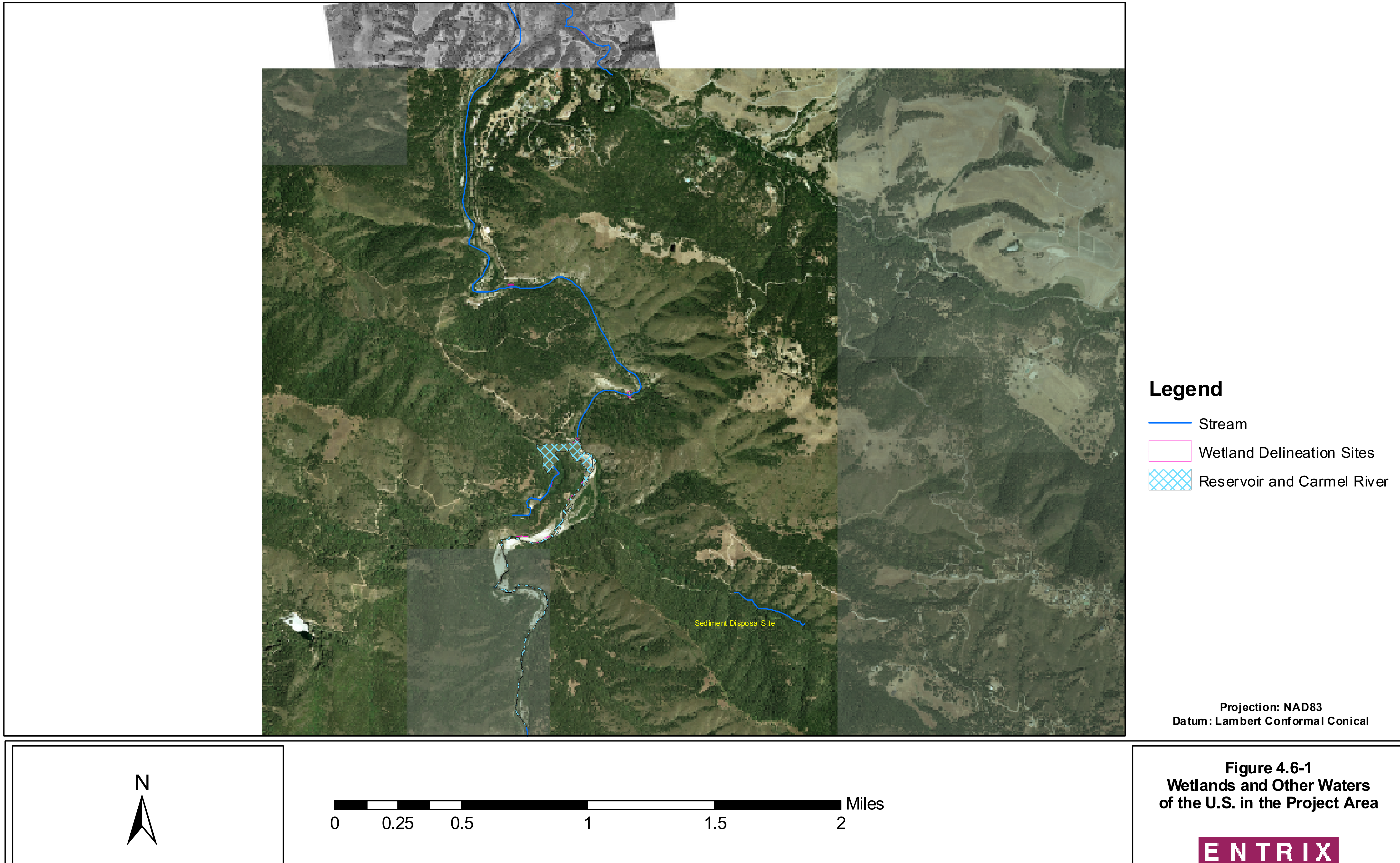

Figure 4.6-1
Wetlands and Other Waters of the U.S. in the Project Area

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Large episodic floods and deposits of sand could scour, bury, and kill recently-established riparian and brushy habitats near water. Since these reaches have hard banks and a steeper gradient, they are less subject to bank failure and loss of mature riparian vegetation, even in smaller episodic events (Denise Duffy & Associates 2000).

Softer banks occur in the lower portion of Reach 5 in the Robles del Rio area and increasingly downstream through reaches 6 and 7 and the upper portion of Reach 8. In areas with softer banks, the river channel would become wider and shallower. Deposition and low flow channel migration is likely to smother or remove young herbaceous and riparian scrub communities on the less stable bars, benches and terraces (Denise Duffy & Associates 2000).

Extensive areas of bare sandy flood plain and braided channels would be created when episodic events deposit large to very large amounts of material, especially if they occur early in the 50-year project life. A complex depositional and erosional pattern with blowouts, terrace scour holes, and trapping of large woody debris could lead to a complex of riparian and wetland habitats of different ages (Denise Duffy & Associates 2000).

Reach 8 (especially the lower two thirds) and the upper portion of Reach 9 have finer grained alluvial soils, with more extensive riparian forest and root stabilized banks. These conditions are combined in numerous locations with hardened banks and a relatively straight and narrow river channel with good conveyance. Therefore, there is less likely to be significant bank migration and loss of riparian vegetation in this reach. Substantial filling of the active channel would bury or create habitat favorable for growth of a successional complex of riparian habitats. This reach has only very localized opportunities for creation of smaller, more isolated and discontinuous bars and benches for seral herbaceous, shrub, willow scrub and woodland succession (Denise Duffy & Associates 2000).

The complex of riparian, wetland, and coastal dune habitats associated with the lagoon and the associated riparian forest above the lagoon is not expected to change appreciably due to release of sediment over SCD. The dynamics of this area are controlled by other factors (Denise Duffy & Associates 2000).

4.6.1 ENVIRONMENTAL SETTING

Locations with potential jurisdictional wetlands and Other Waters of the U.S. in the Project Area for the Proponent's Proposed Project and alternatives include Tularcitos Creek at the new Tularcitos Access Road crossing, the concrete ford on an existing access road, the Old Carmel Dam Bridge (OCDB), **Cachagua Creek at Bridge 529, several culverted waters along Cachagua Road and the Jeep Trail,** the existing plunge pool access road along the east side of the Carmel River (which requires improvements), the plunge pool at the SCD, and the reservoir flood plain upstream of the SCD **including San Clemente Creek, Carmel River, and two unnamed tributaries from the east and west.**

Olberding and Associates conducted a separate field survey of the CVFP settling basins in 1997 (Denise Duffy & Associates 2000). The USACE concurred with this study in determining that the settling basins are not considered to be jurisdictional wetlands or Waters of the U.S. because they are artificial settling basins constructed on dry land for the purpose of collection and detention of piped sediment-laden water from the CVFP (Denise Duffy & Associates 2000). CVFP activities are ongoing, the source of hydrology in the settling basins is artificial and, under normal circumstances, wetland vegetation would not be present.

Wetlands in the Project Area for the Proponent's Proposed Project and alternatives consist primarily of riparian vegetation associated with the Carmel River, Tularcitos Creek, **Cachagua Creek,** and the flood plain of the reservoir along the Carmel River and San Clemente Creek. This riparian vegetation would be classified as palustrine forested wetlands in the Cowardin system where the trees are taller than 20 feet, or as palustrine or lacustrine shrub-scrub wetlands where the woody vegetation is less than 20 feet tall (Cowardin 1979). Functions provided by these riparian wetlands include temporary surface water storage, energy dissipation, nutrient cycling, removal of non-point source pollutants, retention of particulates, organic carbon export, and maintenance of plant and animal communities (Brinson et al. 1995).

Where only herbaceous vegetation is present, the Cowardin classification would be palustrine emergent wetlands ranging from permanently flooded to seasonally flooded. Functions provided by these riparian wetlands include temporary surface water storage, energy dissipation, nutrient cycling, removal of non-point source pollutants, retention of particulates, organic carbon export, and maintenance of plant and animal communities (Brinson et al. 1995).

Other Waters of the U.S. in the Project Area include these streams, and the lower reservoir shoreline of San Clemente Reservoir.

Within the SCD study area, potential jurisdictional wetlands **identified by ENTRIX in 2005**, under current conditions, are found adjacent to San Clemente Reservoir and the base of the SCD, the Carmel River, and Tularcitos Creek, as shown on Figure 4.6-1. **See Appendix AA for the 2011 delineation of wetlands and Other Waters of the U.S.**

ENTRIX ~~has~~ made a preliminary determination that approximately 0.9 acres of jurisdictional wetlands are present at these sites with another 18.5 acres meeting the definition of "Other Waters of the U.S." under Section 404 of the Clean Water Act (CWA). **The Corps did not verify the 2005 delineation. In 2011, URS delineated approximately 2.95 acres of jurisdictional wetlands and 25.68 acres of Other Waters of the U.S. The study area in the two delineations differed in that the 2005 delineation extended slightly further upstream in the Carmel River and included the sediment disposal Site 4R (which is not part of Alternative 3) and the 2011 delineation included waters along Cachagua Road, Tassajara Road, the Jeep**

Trail, and the new proposed Reservoir Access Road. The difference between the 2005 amount of area identified as wetland and Other Waters of the U.S. compared with the amount identified in 2011 is attributable to variations in the delineation methodology.

In the 2005 delineation, Other Waters of the U.S. were defined by the wetted channel as it existed in July and August at the time of the delineations (Section 3.2.7 in Appendix W to original EIR/EIS). Data from the dam spill in July and August 2005 indicate a water surface elevation of 525 and 515 feet respectively, as compared with the 2011 OHWM elevation of 527 feet. Therefore, the 2011 delineation identified a larger reservoir area, wetted river channel and wetlands.

The majority of this acreage occurs within the San Clemente Reservoir. This acreage does not include the fringe wetlands between the Carmel River and the access road, as the improvements to the road are not expected to affect these wetlands. These wetlands are generally in good condition.

4.6.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

The significance criteria for evaluating wetlands impacts resulting from the Proponent's Proposed Project are based on the following considerations. In accordance with CEQA Mandatory Findings of Significance, and agency and professional standards, an adverse impact on wetlands would be significant and would require mitigation if project construction or operations activities would:

- Fill or alter a wetland or vernal pool, resulting in a long-term change in its hydrology or soils, or the composition of vegetation of a unique, rare, or special concern wetland community;
- Substantially affect a rare or endangered species of animal or plant or the habitat of the species;
- Remove or significantly prune overstory tree species in a manner that would affect wetland functions related to bank stabilization, stream temperature, or insect habitat;
- Cause short- or long-term violations of federal or state water quality standards for streams that lead to wetlands, measured as in-stream elevated turbidity readings or decreased DO levels; or
- Cause substantial flooding, erosion or siltation

Impact Assessment Methodology

This assessment evaluates and identifies impacts over a range of temporal scales. The three temporal impact categories are:

- Short-term impacts that occur within the construction period, but do last throughout the period;
- Short-term impacts that occur within the construction period (concurrent with the number of construction seasons, which vary from one alternative to another);
- Long-term impacts that persist beyond the construction period.

Existing resource information and the results of new field studies in 2005 were used to develop the description of the environmental setting. The resources described in that section were evaluated in conjunction with the activities associated with the Proponent's Proposed Project and the alternatives to determine potential impacts and develop mitigation measures.

The following impact issues have been defined for Wetland resources:

- WET-1: Permanent Loss of Wetlands and Other Waters of the U.S. (permanent loss of jurisdictional waters of the U.S.)
- WET-2: Short-term Disturbance of Wetlands and Other Waters of the U.S. (short-term filling of fringe wetlands)
- WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S. (indirect adverse impacts to vegetation, including increased erosion and sedimentation).

The acreages presented in the following discussion are estimates derived from preliminary engineering drawings (Table 4.6-1).

Table 4.6-1: Area of Waters of the U.S. and Potential Jurisdictional Wetlands Impacted by Proponent's Proposed Project and Alternatives

	Other Waters of the U.S. (acres)	Potential Jurisdictional Wetlands (acres)	Other Waters of the U.S. (acres)	Potential Jurisdictional Wetlands (acres)
	Permanent		Short-term	
Proponent's Proposed Project	0.02	--	7.3	0.43
Alternative 1	0.12	--	7.9	0.74
Alternative 2	0.12	--	11.5	0.92
Alternative 3	~~10.0~~ **<u>25.59</u>**	**<u>2.95</u>**	~~0.5~~ **<u>0.07</u>**	~~0.28~~ **<u>0</u>**
Alternative 4	No direct impacts			

<u>The impact numbers presented for Alternative 3 in Table 4.6-1 have been updated using the 2011 delineation (see Appendix AA). The increase observed in the impacted acreage is because in 2005 not all potentially impacted wetlands and Other Waters of the U.S. were delineated for Alternative 3. The 2011 delineation used the methods described above to identify wetlands resources and all</u>

potential impacts in the reservoir area, San Clemente Creek, Carmel River, Cachagua Road, Tassajara Road, the Jeep Trail, and the new proposed Reservoir Access Road.

4.6.3 IMPACTS AND MITIGATION

Proponent's Proposed Project (Dam Thickening)

Locations with potential jurisdictional wetlands in the Project Area for the Proponent's Proposed Project include the concrete ford on an existing access road, the OCDB, the existing access road along the east side of the Carmel River (which requires improvements), the plunge pool at SCD, and the reservoir flood plain upstream of the SCD. The majority of this acreage occurs within the San Clemente Reservoir.

Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S.

Permanent loss of jurisdictional waters of the U.S.
Determination: ***less than significant with mitigation, long-term***

IMPACT

Construction activities associated with the Proponent's Proposed Project would result in the thickening of the Dam by nine feet at the plunge pool and the permanent loss of a small area of jurisdictional Other Waters of the U.S. (Table 4.6-1). Improvements to the OCRD Bridge and concrete ford would result in no permanent loss of wetlands or Other Waters of the U.S.

MITIGATION

See Appendix U for a Botanical Management Plan which includes provisions for restoration, mitigation, and monitoring for wetlands and Other Waters affected by the project. Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 3:1 ratio, grading as necessary and placing cuttings or seedlings in appropriate habitat under the supervision of a qualified botanist. Seedlings would be from Carmel Valley area populations. Replacement plantings would be monitored for at least five years. Seedlings would be replanted as necessary to ensure long-term survival. Restoration sites would be monitored for five years. The USACE, and CDFG would have regulatory authority over the measures in the Botanical Management Plan, but performance criteria will include cover criteria for native vegetation (ranging from 50 to 75 percent) and survival criteria for woody vegetation that is planted. Additional mitigations details are provided in the Botanical Resources Management Plan (Appendix U).

For impacts to Other Waters, mitigation may consist of stream channel improvements either along the Carmel River upstream from the Project Area or along other streams in the watershed. The project proponent may either conduct the work or provide funding to other property managers for projects that restore natural channel conditions.

Restoration may be conducted at sites in lands along the Carmel River owned by the Project Proponent or on appropriate streams elsewhere in the watershed. Restoration sites would be coordinated with the USACE and CDFG and would be conserved in perpetuity.

Issue WET-2: Short-term Disturbance of Wetlands and Other Waters of the U.S.

Short-term filling of fringe wetlands
*Determination**: Less than significant with mitigation, short-term***

IMPACT

Construction activities associated with the Proponent's Proposed Project would result in the temporary filling or dewatering of a small area of fringe palustrine emergent wetlands and several acres of Other Waters of the U.S. (Table 4.6-1).

Construction activities associated with the Proponent's Proposed Project would have no effect on wetlands above the Dam and minimal temporal effect on Other Waters of the U.S. due to draining the reservoir pool and temporary placement of a cofferdam and diversion pipeline during Phase II. Below the Dam, temporary fill would be placed in the plunge pool and at the upper end of the plunge pool access road. Two temporary cofferdams would also be placed in the Carmel River to prevent back flow and create a stilling basin between the cofferdams.

Improvements to the Old Carmel River Dam Bridge and concrete ford should result in no permanent loss of wetlands or Other Waters of the U.S. The Old Carmel River Dam Bridge can be reached from the south end without affecting fringe wetlands. Temporary caissons would constitute a minor temporary fill, and the new upstream piers would occupy approximately the same footprint as the existing piers. The concrete ford for the "high road" would probably require minor fill on top of existing soft fill on the south side of the crossing to provide a firm base.

MITIGATION

Mitigation for Impact Issue WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S.*)* would be implemented. In addition, cofferdams would be constructed of clean river-run gravel. They would be installed no earlier than May and removed in October. (If existing flows are less than the 50 cfs bypass capacity, the cofferdams could be installed as early as April 15th or removed as late as November 30th).

The plunge pool staging area would be filled with gravel (spawning size) and topped with a visqueen liner and a layer of crushed rock and/or sand to create a working surface. When construction is complete, the surface layer and liner would be removed off-site and the gravels used to augment spawning habitat in the plunge pool tailwater and downstream.

The plunge pool access road would be upgraded to a one lane, two-way road with pullouts to minimize road widening and loss of wetlands and riparian vegetation. Any willows, alders, cottonwoods or sycamores removed by temporary filling of the plunge pool and access road would be replaced at a 3:1 ratio by placing cuttings or seedlings in appropriate habitat under the supervision of a qualified botanist. Seedlings would be from Carmel Valley area populations. Replacement plantings would be monitored for at least five years. Seedlings would be replanted as necessary to ensure long-term survival (see mitigation for Impact Issue VE-3 (Loss of other Native Vegetation) in Section 4.5). Additional mitigation details are located in the Botanical Resources Management Plan (Appendix U)

Issue WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S.

Indirect adverse impacts to vegetation, including increased erosion and sedimentation
*Determination****: less than significant with mitigation, short-term***

IMPACT
Construction activities associated with the Proponent's Proposed Project could have indirect impacts on wetlands and Other Waters of the U.S. if these activities result in accelerated erosion and sedimentation. Potential erosion and sedimentation impacts are described in detail in Section 4.5, (Impact Issue VE-4, Indirect Effects on Native Vegetation) Proponent's Proposed Project.

MITIGATION
Implementing mitigation measures for Impact Issue VE-4 would reduce Impact Issue WET-3 to less than significant. BMPs for erosion control are located in the Stormwater Pollutions and Prevention Plan and the Botanical Resources Management Plan (Appendices K and U, respectively).

Alternative 1 (Dam Notching)

Locations with potential jurisdictional wetlands in the Project Area for Alternative 1 include the concrete ford on an existing access road, the OCDB, the existing access road along the east side of the Carmel River (which requires improvements), the plunge pool at SCD, the reservoir flood plain upstream of SCD, and the sediment disposal site. ENTRIX has made a preliminary determination that approximately 0.7 acre of wetlands are present at these sites with another 8.0 acres meeting the definition of "Other Waters of the U.S." under Section 404 of the CWA. The majority of this acreage occurs within the San Clemente Reservoir.

Impact Issue WET-3 (Indirect Impacts to Wetlands and Other Waters of the U.S.) would be the same as described for the Proponent's Proposed Project.

Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S.

Permanent loss of Other Waters of the U.S.

Determination: ***less than significant with mitigation, long-term***

IMPACT

Potential impacts to wetland resources from Alternative 1 are similar to those described for the Proponent's Proposed Project WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S*.),* except that construction activities associated with this alternative would result in the permanent loss of Other Waters of the U.S. due to fill at the sediment disposal site (Table 4.6-1).

MITIGATION

Mitigation measures for Impact Issue WET-1 would be the same as described for the Proponent's Proposed Project. The restoration or conservation acreages would be adjusted to suit the affected acreage.

Issue WET-2: Short-term Disturbance of Wetlands and Other Waters of the U.S.

Short-term loss of fringe wetlands and Other Waters of the U.S.
Determination: ***Less than significant with mitigation, short-term***

IMPACT

Potential impacts to wetland resources from Alternative 1 are similar to those for the Proponent's Proposed Project WET-2 (Short-term Disturbance of Wetlands and Other Waters of the U.S.), except that construction activities associated with this alternative would result in the temporary loss of fringe wetlands and Other Waters of the U.S. (Table 4.6-1).

Construction activities associated with Alternative 1 would affect wetlands and Other Waters of the U.S. above the Dam due to sediment removal. Below the Dam, temporary fill would be placed in the plunge pool and at the upper end of the plunge pool access road, affecting limited areas of Other Waters of the U.S. and fringe wetlands. A temporary cofferdam would also be placed in the Carmel River to divert the flow into a pipeline. A similar cofferdam may be placed in San Clemente Creek.

MITIGATION

Mitigation Measures WET-1 and WET-2 would be implemented as described for the Proponent's Proposed Project. The restoration or conservation acreages would be adjusted to suit the affected acreage.

Issue WET-3: Indirect Impacts to Wetlands and *Other* Waters of the U.S.

Indirect adverse impacts to vegetation, including increased erosion and sedimentation
Determination: ***less than significant with mitigation, short-term***

IMPACT

Construction activities associated with Alternative 1 could have indirect impacts on wetlands and Other Waters of the U.S. if these activities result in accelerated erosion and sedimentation. Potential erosion and sedimentation impacts are described in detail in Section 4.5, (Issue VE-4, Indirect Effects on Native Vegetation) Proponent's Proposed Project.

MITIGATION

Implementing mitigation measures applying to Impact Issue VE-4 would reduce Impact WET-3 to less than significant.

Alternative 2 (Dam Removal)

Within the Project Area of Alternative 2, potential jurisdictional wetlands, under current conditions, are found adjacent to San Clemente Reservoir and the base of the SCD (including the plunge pool), and the Carmel River as shown on Figure 4.6-1. Potential Other Waters of the U.S. include these streams, an unnamed tributary to the Carmel River that forms part of the sediment disposal site, and the reservoir pool upstream of the SCD. The majority of this acreage occurs within the San Clemente Reservoir.

Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S.

Permanent loss of Other Waters of the U.S.
Determination: ***less than significant with mitigation, long-term***

IMPACT

Potential impacts to wetland resources from Alternative 2 are similar to those described for the Proponent's Proposed Project WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S.), except that construction activities associated with this alternative would result in the permanent loss of Other Waters of the U.S. due to fill at the sediment disposal site (Table 4.6-1).

MITIGATION

Mitigation measures applying to Impact Issue for the Proponent's Proposed Project would be implemented. The restoration or conservation acreages would be adjusted to suit the affected acreage.

Issue WET-2: Short-term Disturbance of Wetlands and Other Waters of the U.S.

Short-term filling of fringe wetlands
Determination: ***Less than significant with mitigation, short-term***

IMPACT

Potential impacts to wetland resources from Alternative 2 are similar to those described for Alternative 1, but include short-term impacts to additional wetlands and Other Waters of the U.S. upstream of the disturbance limits of Alternative 1 (Table 4.6-1).

MITIGATION

Mitigation measures applying to Impact Issues WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S.) and WET-2 under the Proponent's Proposed Project would be implemented. The restoration or conservation acreages would be adjusted to suit the affected acreage.

Issue WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S.

Indirect adverse impacts to vegetation, including increased erosion and sedimentation
*Determination: **less than significant with mitigation, short-term***

IMPACT

Potential impacts to wetland resources from Alternative 2 are similar to those described for the Proponent's Proposed Project, but include impacts to Other Waters in the unnamed tributary that is part of the sediment disposal site.

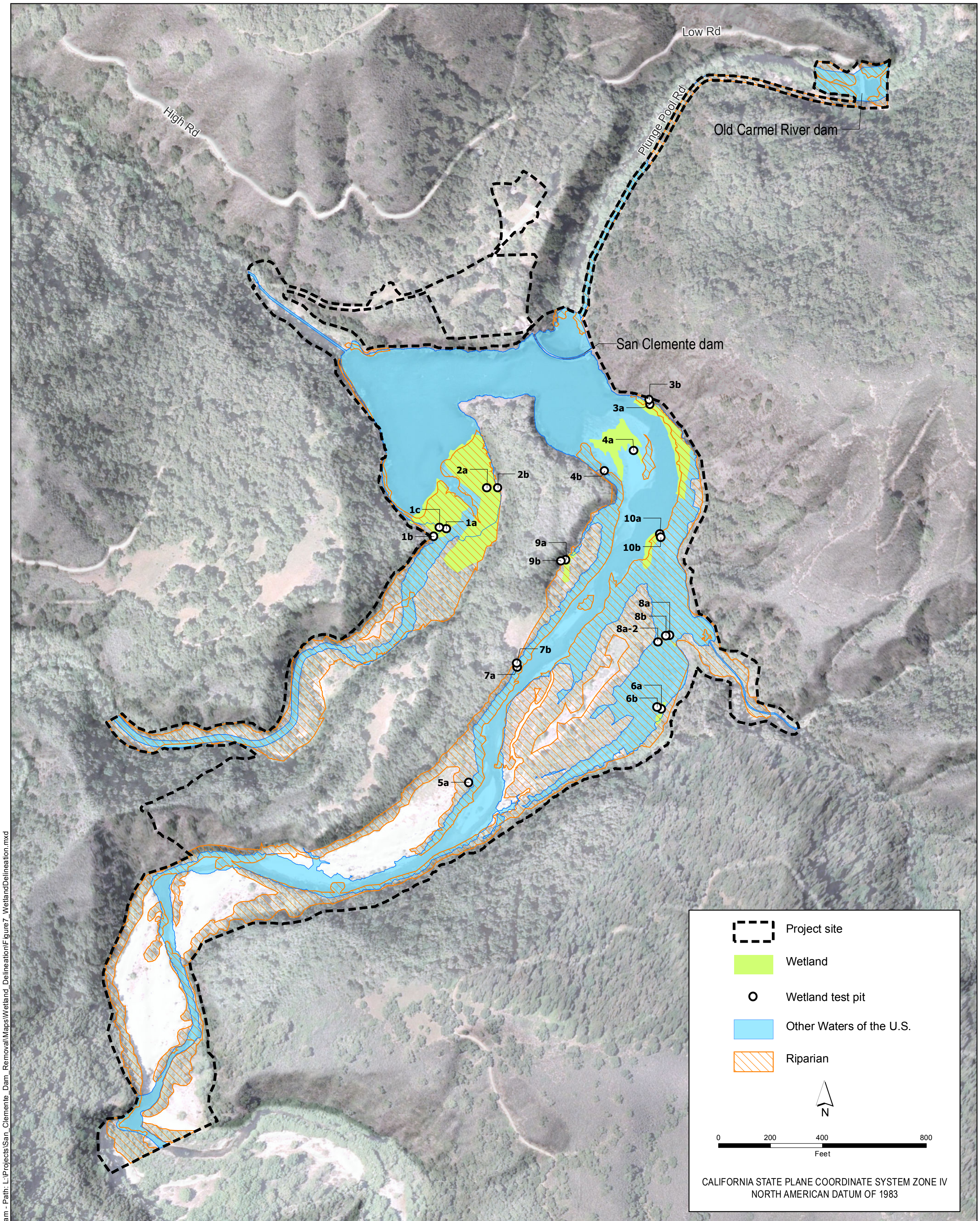
MITIGATION

Implementing mitigation measures applying to Impact Issue VE-4 would reduce Impact WET-3 to less than significant.

Alternative 3 (Carmel River Reroute and Dam Removal)

*Locations with potential jurisdictional wetlands and Other Waters of the U.S. in the Project Area for Alternative 3 ~~include the concrete ford on an existing access road, the OCDB, the existing access road along the east side of the Carmel River (which requires improvements), the reservoir flood plain upstream of SCD and access route and the conveyor route for the sediment disposal site (which form the primary access route for this alternative)~~ **Cachagua Creek where Bridge 529 improvements will be made, culverted waters along Cachagua Road and the Jeep Trail, the reservoir flood plain upstream of SCD, the Reservoir Access Road, the plunge pool and the Plunge Pool Road between SCD and OCRD, San Clemente Creek and the Carmel River upstream of the SCD reservoir, unnamed tributaries to the west of San Clemente Creek and east of Carmel River.***

Within the Alternative 3 Project Area, potential jurisdictional wetlands, under current conditions, are found adjacent to San Clemente Reservoir and the base of the SCD, the Carmel River, and San Clemente Creek, as shown on Figure 4.6-1**a**. Potential Other Waters of the U.S. **(including culverted waters)** include ~~these~~ streams **in the project area (Figure 4.6-1b)** and the reservoir pool upstream of the SCD. The majority of this acreage occurs within the San Clemente Reservoir **area**.



URS Oakland CA - C. Statham - Path: L:\Projects\San_Clemente_Dam_Removal\Maps\Wetland_Delineation\Figure7_WetlandDelineation.mxd

	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/15/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 4.6-1a** 2011 MAPPED WETLAND AND OTHER WATERS OF THE UNITED STATES WITHIN THE RESERVOIR AREA (ALTERNATIVE 3)

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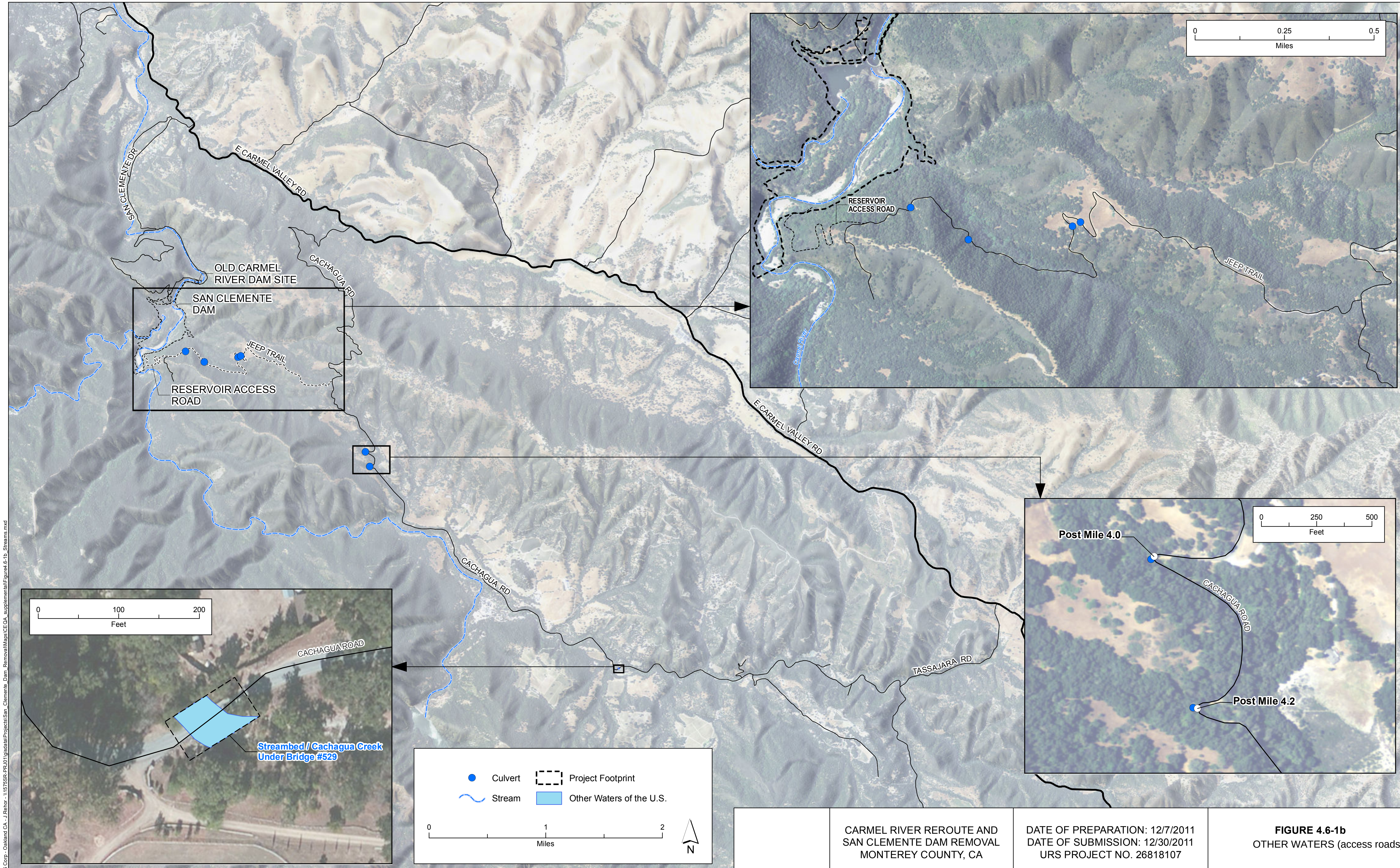

CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 12/7/2011 DATE OF SUBMISSION: 12/30/2011 URS PROJECT NO. 26818107	**FIGURE 4.6-1b** OTHER WATERS (access roads)

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Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S.

Permanent loss of jurisdictional waters of the U.S.
Determination: ***less than significant with mitigation, long-term***

IMPACT

Potential impacts to wetland and Other Waters of the U.S. from Alternative 3 include the permanent loss of approximately 3 acres of jurisdictional wetlands and approximately 26 acres of Other Waters of the U.S. Losses would be caused due to the elimination of San Clemente reservoir by the removal of SCD and permanent fill of the Carmel River just upstream of the SCD (see Table 4.6-1). Potential small permanent loss of Other Waters of the U.S. would occur at several locations along Cachagua Road and the Jeep Trail where culvert extensions will be necessary as part of road improvements.

~~IMPACT~~

~~Potential impacts to wetland resources from Alternative 3 are similar to those for the Proponent's Proposed Project WET-1, although construction activities associated with Alternative 3 would result in the permanent loss of several acres of Other Waters of the U.S. due to the installation of the diversion dam and the elimination of San Clemente reservoir by the removal of SCD (Table 4.6-1).~~

MITIGATION

~~Mitigation measures applying to Impact Issue WET-1 under the Proponent's Proposed Project would be implemented. The restoration or conservation acreages would be adjusted to suit the affected acreage.~~

The EIR/EIS described mitigation for WET-1 under Alternative 3 as being the same as the mitigation for the Proponent's Proposed Project which included mitigating for riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) at a 3:1 ratio. However, during development of this draft SEIR, CAW proposed the following mitigation:

Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 1:1 ratio. Specifically, the wetlands that would be mitigated at a 1:1 ratio constitute approximately 3 acres of jurisdictional lacustrine, littoral, unconsolidated bottom wetlands and riverine, unconsolidated bottom wetlands currently located in San Clemente Creek and Carmel River arms of the reservoir, just upstream of the dam. The USACE has agreed that 1:1 mitigation for these wetlands would still achieve the goal of no net loss for these 2.95 acres of jurisdictional wetlands (H. Costa, pers. comm.). Other agencies which have authority over wetlands habitats have been informed of this proposal and have informally indicated that their permits will likely reflect 1:1 mitigation for this 2.95 acres of wetlands. However, none of these agencies have made a final determination of the mitigation

required. The project will incorporate any and all required measures, which may exceed 1:1 mitigation. Regardless of mitigation measures proposed by these agencies, the project will achieve at least 1:1 mitigation for wetlands impacts.

During wetlands restoration, grading would be conducted as necessary and cuttings or seedlings would be placed in appropriate habitat under the supervision of a qualified botanist. Plant material would be from Carmel Valley area populations. Seedlings and plantings would be replaced as necessary to ensure long-term survival. Restoration sites would be monitored for five years. The USACE, and CDFG would have regulatory authority over the measures in the Botanical Management Plan, but performance criteria will include cover criteria for native vegetation (ranging from 50 to 75 percent) and survival criteria for woody vegetation that is planted. Additional mitigations details are provided in the Botanical Resources Management Plan (Appendix U).

Mitigation for the permanent loss of approximately 26 acres of Other Waters of the U.S. in the Project Area would consist of restoration of more than 3,000 feet of Carmel River channel and San Clemente Creek channel. Mitigation for impacts to Other Waters of the U.S., would also consist of stream channel improvements either along the Carmel River upstream from the Project Area or along other streams in the watershed. The project proponent may either conduct the work or provide funding to other property managers for projects that restore natural channel conditions (See Appendix U).

Implementation of these mitigation measures would reduce impacts of the permanent loss of wetlands and Other Waters of the U.S. to less than significant.

Issue WET-2: Short-term Disturbance of Wetlands and Other Waters of the U.S.

Short-term filling of fringe wetlands
Determination: ***Less than significant mitigation, short-term***

IMPACT

Potential impacts to wetland and Other Waters of the U.S. under Alternative 3 include temporary diversion of San Clemente Creek and the Carmel River during construction. A temporary cofferdam would be placed in the Carmel River to divert the flow into a pipeline. A similar cofferdam may be placed in San Clemente Creek. Temporary disturbance of Other Waters of the U.S. would occur along the Reservoir Access Road, the Plunge Pool Road, Jeep Trail, Cachagua Road, and Cachagua creek during access road improvements.

~~Potential impacts to wetland resources from Alternative 3 are similar to those for the Proponent's Proposed Project WET-2, except that construction activities associated with Alternative 3 would result in the short-term loss of a smaller area of fringe wetlands and Other Waters of the U.S. (Table 4.6-1) A temporary cofferdam would be placed in~~

~~the Carmel River to divert the flow into a pipeline. A similar cofferdam may be placed in San Clemente Creek.~~

MITIGATION

Mitigation measures applying to Impact Issues WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S.) under Alternative 3 would be implemented. In addition, cofferdams would be constructed of clean river-run gravel. They would be installed no earlier than May and removed in October. However, if existing flows are less than the 50 cfs bypass capacity, the cofferdams could be installed as early as April 15th or removed as late as November 30th.

The plunge pool staging area would be filled with spawning size gravel and topped with a visqueen liner and a layer of crushed rock and/or sand to create a working surface. When construction is complete, the surface layer and liner would be removed off-site and the gravels used to augment spawning habitat in the plunge pool tailwater and downstream.

The plunge pool access road would be upgraded to a one lane, two-way road with pullouts to minimize road widening and loss of wetlands and riparian vegetation. The riparian forest and any willows, alders, cottonwoods or sycamores removed by temporary filling of the plunge pool and access road would be replaced at a 3:1 ratio by placing cuttings or seedlings in appropriate habitat under the supervision of a qualified botanist. Seedlings would be from Carmel Valley area populations. Replacement plantings would be monitored for at least five years. Seedlings would be replanted as necessary to ensure long-term survival (see mitigation for Impact Issue VE-3 in Section 4.5) and the Botanical Resources Management Plan (Appendix U). Restoration sites shall be monitored for at least five years.

~~Mitigation measures applying to Impact Issues WET-1 (Permanent Loss of Wetlands and other Waters of the U.S.) and WET-2 under the Proponent's Proposed Project would be implemented. The restoration or conservation acreages would be adjusted to suit the affected acreage.~~

Issue WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S.

Indirect adverse impacts to vegetation, including increased erosion and sedimentation
Determination: ***less than significant with mitigation, short-term***

IMPACT

Potential impacts to wetland resources from Alternative 3 are similar to those for the Proponent's Proposed Project.

MITIGATION

Implementing mitigation measures applying to Impact Issue VE-4 would reduce Impact Issue WET-3 to less than significant.

Alternative 4 (No Project)

The area of potential effect for Alternative 4, the No Project Alternative, encompasses wetlands and Waters of the U.S. downstream of the Dam that may be affected when the reservoir has filled with sediment and uncontrolled sediment spills over the Dam spillway occur. No improvements would be made to the roads and the Dam would remain in its current condition.

Wetlands Issues WET-1 (Permanent Loss of Wetlands and Other Waters of the U.S.), Issue WET-2: (Short-term Disturbance of Wetlands and Other Waters of the U.S) and WET-3 (Indirect Impacts to Wetlands and Other Waters of the U.S.) do not apply to this alternative because there would be no construction activities.

4.7 AIR QUALITY

This section describes the potential impacts of the San Clemente Seismic Safety Project and other action alternatives on the Air Quality in the Project Area. Air Quality includes ambient local and regional air quality influenced by the project. Additional information is provided in ~~this~~ **the** Final EIR/EIS which clarifies and amplifies the information included in the Draft EIR/EIS. This environmental setting section was prepared using information developed from the documents provided by the RDEIR (Denise Duffy & Associates 2000). Air Quality analysis for the project was conducted using criteria, methodologies, and tools developed by the Monterey Bay Unified Air Pollution Control District (MBUAPCD), comprised of Santa Cruz, San Benito and Monterey Counties, and the United States EPA.[3] Calculation templates are included in Appendix X. Appendix Y presents a General Conformity Finding for the Proponent's Proposed Project under the General Conformity Rule adopted to comply with the federal Clean Air Act (CAA) Section 176(c).

Revisions to the Air Quality section were made to analyze impacts to air quality that are specifically associated with improvement of access routes, increase in the estimated amount of excavated sediment, operation of a screening plant, and the import of boulder and other rock materials for channel reconstruction.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.7.1 ENVIRONMENTAL SETTING

Information in this section is derived from the ~~2004~~ **2008** Air Quality Management Plan (AQMP) for the Monterey Bay Region.

Climate and Meteorology

Carmel Valley is contained within the North Central Coast Air Basin (NCCAB) and thus is subject to the climate and meteorological conditions of the basin. The semi-permanent high-pressure cell in the eastern Pacific is the basic controlling factor in the climate of the air basin. In the summer, the high-pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High, forming a stable temperature inversion of hot air over a cool coastal layer. In the fall the winds become weak and the marine layer grows shallow, subsiding completely at times. During the winter the Pacific high moves to the south and has less

[3] An air quality analysis was conducted by Don Ballanti, certified consulting meteorologist, for the RDEIR on the Seismic Retrofit of SCD (DWR 2000). This analysis makes use of Ballanti's work where possible.

influence on the air basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys. Northwest winds are nevertheless still dominant in the winter, but easterly flow is more frequent. Inversion conditions, which tend to reduce the mixing and dilution of pollutants in the valley, are present throughout a significant part of the year.

Ambient Air Quality Standards

The 1970 federal CAA, amended in 1977 and 1990, identifies six criteria, or common, pollutants regulated by EPA on the basis of health and environmental effects:

- Reactive organic compounds/gases (ROC/ROG) as ozone (O_3) precursors[4]
- Carbon monoxide (CO)
- Nitrogen oxides (NO and NO_2 as NO_X) as ozone (O_3) precursors
- Sulfur oxides (SO_2 and SO_3 as SO_X)
- Particulate matter, 10 microns or less and 2.5 microns or less (PM_{10} and $PM_{2.5}$)
- Lead (Pb)[5]

The regulated criteria pollutants and/or their derivatives (e.g., O_3) can cause significant negative health and environmental effects when ambient concentrations are high enough. The EPA and the California Air Resources Board (CARB) have established ambient air quality standards for criteria pollutants. Ambient air quality standards represent maximum allowable safe concentrations to avoid specific adverse health effects associated with each pollutant.

Federal and State of California ambient air quality standards are summarized in Table 4.7-1. These standards differ with regard to certain contaminants because they were developed separately with independent purposes and methods. Despite their differences, both sets of standards were determined with the intent of avoiding public health related effects.

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[4] ROC and ROG are alternate names for VOC and NMHC (i.e., nonmethane nonethane photochemically reactive hydrocarbons, C3 & up)

[5] Lead is not applicable to this analysis since the project is not source of lead emissions

Table 4.7-1: Current Federal and State Ambient Air Quality Standards[6]

Species Name	Averaging Time	California Standards		Federal Standards	
		~~ppmv~~	μ/m3	~~ppmv~~	μ/m3
Ozone (O_3)	1-hour	0.09	~~177~~ **180**	–	–
	8-hour	0.07	137	~~0.08~~ **0.075**	~~157~~ **147**
Carbon Monoxide (CO)	1-hour	20	22,890	35	40,057
	8-hour	9	10,300	9	10,300
	Lake Tahoe (8-hr)	6	6,867	–	–
Nitrogen Dioxide (NO_2)	1-hour	0.18	~~338~~ **339**	**0.10**	**188**
	Annual	0.03	~~56~~ **57**	0.053	100
Sulfur Dioxide (SO_2)	1-hour	0.25	~~654~~ **655**	**0.075**	**196**
	3-hour	–	–	0.50	~~1,308~~ **1,300**
	24-hour	0.04	105	0.14	~~366~~ **-**
	Annual	–	–	0.03	~~78~~
Particulates (as PM_{10})	24-hour	–	50	–	150
	Annual	–	20	–	–
Particulates (as $PM_{2.5}$)	24-hour	–	–	–	35
	Annual	–	12	–	15
Lead (Pb)	30-day	–	1.5	–	–
	90-day	–	–	–	1.5
Sulfates (as SO_4)	24-hour	–	25	–	–
Hydrogen Sulfide (H_2S)	1-hour	0.03	42	–	–
Vinyl Chloride	24-hour	0.01	26	–	–

Source: CARB 2012a
ppm = parts per million
μ/m^3 = micrograms per cubic meter

On July 18, 1997, EPA revised the ozone and particulate matter standards based on a comprehensive review of new scientific evidence. The EPA replaced the 1-hour ozone standard with an 8-hour ozone standard and supplemented the particulate matter standard with 24-hour and annual standards for fine particulate matter. Implementation of the new ozone standard was delayed until recently due to litigation. The federal one-hour standard for ozone was revoked on June 15, 2005, and replaced by the federal eight-hour ozone standard. **The EPA revised the 8-hour ozone standard on March 12, 2008.** The new federal and state standards for particulate matter 2.5 microns in diameter ($PM_{2.5}$) have been adopted as well. Ambient air quality is currently being monitored for these new standards at the Salinas and Santa Cruz air monitoring stations. These standards are in addition to existing standards for particulate matter 10 microns or less (PM_{10}).

2030 Baseline Conditions

The project site is within the NCCAB. The MBUAPCD operates a network of monitoring sites throughout the NCCAB. The four monitoring sites are located in Carmel Valley, King City, Monterey, and Salinas. An additional Salinas site has not been used since 1999. The monitoring site in Carmel Valley at Ford Road is the one in closest proximity to the project site, and monitors for ozone and PM_{10}.

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[6] CARB (2007) http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

One exceedence of the state ~~ozone~~ standard for PM_{10} was recorded at the Carmel Valley monitoring site in 1999, and two exceedences were recorded in 2001 and 2003 at the Salinas monitoring site. The 2004 AQMP states that in 2000 to 2003 the state ozone standard was exceeded on 24 station days or 17 air basin days for a total of 36 hours. The MBUAPCD meets criteria for nonattainment-transitional area. Tables 4.7-2 through 4.7-6 summarize relevant background data for ozone, PM_{10}, CO, and NO_2 [7]

Table 4.7-2: Ozone Trends Summary: Carmel Valley-Ford Road

Year	Days Exceeding Standard			Highest Concentration for O_3 (ppm)	
	1-hour State	1-hour Federal	8-hour Federal	1-hour average	8-hour average
2010	**0**	**0**	**0**	**0.077**	**0.070**
2009	**0**	**0**	**1**	**0.085**	**0.082**
2008	**0**	**0**	**0**	**0.074**	**0.069**
2007	**0**	**0**	**0**	**0.075**	**0.070**
2006	**0**	**0**	**0**	**0.085**	**0.072**
2005	**0**	**0**	**0**	**0.073**	**0.065**
2004	0	0	0	0.093	0.079
2003	0	0	0	0.082	0.074
2002	0	0	0	0.080	0.073
2001	0	0	0	0.085	0.079
2000	0	0	0	0.088	0.079
1999	0	0	0	0.080	0.067
1998	0	0	0	0.082	0.069
1997	0	0	0	0.080	0.072
1996	0	0	0	0.089	0.080
1995	0	0	0	0.093	0.077
1994	0	0	0	0.093	0.079

Notes: All concentrations expressed as parts per million. An exceedence is not necessarily a violation.
Source of data: CARB ~~2005~~ **2012a**

[7] For all tables: When State and Federal concentrations were provided, state numbers were used. In most cases, the state and federal numbers provided were the same, in some cases they differed slightly.

Table 4.7-3: Ozone Trends Summary: Salinas #3

Year	Days Exceeding Standard			Highest Concentration for O_3 (ppm)	
	1-hour State	1-hour Federal	8-hour Federal	1-hour average	8-hour average
2010	**0**	**0**	**0**	**0.073**	**0.073**
2009	**0**	**0**	**0**	**0.077**	**0.077**
2008	**0**	**0**	**0**	**0.078**	**0.078**
2007	**0**	**0**	**0**	**0.067**	**0.058**
2006	**0**	**0**	**0**	**0.066**	**0.057**
2005	**0**	**0**	**0**	**0.069**	**0.057**
2004	0	0	0	0.077	0.070
2003	0	0	0	0.073	0.063
2002	0	0	0	0.075	0.062
2001	0	0	0	0.076	0.069
2000	0	0	0	0.075	0.065

Notes: All concentrations expressed as parts per million. An exceedence is not necessarily a violation
Source of data: CARB **2012b**

Table 4.7-4: Background Ambient PM_{10}: Carmel Valley & Salinas

Year	Salinas #3 Annual Mean for PM_{10} (μ/m^3)	Carmel-Ford Annual Mean for PM_{10} (μ/m^3)	Salinas #3 Highest 24-hour Concentration for PM_{10} (μ/m^3)	Carmel-Ford Highest 24-hour Concentration for PM_{10} (μ/m^3)
2010	**14.8**		**39**	
2009	**14.8**	**11.0**	**41**	**23**
2008	**19.9**	**13.6**	**52**	**29**
2007	**17.5**	**11.6**	**39**	**28**
2006	**17.3**	**11.7**	**51**	**29**
2005	**15.0**	**11.3**	**37**	**24**
2004			41	33
2003		13	67	35
2002	18.5	14.8	46	35
2001			51	31
2000			37	28
1999				57
1998				29
1997		14.3		31
1996				24
1995		13.4		28
1994		15.3		31
Max	19	15	67	57

Notes: Concentrations corrected to 20 C (68 F)
Source of data: CARB **2012b**

Table 4.7-5: Background Ambient CO: Salinas

Year	Highest 8-hour Concentration for CO (ppm)	Highest 8-hour Concentration for CO (μ/m^3)
2010	**0.76**	**884**
2009	**0.90**	**1047**
2008	**0.89**	**1036**
2007	**1.15**	**1338**
2006	**1.04**	**1210**
2005	**0.86**	**1001**
2004	1.21	1408
2003	1.09	1269
2002	1.38	1606
2001	1.64	1909
2000	1.40	1630
1999	1.79	2084
1998	2.18	2538
1997	1.79	2084
1996	2.56	2980
1995	2.13	2479
1994	2.06	2398
Max		2980

Notes: 1994 to 1999 Salinas Natividad Road #2, 1999 to 2004 Salinas #3. Concentrations corrected to 20 C (68 F)
Sources of data: CARB ~~2005~~ **2012a**

Table 4.7-6: Background Ambient NO_2: Salinas #3 & Salinas Natividad Road #2

Year	Salinas #3	Salinas Natividad Road #2	Salinas #3	Salinas Natividad Road #2
	Annual Mean for NO_2 (ppm)	Annual Mean for NO_2 (μ/m3)	Highest Concentration for NO_2 (ppm)	Highest Concentration for NO_2 (μ/m3)
2010	**0.006**	**-**	**0.036**	**-**
2009	**0.006**	**-**	**0.040**	**-**
2008	**0.007**	**-**	**0.049**	**-**
2007	**0.007**	**-**	**0.050**	**-**
2006	**0.007**	**-**	**0.067**	**-**
2005	**0.008**	**-**	**0.052**	**-**
2004	0.007	13	0.139	266
2003	0.006	11	0.053	101
2002	0.007	13	0.049	94
2001	0.007	13	0.041	78
2000	0.007	13	0.071	136
1999	0.010	19	0.054	103
1998	0.010	19	0.085	163
1997	0.010	19	0.056	107
1996	0.011	21	0.060	115
1995	0.011	21	0.054	103
1994	0.012	23	0.067	128
Max		23		266

Notes: 1994 to -1999 Salinas Natividad Road #2, 1999 to 2004 Salinas #3. Concentrations corrected to 20 C (68 F)
Sources of data: CARB ~~2005~~ **2012a**

Table 4.7-7 shows aggregated historic and projected exceedences of the California 1-hour ozone standard (0.09 ppm) in the NCCAB for 1987 through 2030, respectively[8]. Projections for 2004 to 2030 are based on nonlinear trendline analysis of historic data from 1987 to 2003.[9] The trendline analysis shows an overall quantitative improvement in ambient air quality in the NCCAB from 1987 to 2003, with the expectation that implementation of district-wide NO_X and ROC emission control measures will continue to reduce ambient ozone levels in the future.

Air Quality Planning

The MBUAPCD shares responsibility with CARB and the EPA for ensuring that the State and National Ambient Air Quality Standards (NAAQS) are met within Monterey County. State law assigns local air districts the primary responsibility for control of air pollution from stationary sources while the State presides over control of mobile sources. The MBUAPCD is responsible for developing regulations that govern emissions of air pollution, permitting and inspecting stationary sources, and monitoring air quality and air quality planning activities.

Federally mandated air quality planning is regulated by the CAA Amendments of 1990 (CAAA). Historically, the NCCAB was classified as a moderate nonattainment area for ozone and either unclassified or attainment for all other pollutants. In 1994 the MBUAPCD submitted a redesignation request (requesting redesignation from nonattainment to attainment). As part of the redesignation process, the MBUAPCD, the Association of Monterey Bay Area Governments (AMBAG) and the San Benito County Council of Governments adopted a Maintenance Plan for the region.

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8 Rounded to nearest whole station day.
9 Last available year of published reduced data is 2003.

Table 4.7-7: Exceedences of State Ozone Standard in NCCAB 1987 — 2030[10]

Calendar Year	Data Type	Basin-Wide Station Days	
		Lower Estimate	Upper Estimate
1987	Historic	42	42
1988	Historic	16	16
1989	Historic	12	12
1990	Historic	13	13
1991	Historic	14	14
1992	Historic	10	10
1993	Historic	17	17
1994	Historic	6	6
1995	Historic	8	8
1996	Historic	19	19
1997	Historic	1	1
1998	Historic	12	12
1999	Historic	3	3
2000	Historic	4	4
2001	Historic	3	3
2002	Historic	11	11
2003	Historic	3	3
2004	Projected	3	4
2005	Projected	3	4
2006	Projected	2	4
2007	Projected	2	4
2008	Projected	2	3
2009	Projected	2	3
2010-19	Projected	1	3
2020-30	Projected	0	2

With revocation of the federal one-hour ozone standard in 2005, the NCCAB is now designated either an attainment or unclassified area for all federal air quality standards[11] as applicable. The NCCAB is designated a nonattainment transitional area for the State one-hour ozone standard, a nonattainment area for the State PM_{10} standard, and an attainment area for the State CO standard in Monterey County.

The current attainment status of the NCCAB is listed in Table 4.7-8. The 1991 AQMP for the Monterey Bay Area was the first plan prepared in response to the California Clean Air Act of 1988 (CCAA) that established specific planning requirements to meet the ozone standard. The Act requires that the AQMP be updated every three years. The ~~2004~~ **2008** AQMP is the ~~fourth~~ **latest** update to the 1991 AQMP with the first ~~three~~ **four** completed in 1994, 1997**,** ~~and~~ 2000, **and 2004** respectively. The AQMP addresses only attainment of the State ozone standard. Attainment of the PM_{10} standard is addressed in a separate report**, the *2005 Particulate Matter Plan***. The CCAA also requires the MBUAPCD to prepare and submit a report to CARB summarizing progress in meeting the schedules for developing, adopting or implementing the air pollution control

10 MBUAPCD, 2004 AQMP, September 2004, Table 2-2.
11 Under the Federal one-hour standard, the NCCAB was classified as a maintenance area for ozone.

measures contained in the MBUAPCD's plans. The report is due by December 31 of each year and is included in the AQMP.

Table 4.7-8: NCCAB Attainment Status [12]

Criteria Pollutant	Federal Status	State Status
Ozone –1 hour	~~Not Applicable~~ **Maintenance***	Nonattainment ~~Transitional~~**
Ozone – 8 hour	Attainment	**Nonattainment** ~~Not Applicable~~
Carbon Monoxide	Unclassified/Attainment	Monterey – Attainment San Benito – Unclassified Santa Cruz – Unclassified
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified	Attainment
Inhalable PM_{10}	**Unclassified/Attainment** ~~Attainment~~	Nonattainment
Inhalable $PM_{2.5}$	**Unclassifiable/Attainment** ~~Unclassified~~	~~Not Applicable~~ **Attainment**

*** The Federal 1 hour standard was revoked by the EPA in the NCCAB on June 15, 2005.**
**** In November 2006, CARB issued new designations to reflect the addition of an 8-hour average to the State AAQS for ozone. The NCCAB was redesignated from nonattainment-transitional to nonattainment.**

Senate Bill No. 656 is a new planning requirement that calls for a plan and strategy for reducing $PM_{2.5}$ and PM_{10}. This bill requires CARB to identify, develop and adopt a list of control measures to reduce the emissions of $PM_{2.5}$ and PM_{10} from new and existing stationary, mobile, and area sources. The MBUAPCD has developed particulate matter control measures and submitted a plan to CARB that includes a list of measures to reduce particulate matter. Under the plan, the District is required to continue to assess $PM_{2.5}$ and PM_{10} emissions and their impacts. The PM plan was officially adopted by the District Board in December 2005.

The NCCAB is in attainment with the federal eight-hour ozone standard, whereas the air basin was a nonattainment area under the former one-hour ozone standard. The NCCAB is under the authority of the MBUAPCD which was required to write a Federal Maintenance Plan (FMP) in 1994 for ozone. This document still applies today. The MBUAPCD is not required to update the plan but is required to continue monitoring ozone emissions.

General Conformity

The federal CAA Section 176(c) prohibits federal entities from taking actions (e.g., funding, licensing, permitting, or approving projects) in NAAQS nonattainment or maintenance areas which do not conform to the State Implementation Plan (SIP) for the attainment and maintenance of NAAQS pursuant to Section 110(a) of the CAA. The purpose of conformity is to:

- Ensure federal activities do not interfere with the budgets in the SIP;
- Ensure actions do not cause or contribute to new violations;

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[12] MBUAPCD, CEQA Air Quality Guidelines, October 1995 (last revised ~~June 2004~~ **February 2008**), Table 6-1

- Ensure attainment and maintenance of the NAAQS.

  Conformity to an implementation plan means:

- Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards.

- That such activities would not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. The determination of conformity should be based on the most recent emissions, and such emissions should be determined from the most recent population, employment, travel, and congestion estimates as determined by the metropolitan planning organization or any other agency authorized to make such estimates.

Notwithstanding contemporaneous attainment status, the Proponent's Proposed Project would nevertheless comply with the conformity requirements as stated in Section 176(c) of the CAA. No entity may take action in this area that does not conform to the SIP for the attainment and maintenance of the NAAQS in the NCCAB. An analysis of impacts of the project to the NCCAB must be conducted prior to any project construction within the region.

4.7.2 ENVIRONMENTAL RESOURCE IMPACTS STANDARDS AND METHODS

Standards of Significance

In accordance with state and county CEQA Guidelines, MBUAPCD CEQA Air Quality Guidelines, and agency and professional standards, a project impact would be significant if it would:

- Violate any air quality standard or contribute to an odor problem;

- Cause a cumulatively considerable net increase in criteria pollutant emissions in nonattainment areas;

- Contribute substantially to an existing or projected air quality violation by exposing sensitive receptors (e.g., schools, daycare centers, hospitals, nursing homes) to substantial pollutant concentrations; or

- Be inconsistent with the AQMP.

The MBUAPCD has established recommended thresholds of significance to be used to evaluate air quality impacts for construction and operation. For direct and indirect operational impacts, the thresholds and estimated emissions for the Proponent's Proposed Project and Alternatives 1 through 4 are shown in Table 4.7-9.

Table 4.7-9: Comparison of Estimated Emissions for Significance

Project Option	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Significance Threshold[13]	137	150	550	82	137	82
Proponent's Proposed Project	443	0	524	25	62	708
Alternative 1 (Dam Notching)	241	0	286	13	34	419
Alternative 2 (Dam Removal)	725	1	858	40	101	1257
Alternative 3 (Reroute and Removal)	**582** ~~491~~	0	**618** ~~572~~	**30** ~~27~~	**74** ~~68~~	**1220** ~~1092~~
Alternative 4 (No Project)	0	0	0	0	0	0

As shown in Table 4.7-9, various project alternatives exceed MBUAPCD significance thresholds for daily mass emissions NO_X, CO, and fugitive PM_{10}., Determination of significance in this assessment is based on screening dispersion modeling[14] results which estimate relative ambient air quality impacts with respect to state and federal air quality standards. Thus, if a modeled concentration, when added to the maximum recent historic background concentration, does not exceed an applicable standard, it could be argued that there is no significant impact to ambient air quality from project alternative activities. However, the MBUDAPCD stated in its comments on the draft EIR**/EIS** that because it is a precursor to the formation of ozone in an air basin that is non-attainment for the state ozone standard, NO_X is a criteria pollutant of regional (not only local) significance and the distance of the nearest residential receptors does not eliminate the impact of emissions of 443 lbs/day, when the threshold of significance is 137 lbs/day. To the extent that NO_X emissions contribute to a regional incremental increase of NO_X, there could be a potential significant environmental impact on ambient air quality from project alternative activities.

Temporary emissions from construction activities consistent with the proposed project schedule are estimated for vehicle traffic, off-road equipment, and fugitive road dust. Blasting emissions are not included since there are no EPA-approved emission factors for civil demolition blasting. Also, blasting emissions would be transient (under one hour) and relatively small compared to other construction emissions, and therefore can be safely ignored in assessing daily and annual ambient impacts at the screening level.

Some roads used for the project would be improved with several inches of Class II base rock and a double chip seal coat. Paving reduces generation of road dust generally equivalent to watering of unpaved roads. All roads in this screening assessment are treated as moderately watered (continuously moist) for screening assessment purposes[15]. Fugitive PM_{10} emissions are based on equipment activity for each alternative that includes silt management, as applicable.

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13 MBUAPCD, CEQA Air Quality Guidelines, October 1995 (last revised ~~June 2004~~ **February 2008**), Table 5-1
14 Refined dispersion modeling is beyond the scope of this study.
15 A dry paved road with a fine layer of carryover dust is assumed to be generally equivalent to a moderately watered unpaved road in an industrial or construction setting for the screening assessment.

Screening Impact Assessment Methodology

For diesel-powered on-road trucks, CARB EMFAC 2002 output was used to estimate criteria pollutants (i.e., emission factors) in diesel exhaust (NO_X, SO_X, CO, PM_{10}, and ROC) pursuant to the following parameters (SO_X emission factors calculated from empirical values):

- Monterey Bay area
- Average annual emissions (i.e., 4-season)
- Model year 2000 with 100,000 miles (consistent with typical vehicle age)
- Standard inspection & maintenance (I/M) program
- 37.1 percent engine efficiency (South Coast Air Quality Management District [SCAQMD] CEQA Air Quality Handbook, Table A9-3-A)
- 15 ppm S in diesel fuel (required in California after 1/1/06)
- ROC includes exhaust, hot soak, and running loss

For fugitive PM_{10F} from road dust, from EPA AP-42 Chapter 13.2.2 equation 1a is applicable for vehicles on unpaved roads at industrial sites (EPA 2006):

$E = [K\ (S/12)^a\ (W/3)^b]\ [1\text{-}C]\ (453.59)$ g/mile, where:

K = 1.5	Constant, Table 13.2.2-2
S = 8.5	Silt content, percent Table 13.2.2-1
a = 0.9	Exponent, Table 13.2.2-2
W = 2.5 – 35	Mean vehicle weight in tons, varies per class
b = 0.45	Exponent, Table 13.2.2-2
C = 0.75	Default control efficiency, Fig. 13.2.2-2, minimum moisture ratio = 2

Table 4.7-10 shows the resultant emission factors for diesel exhaust and fugitive dust based on the above methodologies.

Table 4.7-10: On-Road Diesel Truck Emission Factors in Grams per Mile

Emission Factors	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
Type I Light Duty Truck	0.158	0.008	1.987	0.006	0.202	115
Type II Light Duty Truck	0.326	0.009	2.579	0.012	0.225	175
Medium Duty Truck	0.585	0.010	3.008	0.016	0.302	224
Type I Light Heavy Duty Truck	1.603	0.013	0.537	0.021	0.144	267
Type II Light Heavy Duty Truck	3.203	0.016	0.696	0.034	0.235	305
Medium Heavy Duty Truck	9.224	0.022	2.167	0.180	0.257	341
Heavy Heavy Duty Truck	12.785	0.036	0.810	0.146	0.249	375

For additional diesel-powered on-road trucks, including the estimated 160 one-way truck trips needed to import boulder and other rock materials for channel reconstruction, CARB EMFAC2011 emission factors were used to estimate criteria pollutant emission rates (NOX, SOX, CO, PM10, and ROC) for the truck trips in 2014 associated with Alternative 3. The on-road haul trucks ~~*are assumed to be*~~ *will be* **travelling at ~~*a speed*~~** *the posted speed limit* **of 15 mph. The updated EMFAC2011 incorporates the latest emissions inventory methods for heavy duty trucks and buses. These estimates reflect the impact of the economic recession. Table 4.7-11 shows the resultant emission factors for diesel exhaust based on CARB EMFAC2011 model.**

Table 4.7-11: On-Road Diesel Truck Emission for Alternative 3 Factors in Grams per Mile

Emission Factors	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
Heavy Heavy Duty Truck	**12.87**	**0.00**	**3.038**	**0.251**	**1.157**	**313**

Note: The PM_{10F} emission factor increased because of the change in vehicle weight between the CARB EMFAC2002 and EMFAC2011 model versions.

The implementation of practical and cost-effective NO_X controls for diesel vehicles and equipment, such as Viscon, could reduce NO_X emissions up to 25 percent. However, reducing on-road vehicle emissions alone would not reduce NO_X emissions from project activities below significance (137 lb/day NO_X), since the bulk of these emissions are from off-road equipment, as summarized in Table 4.7-9 and detailed below. Since it is unlikely NO_X mass emissions could be reduced below the significance threshold, screening dispersion modeling is used to determine significance in this assessment, as described above.

For EIR/EIS**, and draft SEIR,** preliminary screening analysis of off-road construction equipment, (URBEMIS 2002 Appendix H per 40 CFR 89.112 Tier 1) emission factors shown in Table 4.7-11 assume 37.1 percent efficiency (per SCAQMD CEQA guidelines) and use of California ultra-low sulfur diesel fuel (15 ppm S by weight). Please note: the Tier 1 factors were used in the preliminary estimate to account for the use of older, hired equipment (i.e., worst case). During the permitting process, it may be deemed appropriate to use Tier 2 factors, or a composite of Tier 1 and Tier 2 factors.

Appendix X contains tables showing information on the types of on-road vehicles to be used in the project and the projected utilization of each vehicle (average speed assumed is 15 mph). As explained above, EMFAC 2002/**2011** emission factors are used to estimate on-road vehicle emissions for the project alternatives.

The URBEMIS model is designed for estimating typical urban traffic impacts from residential, educational, recreational, retail, commercial, and industrial development. Non-typical projects such as dam construction work in a rural setting are not part of the URBEMIS model. As such, the URBEMIS model is not applicable for this type of project application. However, URBEMIS emission factors can be used to estimate off-road emissions as described above and shown in Table 4.7- **12** ~~11~~ below.

Table 4.7-12 ~~11~~: Off-Road Diesel Equipment Emission Factors in Grams per BHP-hr[16]

Emission Factors	NO_X	SO_X	CO	PM_{10}	ROC
Off-Road Equipment (Tier 1)	6.9	0.005	8.5	0.4	1.0

Under Alternative 3, for the increase in sediment excavation, screening plant operation, and the import of boulder and other materials for channel reconstruction, off-road construction equipment exhaust emissions were estimated using the latest CARB OFFROAD model (OFFROAD 2011). The OFFROAD model assumes that post-2007 engines are engines subject to the 2008 procedures for new off-road diesel engines and are certified to Tier 2, Tier 3, or Tier 4 interim emission standards (depending on the year and engine power rating). Table 4.7-13 shows the resultant emission factors for diesel exhaust based on the above methodologies.

[16] Same as U.S. EPA Tier 1, 40 CFR 89.112

Table 4.7-13: Off-Road Diesel Equipment Emission Factors in lbs-hr

Emission Factors	Hp	NO_X	SO_X	CO	PM_{10}	ROC
Cranes	50 - 9999	0.0461 - 0.181	0.000 - 0.010	0.191 - 19.08	0.016 - 0.102	0.046 - 0.181
Excavators	50 - 750	0.156 - 2.136	0.000 - 0.004	0.259 - 1.237	0.012 - 0.071	0.021 - 0.113
Off-Highway Trucks	175 - 1000	0.812 - 5.366	0.001 - 0.006	0.513 - 2.418	0.047 - 0.161	0.065 - 0.293
Rollers	50 - 500	0.164 - 1.847	0.000 - 0.002	0.227 - 0.897	0.015 - 0.077	0.033 - 0.116
Rubber Tired Dozers	175 - 750	1.280 - 3.808	0.001 - 0.004	0.611 - 3.288	0.073 - 0.139	0.103 - 0.225
Rubber Tired Loaders	50 - 1000	0.210 - 4.494	0.000 - 0.006	0.311 - 3.012	0.024 - 0.129	0.063 - 0.255
Other General Industrial Equipment	50 - 1000	0.151 – 4.160	0.000 – 0.006	0.243 - 2.043	0.015 – 0.105	0.035 - 0.181
Other Material Handling Equipment	50 - 9999	0.185 – 4.022	0.000 – 0.007	0.279 – 23.87	0.019 – 0.097	0.048 – 0.144

Estimated truck and trip data was provided by Higgins & Associates (1998) for low, medium, and high increments (access road construction, dam thickening, and dam removal, respectively). Estimated off-road construction equipment and activity data was also provided for the Dam thickening (Proponent's Proposed Project) and dam removal (Alternative 2) scenarios. Based on these scenarios, empirical estimates were made for Alternatives 1 and 3. Emission calculations (Appendix X) were performed using standardized multi-variable spreadsheet templates designed to evaluate different project scenarios. As shown in Appendix X, estimated on-road NO_X emissions for the Proponent's Proposed Project and any of the Alternatives (1, 2, or 3) are 5 and 8 pounds per day, respectively, which is small compared to the majority off-road vehicle and equipment NO_X emissions.

The latest version of EPA's SCREEN3 (1995) ~~g~~ **G**aussian plume dispersion model was used to calculate the ground level concentrations of criteria emissions. SCREEN3 is a single source Gaussian plume model which provides maximum ground-level concentrations for point, area, flare, and volume sources, as well as concentrations in the cavity zone, and concentrations due to inversion break-up and shoreline fumigation. The screening dispersion modeling options selected include the use of rural dispersion parameters and regulatory default options. The input file specified information regarding the subject emission sources including location, type (segmented area), and emission rate (g/sec). Default (internal) meteorological data were utilized in conjunction with the SCREEN3 model (i.e., stability class E, standard deviation or sigmatheta of horizontal wind direction between 3.8 and 7.5 degrees). Maps and aerial photographs of the project site and vicinity were used to determine approximate locations of emission sources and distances to receptors for the assessment. Release parameters used for the assessment are shown in Table 4.7-**14** ~~12~~.

Table 4.7-14 ~~12~~: SCREEN 3 Release Parameters

Release Parameter	Units	4R	Dam	Access
Source Type	**Label**	**Area**	**Area**	**Area**
Long Side	meters	1360	600	1600
Short Side	meters	8	600	8
Long Side (segment)	meters	80	n/a	80
Release Rate (unit)	g/sec-m^2	1	1	1
Release Rate (segment)	g/sec-m^2	0.059	n/a	0.050
Release Height	meters	2.5	25	2.5
Receptor Height	meters	1.5	1.5	1.5
Dispersion Coefficient	Urban/Rural	Rural	Rural	Rural
Range of Directions	Yes/No	Yes	Yes	Yes
Stability Class	A-F	E	E	E
Automated Distance Array	Yes/No	Yes	Yes	Yes
Minimum Distance	meters	10	10	10
Maximum Distance	meters	1000	1000	1000

It should be noted that the screening model in area source mode (e.g., 8 m x 80 m road segments which simulate a line source) does not take into account 1) actual meteorology data, 2) complex terrain, and 3) downwash. It is a basic tool for ranking relative impacts assuming hypothetical "worst case" stability class E, which is sigmatheta (standard deviation) of horizontal wind direction between 3.8 and 7.5 degrees. Nevertheless, the impact assessment conservatively demonstrates that while the project does not significantly impact or degrade existing ambient concentrations of CO, PM_{10} (primarily from road dust) is increased and thus would require mitigation (e.g., sufficient periodic road watering). While the modeled concentration of NO_X, when added to the maximum recent historic background concentration, does not exceed an applicable standard, the MBUBAPCD has expressed concerns regarding the incremental addition of NO_X to regional air quality levels. Mitigation measures to reduce NO_X are discussed below.

4.7.3 IMPACTS AND MITIGATION

The following impact issues have been defined for air quality:

- AQ-1: Dam Site Activities (short-term emissions from construction equipment and road dust)
- AQ-1a: Screening Plant Operation (short-term emissions from equipment associated with the screening plant for Alternative 3 only)
- AQ-2: Access Road Upgrades (short-term dust and other emissions during access road improvements)
- AQ-3: Project-Generated Traffic (short-term dust and other emissions during project-related travel)
- AQ-3a: Project-Generated Traffic - Additional Truck Trips (short-term dust and other emissions during project-related travel for Alternative 3 only)

- AQ-4: Concrete Batch Plant Operation (operation of a new, short-term stationary source)

Proponent’s Proposed Project (Dam Thickening)

Issue AQ-1: Dam Site Activities

Short-term emissions from construction equipment and road dust
Determination: **significant, unavoidable, short-term**

IMPACT
Construction activities would generate temporary emissions from diesel-powered equipment and road dust. Fugitive dust, if not mitigated, could exceed the MBUAPCD construction threshold of significance for PM_{10} only. This would be a potentially significant unavoidable impact.

The Proponent’s Proposed Project would have no operational impacts because it would not create any new air pollutant sources nor generate new employee vehicle trips. The Proponent’s Proposed Project would affect regional and local air quality during construction. The level and types of activities would vary over the construction period, but the activities with the greatest potential to generate air pollutants are materials delivery (aggregates); and concrete placement (pouring, securing). These phases represent the periods of greatest pollutant generation, at other times less-polluting activities such as land surveying, land clearing, reservoir dewatering, site preparation, and integrity testing would occur.

SCD is in an isolated portion of the Carmel River Valley. During daytime hours, prevailing winds would carry emissions up-river or towards the east. The closest receptors are residences in the Sleepy Hollow Subdivision, which is located along San Clemente Drive, as shown in Figure 4.7-1. These homes would be quite distant (3900 to 5300 meters from the Dam site) and generally upwind of construction activity at the Dam itself. Therefore localized dust created by sand blasting and drilling dowel holes during preparation of the existing dam surface would not impact any receptors. Emissions associated with concrete trucks hauling materials from the batch plant to the Dam site would also occur at a substantial distance and downwind of these receptors.

Tables 4.7-**15** ~~13~~ and 4.7-**16** ~~14~~ show estimated aggregated maximum emissions in pounds per day and tons per year at the Dam for the various activities that would occur during project construction. Two primary types of emission sources have been estimated: 1) diesel fuel combustion in vehicle and equipment engines, and 2) generation of fugitive road dust (PM_{10F}). The tables distinguish the generation of fugitive dust (PM_{10F}) from PM_{10} emitted from combustion sources (due to different emission estimation techniques), although the same standard applies to both.

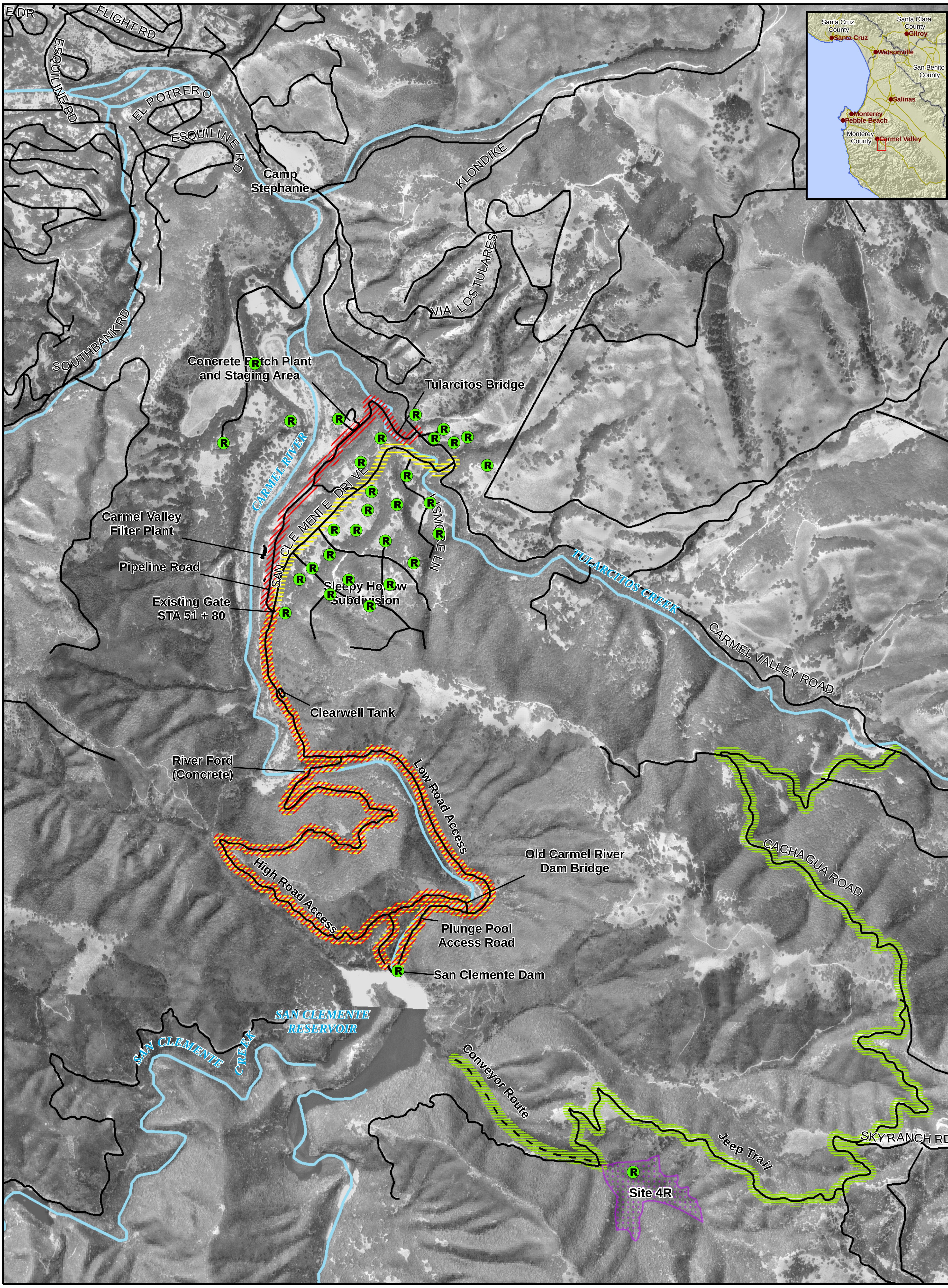
Table 4.7-<u>15</u> ~~13~~: Estimated Temporary Daily Construction Emissions — Proponent's Proposed Project

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Dam Site	430	0	523	25	62	322

Table 4.7-<u>16</u> ~~14~~: Estimated Temporary Annual Construction Emissions — Proponent's Proposed Project

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Dam Site	54	0	66	3	8	23

Table 4.7-**<u>15</u>** ~~13~~ shows that estimated daily emissions from fuel combustion at the Dam and sediment handling could exceed the 137 pound per day level of significance for NO_X contained in Table 4.7-9. However, Tables 4.7-**<u>17</u>** ~~15~~ and 4.7-**<u>18</u>** ~~16~~ show that maximum estimated NO_X impacts would be below state and federal ambient air quality standards (338 μ/m^3 hourly and 100 μ/m^3 annual, respectively).



Legend

Access Routes
- Cachugua / 4R
- Sleepy Hollow
- Tularcitos
- Sleepy Hollow / Tularcitos*

- Stream
- Existing Road
- Proposed Road
- Sediment Disposal Site

- R Sensitive Receptor

*Note: Sleepy Hollow and Tularcitos access routes share the same roads between the filter plant and the dam

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 4.7-1

Sensitive Receptors Map

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Table 4.7-17 ~~15~~: Estimated NO_X Impact in Residential Zone Proponent's Proposed Project

Criteria Pollutant	Averaging Period	Modeled Concentration	Background Concentration	Total Concentration
		μ/m³	μ/m³	μ/m³
Nitrogen Oxides (as NO_2)	1-hour	5.7	266	272
	Annual	0.5	23	23

Table 4.7-18 ~~16~~: Estimated NO_X Impact at Dam Site Proponent's Proposed Project

Criteria Pollutant	Averaging Period	Modeled Concentration	Background Concentration	Total Concentration
		μ/m³	μ/m³	μ/m³
Nitrogen Oxides (as NO_2)	1-hour	41.6	266	308
	Annual	3.3	23	26

Incremental ambient NO_X in the residential zone is 5.7 μ/m^3, an increase of 2.1 percent above the maximum hourly background concentration of 266 μ/m^3 for a total of 272 μ/m^3, which is under the state standard of 338 μ/m^3. Such an increase would not be measurable by an ambient NO_X monitor since it lies within the daily calibration bandwidth of the instrument (2.5 percent Hourly NO_X impacts at the Dam site are slightly greater, 15.6 percent but still below the state standard. The federal annual NO_X standard of 100 μ/m^3 is not exceeded at the residential zone or the Dam site is. The nearest residential receptors are located far enough from the Dam site (3,900 to 5,300 meters) that only a limited amount of dispersed NO_X would be transported by wind due to diffusion. Although very small, there may be an incremental significant unavoidable impact on ambient air quality in distant residential areas or at the Dam site from NO_X emissions, because these emissions are above the mass emissions significance threshold.

Estimated emissions of fugitive dust (PM_{10F}) could potentially exceed the PM_{10} threshold of 82 lb/day by a significant amount, thus requiring mitigation in order to minimize ambient air impacts. Table 4.7-**19** ~~17~~ summarizes the PM_{10} impacts of the Proponent's Proposed Project.[17]. The 550 pound per day CO level of significance is not exceeded by the Proponent's Proposed Project.

[17] For a description how emission rates (lb/day) are translated to ambient air impacts (μ/m^3), refer to Impact Assessment Methodology at the end of this section.

Table 4.7-19 ~~17~~: Estimated PM_{10} Impact Summary Proponent's Proposed Project

Location	Averaging Period	Modeled Concentration	Background Concentration	Total Concentration
		μ/m3	μ/m3	μ/m3
Dam Site Average	1-hour	33.6	–	–
	24-hour	13.4	57	70
	Annual	2.7	15	18

MITIGATION

There are several feasible mitigation measures that address the many sources of PM_{10} during the construction phase of a project (e.g., grading, wind erosion, entrained dust). Common measures include watering, chemical stabilization, or reducing surface wind speeds with windbreaks. Summarized below are feasible mitigation measures for PM_{10}, the source of emissions that would be affected, the effectiveness of the measure in mitigating emissions, and the source of assumptions. The effect of a mitigation measure can be quantified by identifying the source of PM_{10} that would be affected, estimating emissions from the source, and applying a mitigation effectiveness factor to those emissions. For example, watering active, unpaved construction areas with full coverage can reduce fugitive PM_{10} from construction equipment and other mobile sources by 50 percent, reducing daily emissions from 70 lb/day/acre to 35 lb/day/acre.

Because construction-related emissions of PM_{10} vary based on a number of factors (e.g., activity types, area of activity, silt content), the level of mitigation necessary to reduce impacts below significance would vary and would be monitored during construction by the owner's engineer or consultant, to assure that actual mitigation is effective. In general, mitigation measures that address larger sources of PM_{10} during construction (e.g., grading, excavation, entrained dust from unpaved roads) have the greatest potential to substantially reduce fugitive dust to a less than significant level. Mitigation measures for the Proponent's Proposed Project include:[18]

- Water all active construction areas and access roads at least twice daily. Frequency would be based on the type of operation, soil, and wind exposure.
- Prohibit all grading (e.g., sediment removal) activities during periods of high wind (over 15-mph).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Haul trucks would maintain at least 2 feet of freeboard.

[18] MBUAPCD, CEQA Air Quality Guidelines, October 1995 (last revised June 2004), Table 8-2

- Cover all trucks hauling dirt, sand, or loose materials.
- Seed or plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles with tarps
- Post a publicly visible sign giving the telephone number and person to contact regarding dust complaints. This person would respond to complaints and take corrective action within 48 hours. The phone number of the MBUAPCD would be visible to ensure compliance with Rule 402 (Nuisance).

Emissions of NO_X from heavy duty equipment would be reduced by using practical and cost-effective NO_X controls for diesel vehicles and equipment in order to minimize emissions. Since daily CO emissions are below the level of significance, no CO mitigation would be required. The Applicant would implement practical and cost-effective PM_{10} controls for access roads, including paving and coarse graveling, in addition to periodic watering, along with practical and cost-effective NO_X controls for diesel vehicles and equipment, such as Viscon[19]. The Applicant would utilize, to the maximum extent possible, state-certified construction equipment in the Portable Equipment Registration Program (PERP) which is pre-approved for use in any district by CARB. The applicant would work closely with district staff upon commencement of permitting activities consistent with project scheduling requirements.

Issue AQ-2: Access Road Upgrades

Short-term dust and other emissions during access road improvements
Determination: **significant, unavoidable, short-term**

IMPACT

Construction activities during access road improvements would sometimes be upwind of residential neighborhoods and, if not mitigated, create the potential for dust nuisance complaints. This would be determined by several factors, including the amount of emissions, distance between the source of emission and receptors, and prevailing wind direction when construction activities occur.

Access road associated emissions would be relatively small compared to proposed and alternative project emissions. The small differences in emissions between the San Clemente Drive or Tularcitos access routes would have little effect on the comparative ambient air quality impacts of the Proponent's Proposed Project and action alternatives. Therefore, a typical set of access road-related emissions have been developed for evaluation of the routes. The results presented in Tables 4.7-**20** ~~18~~ and 4.7-**21** ~~19~~ for the existing (San Clemente Drive) access route and the alternative (Tularcitos) demonstrate the negligible difference between the two routes. These data indicate that

[19] While Viscon can reduce NOx emissions by about 25 percent, the use of Viscon would not lower NO_X emissions below the 137 pound per day significance threshold (0.75 x 443 lb/day = 332 lb/day).

for the Proponent's Proposed Project, the greatest potential for dust nuisance would occur during construction of access road improvements and during the aggregate delivery phase of the project, when up to 20 trucks trips per day would use the improved access road and from cement trucks hauling from the batch plant to the Dam. Depending on the weather and the types of amounts of activity along the new access road, a temporary potential for dust nuisance could exist at the closest homes within the Sleepy Hollow Subdivision prior to implementation of mitigation measures, as discussed below.

Table 4.7-20 ~~18~~: Estimated Daily Construction Emissions — Road Construction

Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
San Clemente Drive	0.43	0.00	0.10	0.01	0.01	16
Tularcitos Route	0.41	0.00	0.10	0.01	0.01	15
Typical	0.42	0.00	0.10	0.01	0.01	16

Table 4.7-21 ~~19~~: Estimated Annual Construction Emissions — Road Construction

Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
San Clemente Drive	0.02	0.00	0.01	0.00	0.00	0.8
Tularcitos Route	0.02	0.00	0.00	0.00	0.00	0.7
Typical	0.02	0.00	0.01	0.00	0.00	0.8

Table 4.7-**20** ~~18~~ shows that estimated daily emissions from fuel combustion would not exceed any level of significance contained in Table 4.7-**9** ~~1~~. However, estimated emissions of fugitive dust (PM_{10F}) could potentially be about one-half the PM_{10} threshold of 82 lb/day. At this level of emission, mitigation would be a good construction site practice. Due to the nuisance level that could occur to residence of Sleepy Hollow, the impact would be significant and unavoidable for short periods of time.

MITIGATION

Dust generation due to travel on unpaved roads between the batch plant and the Dam is a potentially significant impact (see Table 4.7-**15** ~~13~~) that could be reduced to a less than significant level by requiring contractors to minimize dust generation during construction through implementation of the following dust suppression techniques, which could reduce fugitive PM_{10} emissions from unpaved roads below the 82 lb/day threshold:

- Use crushed rock as a final base on the unpaved service roads from Center Court Place to the Batch Plant, and from the Batch Plant to the Filter Plant to minimize dust generation in the vicinity of the Sleepy Hollow subdivision. According to the project engineer, placement of crushed rock would make the roads more driveable and would also keep dust down.

- Use watering trucks and adequate quantities of water to suppress dust on unpaved or unrocked roads, parking areas, staging areas and the batch plant. Water quality BMPs (see Section 4.5) would avoid introducing sediment into the river and creeks. The amount and frequency of water application would be adjusted for weather conditions to maintain a minimum average soil moisture ratio of 5, for 95 percent or greater dust suppression. Non-toxic chemical stabilizers or dust suppressants would be applied to unpaved haul roads. These may consist of materials that are added to the water prior to application, or materials worked into the road surface that increases the efficiency of subsequent wetting with water.

- As traffic and weather allow, regularly vacuum sweep (municipal street sweeper) accumulated soil from the surface of Center Court Place and affected portions of San Clemente Drive to prevent introducing sediment into river and creeks.

- Impose and enforce a 15-mph speed limit for all vehicles on unpaved haul roads.

The Applicant would implement practical and cost-effective PM_{10} controls for access roads, including paving and coarse graveling, in addition to periodic watering, along with practical and cost-effective NO_X controls for diesel vehicles and equipment, such as Viscon[20]. The Applicant will utilize, to the maximum extent possible, state-certified construction equipment in the PERP, which is pre-approved for use in any district by the Air Resources Board. The Applicant will work closely with district staff upon commencement of permitting activities consistent with project scheduling requirements.

Issue AQ-3: Project-Generated Traffic

Short-term dust and other emissions during project-related travel
Determination: **significant, unavoidable, short-term**

Construction activities during access road improvements and truck travel on the unpaved service road to and from the concrete batch plant site would sometimes be upwind of residential neighborhoods and, if not mitigated, create the potential for dust nuisance complaints.

Worker travel consists of motor vehicle exhausts from contractor employee trips to and from the project site. Truck travel represents on-road trucks delivering construction materials to the site. Fugitive emissions are mainly the result of mechanical action of vehicle wheels on unpaved earth surfaces. On-site vehicles and equipment consist of concrete trucks and other diesel-powered construction equipment. Unpaved road dust would be raised by the material delivery and concrete trucks traveling on the graveled interior haul roads.

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[20] While Viscon can reduce NO_X emissions by about 25 percent, the use of Viscon would not lower NO_X emissions below the 137 pound per day significance threshold (0.75 x 443 lb/day = 332 lb/day).

Use of existing paved roads and improvement of unpaved access roads to the concrete batch plant site and the CVFP should generate less than significant levels of dust during the road building phase. However, as shown in Table 4.7-9, PM_{10} emissions could exceed the MBUAPCD threshold during material delivery and concrete placement. This would primarily be due to travel on unpaved roads between the CVFP and Dam.

Again, emissions associated with project-generated traffic would vary relatively little between the Proponent's Proposed Project and the action alternatives. The analysis utilized the roads nearest the receptor area to access PM_{10} impacts on those receptors. Although the routes for the alternatives are different from the Proponent's Proposed Project, the distance to the receptor location via each route is approximately the same. These small differences in emissions would have negligible effect on comparative ambient air quality impacts. Therefore, a typical set of project traffic-related emissions have been developed for evaluation of all of the alternatives.

Typical fugitive dust (PM_{10F}) emissions are shown in Table 4.7-**22** ~~20~~ in terms of background concentrations, modeled increments that result from project-related traffic, and total resulting concentrations. Estimated emissions of fugitive dust (PM_{10F}) could exceed the PM_{10} threshold of 82 lb/day, which would be a significant unavoidable impact.

Table 4.7-22 ~~20~~: Estimated PM_{10} Impact Summary
Proponent's Proposed Project

Location	Averaging Period	Modeled Concentration	Background Concentration	Total Concentration
		μ/m³	μ/m³	μ/m³
Access Roads (typical)	1-hour	10.6	–	–
	24-hour	4.2	57	61
	Annual	0.8	15	16

MITIGATION

The project impact identified above could be reduced with implementation of Mitigation Measure AQ-2 (Access Road Upgrades) and the following additional measures:

- Provide Sleepy Hollow residents with a card containing the telephone number and person to contact regarding dust, traffic and noise complaints as well as providing construction schedule information. This person would respond to complaints and arrange for corrective action to be taken within 24 hours. The phone number of the MBUAPCD would also be provided.

The applicant would be responsible for ensuring that the mitigation measures are implemented. Agencies and local government issuing permits would enforce compliance with permit conditions. Construction monitoring would be conducted to assure that permit requirements, resource protection measures, and mitigation measures are followed. The owner's contracts would embody pertinent requirements, and the applicant would require contractors to comply with the terms of their contracts.

The project management would post a publicly visible sign in the Sleepy Hollow area giving the telephone number and project contact person to contact regarding dust or noise complaints:

- The project contact person would respond to complaints and take corrective action within 48 hours.
- Corrective actions would require that all fugitive dust and noise mitigation measures listed above be verified (i.e., checked and inspected) for implementation and effectiveness.
- As a backstop measure, the complaint line telephone numbers of the MBUAPCD and Monterey County Resource Management Agency would also be posted to ensure compliance with applicable nuisance rules (e.g., MBUAPCD Rule 402, Nuisance).

Issue AQ-4: Concrete Batch Plant Operation

Operation of a new, short-term stationary source
Determination: ***less than*** **significant with mitigation, short-term**

The concrete batch plant would be subject to regulation by the MBUAPCD as a temporary stationary source. In general, New Source Review (NSR) rules would require the following conditions to be met in order to obtain an operating permit:

- Best Available Control Technology (BACT);
- Offsets (nonattainment pollutants over regulatory threshold);
- Protection of ambient air quality;
- Certification of statewide compliance for all sources under common ownership and/or operational control; and
- For sources subject to CEQA, analysis of alternatives.

Under MBUAPCD rules, a nonexempt stationary source must be permitted, and a permit would not be issued unless the proposed source meets all applicable MBUAPCD rules and regulations regarding emission limits, opacity limits, control requirements, offsets and other limitations or conditions. The MBUAPCD also enforces compliance with Rule 402 (Nuisance).

MITIGATION

Under general NSR rules described above, batch plant emissions would be mitigated by jurisdictional MBUAPCD temporary source operating permit conditions, which would likely require powering of the batch plant with electricity (i.e., no diesel fuel combustion emissions) and fugitive dust control measures (e.g., water sprays, pneumatic dust collectors).

The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch pant equipment and aggregate materials. This limits possible sites for the batch plant to generally near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

The Applicant will work closely with district staff upon commencement of permitting activities consistent with project scheduling requirements.

Alternative 1 (Dam Notching)

Impacts and mitigation for Air Quality Issues AQ-2 (Access Road Upgrades) and AQ-3 (Project-Generated Traffic) would be the same as the Proponent's Proposed Project except the mitigation would also include the Cachagua Access Route. Issue AQ-4 (Concrete Batch Plant) would not apply to Alternative 1.

Issue AQ-1: Dam Site Activities

Short-term emissions from construction equipment and road dust
Determination: **significant, unavoidable, short-term**

Refer to Proponent's Proposed Project for a general discussion of construction activities as they relate to air quality effects. For Alternative 1, Tables 4.7-**23** ~~21~~ and 4.7-**24** ~~22~~ show estimated aggregated maximum emissions in pounds per day and tons per year that would occur at the dam site and sediment disposal site.

Table 4.7-23 ~~21~~: Estimated Daily Construction Emissions Alternative 1

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Sediment Disposal Site	9	0	1	0	0	254
Dam Site	233	0	285	13	34	164
Totals	241	0	286	13	34	419

Table 4.7-24 ~~22~~: Estimated Annual Construction Emissions Alternative 1

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Sediment Disposal Site	0	0	0	0	0	13
Dam Site	35	0	43	2	5	25
Totals	35	0	43	2	5	37

Table 4.7-23 shows estimated daily emissions from fuel combustion at the Dam and sediment disposal sites. Impacts are similar to those discussed for the Proponent's Proposed Project in that although emissions at these sites could exceed the level of significance for mass emissions of $NO_{X,}$ maximum estimated NO_X impacts to the nearest residential receptors would be below the state and federal ambient air quality standards (338 μ/m^3 hourly and 100 μ/m^3 annual, respectively) (Tables 4.7-**25** ~~23~~ and 4.7-**26** ~~24~~).

Table 4.7-25 ~~23~~: Estimated NO_X Impact in Residential Zone Alternative 1

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m^3	Background Concentration μ/m^3	Total Concentration μ/m^3
Nitrogen Oxides (as NO_2)	1-hour	3.8	266	270
	Annual	0.3	23	23

Table 4.7-26 ~~24~~: Estimated NO_X Impact at Dam Site Alternative 1

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m^3	Background Concentration μ/m^3	Total Concentration μ/m^3
Nitrogen Oxides (as NO_2)	1-hour	22.5	266	289
	Annual	1.8	23	25

Although very small, there may be a significant unavoidable impact on ambient air quality in distant residential areas or at the dam site from NO_X emissions, because these emissions are above the mass emissions significance threshold. As for Alternative 1, estimated emissions of fugitive dust (PM_{10F}) could exceed the PM_{10} threshold (Table 4.7-**27** ~~25~~).

Table 4.7-27 ~~25~~: Estimated PM_{10} Impact Summary Alternative 1

Location	Averaging Period	Modeled Concentration μ/m^3	Background Concentration μ/m^3	Total Concentration μ/m^3
Site 4R Average	1-hour	125.6	–	–
	24-hour	50.2	57	107
	Annual	10.0	15	25
Dam Site Average	1-hour	17.2	–	–
	24-hour	6.9	57	64
	Annual	1.4	15	16

Neither the residential zone nor the dam site exceeds the federal annual NO_X standard of 100 μ/m^3. The nearest residential receptors are located far enough from the dam site (3900 to 5300 meters); only a limited amount of dispersed NO_X would be transported by wind due to diffusion. Although very small, there may be an incremental, significant unavoidable impact on ambient air quality in distant residential areas or at the dam site from NO_X emissions, because these emissions are above the mass emissions significance threshold.

MITIGATION

Air quality mitigation measures would be the same as for the Proponent's Proposed Project.

Alternative 2 (Dam Removal)

Impacts and mitigation for Air Quality Issues AQ-2 (Access Road Upgrades) and AQ-3 (Project-Generated Traffic) would be the same as the Proponent's Proposed Project except the mitigation would also include the Cachagua Access Route. Issue AQ-4 (Concrete Batch Plant) would not apply to Alternative 2.

Temporary emissions from construction activities associated with Alternative 2 are estimated for vehicle traffic, off-road equipment, and fugitive road dust. Blasting emissions are not included since there are no EPA-approved emission factors for civil demolition blasting. Also, blasting emissions would be transient (under one hour) and relatively small compared to other construction emissions, and therefore can be safely ignored in assessing daily and annual ambient impacts at the screening level.

Issue AQ-1: Dam Site Activities

Short-term emissions from construction equipment and road dust
Determination: **significant, unavoidable, short-term**

Refer to Proponent's Proposed Project (Dam Thickening) for a general discussion of activities as they relate to air quality effects. For Alternative 2, Tables 4.7-**28** ~~26~~ and 4.7-**29** ~~27~~ show estimated aggregated maximum emissions in pounds per day and tons per year that would occur at the dam site and sediment disposal site.

Table 4.7-28 ~~26~~: Estimated Daily Construction Emissions Alternative 2

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	26	0	2	0	1	763
Dam Site	699	1	856	40	101	494
Totals	725	1	858	40	101	1257

Table 4.7-29 ~~27~~: Estimated Annual Construction Emissions Alternative 2

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	38
Dam Site	105	0	128	6	15	74
Totals	106	0	128	6	15	112

Table 4.7-**28** ~~26~~ shows estimated daily emissions from fuel combustion at the Dam and sediment disposal sites. Impacts are similar to those discussed for the Proponent's Proposed Project in that although emissions at these sites could exceed the level of significance for mass emissions of NO_X and CO, maximum estimated NO_X and CO impacts to the nearest residential receptors would be below the state and federal ambient air quality standards (Tables 4.7-**30** ~~28~~ and 4.7-**31** ~~29~~).

Table 4.7-30 ~~28~~: Estimated NO_X and CO Impact in Residential Zone Alternative 2

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m³	Background Concentration μ/m³	Total Concentration μ/m³
Nitrogen Oxides (as NO_2)	1-hour	11.3	266	277
	Annual	0.9	23	24
Carbon Monoxide (CO)	1-hour	2.7	4257	4260
	8-hour	1.9	2980	2982

Table 4.7-31 ~~29~~: Estimated NO_X and CO Impact at Dam Site Alternative 2

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m³	Background Concentration μ/m³	Total Concentration μ/m³
Nitrogen Oxides (as NO_2)	1-hour	67.7	266	334
	Annual	5.4	23	28
Carbon Monoxide (CO)	1-hour	82.9	4257	4340
	8-hour	58.0	2980	3038

Although very small, there may be an incremental significant unavoidable impact on ambient air quality in distant residential areas or at the dam site from NO_X emissions, because these emissions are above the mass emissions significance threshold. As with Alternative 2, estimated emissions of fugitive dust (PM_{10F}) could exceed the PM_{10} threshold (Table 4.7-**32** ~~30~~).

Table 4.7-32 ~~30~~: Estimated PM_{10} Impact Summary Alternative 2

Location	Averaging Period	Modeled Concentration μ/m³	Background Concentration υg/m³	Total Concentration μ/m³
Site 4R Average	1-hour	377.1	–	–
	24-hour	150.8	57	208
	Annual	30.2	15	45
Dam Site Average	1-hour	51.7	–	–
	24-hour	20.7	57	78
	Annual	4.1	15	19

MITIGATION

Air quality mitigation measures would be the same as for the Proponent's Proposed Project.

Alternative 3 (Carmel River Reroute and Dam Removal)

Impacts and mitigation for Air Quality Issue~~s AQ-2 (Access Road Upgrades) and~~ AQ-3 (Project-Generated Traffic) would be the same as the Proponent's Proposed Project except mitigation would also include the Cachagua Access Route, Issue AQ-4 (Concrete Batch Plant) would not apply to Alternative 3.

Short-term emissions from construction activities associated with the Alternative 3 are estimated for ~~vehicle traffic~~, off-road equipment **(AQ-1)**, **screening plant operations (AQ-1a)**, **access road improvements (AQ-2),** and **additional vehicle traffic and** fugitive road dust **(AQ-3a)**. Blasting emissions are not included since there are no EPA-approved emission factors for civil demolition blasting. Also, blasting emissions would be transient (under one hour) and relatively small compared to other construction emissions, and therefore can be safely ignored in assessing daily and annual ambient impacts at the screening level.

Issue AQ-1: Dam Site Activities

Short-term emissions from construction equipment and road dust
Determination: **significant, unavoidable, short-term**

Refer to Proponent's Proposed Project for a general discussion of activities as they relate to air quality effects. For Alternative 3, Tables 4.7-**33** ~~31~~ and 4.7-**34** ~~32~~ show estimated aggregated maximum emissions in pounds per day and tons per year that would occur at the dam site and reservoir. **Updated calculations of sediment excavation for Alternative 3 that indicate approximately 314,000 cubic yards of additional sediment material would be excavated and moved at the dam site. This sediment would originate from the San Clemente Creek arm to the sediment disposal area as well as other areas such as the diversion channel. The emission estimates below have been updated to include emissions from excavation and hauling of the additional sediment.**

Table 4.7-33 ~~31~~: Estimated Daily Construction Emissions Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Sediment Site	26	0	2	0	1	763
Additional Sediment Excavation	**60**	**0**	**30**	**2**	**4**	**99**
Dam Site	465	0	570	27	67	329
Totals	**551** ~~491~~	0	**602** ~~572~~	**29** ~~27~~	**72** ~~68~~	**1191** ~~1092~~

Table 4.7-34 ~~32~~: Estimated Annual Construction Emissions Alternative 3

Location	NO_X tons/yr	SO_X tons/yr	CO tons/yr	PM_{10} tons/yr	ROC tons/yr	PM_{10F} Tons/yr
Sediment Site	1	0	0	0	0	38
Additional Sediment Excavation	**2**	**0**	**1**	**0**	**0**	**19**
Dam Site	70	0	86	4	10	49
Totals	**73** ~~71~~	0	**87** ~~86~~	4	10	**106** ~~87~~

Table 4.7-**33** ~~31~~ shows estimated daily emissions from fuel combustion at the Dam and sediment disposal sites. Impacts are similar to those discussed for the Proponent's Proposed Project in that although emissions at these sites could exceed the level of significance for mass emissions of NO_X and CO, maximum estimated NO_X and CO impacts to the nearest residential receptors would be below the state and federal ambient air quality standards (Tables 4.7-**35** ~~33~~ and 4.7-**36** ~~34~~). Although very small, there may be an incremental significant, unavoidable impact on ambient air quality in distant residential areas or at the dam site from NO_X emissions, because these emissions are above the mass emissions significance threshold. As with the Proponent's Proposed Project, estimated emissions of fugitive dust (PM_{10F}) could exceed the PM_{10} threshold (Table 4.7-**37** ~~35~~).

Table 4.7-35 ~~33~~: Estimated NO_X and CO Impact in Residential Zone Alternative 3

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m³	Background Concentration μ/m³	Total Concentration μ/m³
Nitrogen Oxides (as NO_2)	1-hour	7.6	266	274
	Annual	0.6	23	24
Carbon Monoxide (CO)	1-hour	1.8	4257	4259
	8-hour	1.2	2980	2981

Table 4.7-36 ~~34~~: Estimated NO_X and CO Impact at Dam Site Alternative 3

Criteria Pollutant	Averaging Period	Modeled Concentration μ/m³	Background Concentration μ/m³	Total Concentration μ/m³
Nitrogen Oxides (as NO_2)	1-hour	45.1	266	311
	Annual	3.6	23	27
Carbon Monoxide (CO)	1-hour	55.2	4257	4312
	8-hour	38.6	2980	3019

Table 4.7-37 ~~35~~: Estimated PM_{10} Impact Summary Alternative 3

Location	Averaging Period	Modeled Concentration	Background Concentration	Total Concentration
		μ/m³	μ/m³	μ/m³
Sediment Site Average	1-hour	377.1	–	–
	24-hour	150.8	57	208
	Annual	30.2	15	45
Dam Site Average	1-hour	34.4	–	–
	24-hour	13.8	57	71
	Annual	2.8	15	18

MITIGATION

Air quality mitigation measures would be the same as for the Proponent's Proposed Project.

Tables 4.7-38 and 4.7-39 show the mitigated daily and annual construction emissions, respectively.

Table 4.7-38: Estimated Mitigated Daily Construction Emissions: Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Sediment Site	26	0	2	0	1	326
Additional Sediment Excavation	60	0	30	2	4	126
Dam Site	465	0	570	27	67	141
Old Carmel River Dam Removal	21	0	12	1	1	0
Totals	573	0	614	30	74	592

Table 4.7-39: Estimated Mitigated Annual Construction Emissions: Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	Tons/yr
Sediment Site	1	0	0	0	0	16
Additional Sediment Excavation	4	0	2	0	0	8
Dam Site	70	0	86	4	10	21
Old Carmel River Dam Removal	0	0	0	0	0	0
Totals	75	0	88	4	10	45

The emissions would still exceed the MBUAPCD thresholds of significance, even after mitigation. The impact would therefore be significant, and unavoidable.

Issue AQ-1a: Screening Plant Operation

Short-term emissions from construction equipment
Determination: **less than significant, short-term (screening plant only); significant, unavoidable, short term when combined with all construction emissions**

Channel restoration activities will include excavation and placement of gravel, cobble, and boulder materials salvaged during sediment removal. The excavated materials will be sorted at a screening plant located upstream of the diversion dike (see Figure 3.5-2a). The channel floodplain in this location would be graded before installation of the screening plant. The plant would occupy approximately 0.22 acres and would include a 200-horsepower diesel powered motor, vibrating screen, and conveyor to separate the sand, silt, gravel, cobbles, and boulders. Approximately 20,000 cubic yards of gravel, cobble, and boulder material would be processed and salvaged from the excavated sediment. The plant would operate approximately 50 percent of the time over a 2-month period (about 30 days of operation).

Tables 4.7-40 and 4.7-41 show estimated aggregated maximum emissions in pounds per day and tons per year that would occur due to screening plant operations. *The screening plant operation was analyzed independently because it is a component of Alternative 3 that was not addressed in the Final EIR/EIS*.

Table 4.7-40: Estimated Daily Screening Plant Emissions Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Screening Plant	9	0	4	0	1	8

Table 4.7-41: Estimated Annual Screening Plant Emissions Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	Tons/yr
Screening Plant	0	0	0	0	0	0

Table 4.7-40 shows that estimated daily emissions from screening plant activities would not exceed the level of significance for mass emissions; therefore the impacts would be less than significant by itself, but would add to overall significant emissions generated by the project.

Mitigation

Impacts associated with operation of the screening plant will be minimized by implementation of the mitigation measures for Issue AQ-1. However, even with this mitigation operation of the screening plant, as part of the dam site activities, would remain significant and unavoidable.

Issue AQ-2: Access Road Upgrades

Short-term dust and other emissions during access road improvements
***Determination:* less than significant with mitigation, short-term**

Mitigation

Impacts and mitigation would be the same as the Proponent's Proposed Project except the Tularcitos route would not be improved, and the following access road upgrades would apply:

Access road upgrades will be performed on Cachagua Road to improve line of sight at several curves and to upgrade an existing Monterey County bridge (Bridge 529). Improvements would also be made to the existing Jeep Trail, including the grading of several staging areas along this road (see Table 3.5-1 and Figure 3.5-1a). In addition, a new access road between the Jeep Trail and the reservoir, called the Reservoir Access Road, would be constructed (see Figure 3.2-2a). The Reservoir Access Road will include two staging areas.

Tables 4.7-42 and 4.7-43 show the daily and annual exhaust and fugitive dust emissions associated with the access road upgrades for Tassajara/Cachagua Roads, the Jeep Trail and staging areas, and the Reservoir Access Road and staging areas.

Table 4.7-42: Estimated Access Road Upgrade Daily Emissions

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Tassajara/ Cachagua Road	69	0	34	3	5	6
Jeep Trail + Staging Areas	63	0	31	3	4	106
Reservoir Access Road + Staging Areas	63	0	31	3	4	43
Total	196	0	95	8	13	155

Table 4.7-43: Estimated Access Road Upgrade Annual Emissions

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	Tons/yr
Tassajara/ Cachagua Road	3	0	1	0	0	0

Jeep Trail + Staging Area	3	0	1	0	0	7
Reservoir Access Road + Staging Area	3	0	1	0	0	3
Total	8	0	4	0	1	10

Fugitive dust (PM_{10F}) emissions associated with the access road upgrades would exceed the MBUAPCD threshold of significance (82 lbs/day). Construction activities during access road improvements could sometimes be upwind of residential neighborhoods and, if not mitigated, create the potential for dust nuisance complaints.

MITIGATION

Air quality mitigation measures would be the same as for the Proponent's Proposed Project, except that any mitigation measures specific to the batch plant would not apply.

Tables 4.7-44 and 4.7-45 shows the mitigated daily and annual emissions respectively for the Alternative 3 access road upgrades for Tassajara/Cachagua Roads, the Jeep Trail and staging areas, and the Reservoir Access Road and staging areas.

Table 4.7-44: Estimated Mitigated Access Road Upgrade Daily Emissions

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Tassajara/ Cachagua Road	69	0	34	3	5	2
Jeep Trail + Staging Areas	63	0	31	3	4	27
Reservoir Access Road + Staging Areas	63	0	31	3	4	11
Total	196	0	95	8	13	39

Table 4.7-45: Estimated Mitigated Additional Access Road Upgrade Annual Emissions

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	Tons/yr
Tassajara/ Cachagua Road	3	0	1	0	0	0
Jeep Trail + Staging Areas	3	0	1	0	0	2
Reservoir Access Road + Staging Areas	3	0	1	0	0	1
Total	8	0	4	0	1	3

Mitigated fugitive dust (PM10F) emissions associated with the additional access road upgrades would be less than the MBUAPCD threshold of significance (82 lbs/day). Therefore, this impact would be less than significant with mitigation.

Issue AQ-3a: Project Generated Traffic - Additional Truck Trips

Short-term emissions from construction equipment and road dust
Determination: **less than significant** *with mitigation*, **short-term**

Although approximately 20,000 cubic yards of gravel, cobble, and boulder material would be salvaged from the excavated sediment, additional boulder and other materials for channel restoration will likely have to be imported from offsite sources. Approximately 160 truck trips would be necessary to import this material.

Boulder and other channel restoration materials would likely come from suppliers in the Salinas area, which is approximately 23 miles from the Dam site. Results shown in Table 4.7-46 are only for these additional truck trips, and would be in addition to the trips for other the project-generated traffic analyzed under issue AQ-3 (Project-Generated Traffic) for the Proponent's Proposed Project.

Table 4.7-46: Estimated Additional Truck Trip Daily Emissions Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/day
Additional Truck Trips	1	0	0	0	0	21

Table 4.7-47: Estimated Additional Truck Trip Annual Emissions Alternative 3

Location	NO_X	SO_X	CO	PM_{10}	ROC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	Tons/yr
Additional Truck Trips	0	0	0	0	0	3

~~***Additional truck travel on the unpaved service road associated with Alternative 3 would sometimes be upwind of residential neighborhoods and, if not mitigated, could create the potential for dust nuisance complaints.***~~

As shown in Table 4.7-46, the fugitive dust (PM_{10F}) emissions during material delivery would not exceed the MBUAPCD threshold of 82 lb/day, and therefore would be less than significant. *However, additional truck travel on the unpaved service road associated with Alternative 3 would sometimes be upwind of residential* *neighborhoods and, if not mitigated, could create the potential for dust nuisance complaints.*

Mitigation

Air quality mitigation measures would be the same as for AQ-2 and AQ-3.

Alternative 4 (No Project)

No construction activities would be associated with the No Project Alternative; therefore there would be no additional issues related to air quality.

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4.7a GREENHOUSE GAS EMISSIONS

Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.

Global warming is the name given to the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to by unequivocal (IPCC, 2007) with global surface temperature increasing approximately 1.33 °F over the last one hundred years. Continued warming is projected to increase global average temperature between 2 and 11 °F over the next one hundred years.

The causes of this warming have been identified as both natural processes and as the result of human actions. The Intergovernmental Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. However, after 1950, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in greenhouse gas (GHG) concentrations in the Earth's atmosphere are thought to be the main cause of human induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last hundred years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

The principal greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFC), hydrofluorocarbons (HFC), (Health and Saf. Code, § 38505, subd. (g); CEQA Guidelines, § 15364.5). Water vapor is also an important GHG, in that it is responsible for trapping more heat than any of the other GHGs. However, water vapor is not a GHG of concern with respect to anthropogenic activities and emissions. Each of the principal greenhouse gases has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat

trapping ability of each of these gases vary significantly from one another. Methane is 23 times as potent as carbon dioxide, while sulfur hexafluoride is 22,200 times more potent than carbon dioxide. Conventionally, greenhouse gases have been reported as carbon dioxide equivalents (CO_2e). CO_2e takes into account the relative potency of non-CO_2 greenhouse gases and converts their quantities to an equivalent amount of CO_2 so that all emissions can be reported as a single quantity.

The primary man-made processes that release these gases include: burning of fossil fuels for transportation, heating and electricity generation; agricultural practices that release methane such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high global warming potential gases such as SF6, PFCs, and HFCs. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth's capacity to remove CO_2 from the air and altering the Earth's albedo or surface reflectance, allowing more solar radiation to be absorbed.

4.7a.1 Environmental Setting

Global Climate Trends and Associated Impacts

The rate of increase in global average surface temperature over the last hundred years has not been consistent; the last three decades have warmed at a much faster rate – on average 0.32°F per decade. Eleven of the twelve years from 1995 to 2006, rank among the twelve warmest years in the instrumental record of global average surface temperature (going back to 1850) (IPCC, 2007).

During the same period over which this increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen on average1.8 mm/yr; precipitation patterns throughout the world have shifted, with some areas becoming wetter and other drier; tropical cyclone activity in the North Atlantic has increased; peak runoff timing of many glacial and snow fed rivers has shifted earlier; as well as numerous other observed conditions. Though it is difficult to prove a definitive cause and effect relationship between global warming and other observed changes to natural systems, there is high confidence in the scientific community that these changes are a direct result of increased global temperatures (IPCC, 2007).

California Climate Trends and Associated Impacts

Maximum (daytime) and minimum (nighttime) temperatures are increasing almost everywhere in California but at different rates. The annual minimum temperature averaged over all of California has increased 0.33°F per decade during the period 1920 to 2003, while the average annual maximum temperature has increased 0.1°F per decade (Moser et al., 2009).

With respect to California's water resources, the most significant impacts of global warming have been changes to the water cycle and sea level rise. Over the past century, the precipitation mix between snow and rain has shifted in favor of more rainfall and less snow (Mote et al., 2005; Knowles, 2006) and snow pack in the Sierra Nevada is melting earlier in the spring (Kapnick and Hall, 2009). The average early spring snowpack in the Sierra Nevada has decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage (DWR, 2008). These changes have significant implications for water supply, flooding, aquatic ecosystems, energy generation, and recreation throughout the state. During the same period, sea levels along California's coast rose seven inches (DWR, 2008). Sea level rise associated with global warming will continue to threaten coastal lands and infrastructure, increase flooding at the mouths of rivers, place additional stress on levees in the Sacramento-San Joaquin Delta, and will intensify the difficulty of managing the Sacramento-San Joaquin Delta as the heart of the state's water supply system.

Local Climate

Local climate in Carmel Valley where the project area is located is discussed in Section 4.7 Air Quality.

Most of the GHG emissions in Monterey County are existing direct emissions from vehicles and stationary sources associated with various residential, commercial, industrial and agricultural uses. There are also indirect GHG emissions from electricity consumption and landfill activity.

Table 4.7a-1: Monterey County Greenhouse Gas Estimate, 2006

Source	GHG Emissions	% of Total	Notes
Vehicle Emissions	647,175	45%	Includes miles on County roads and 25%vof state highway miles.
Natural Gas Consumption	190,848	13%	Residential, commercial, and industrial consumption from PG&E.
Electricity Consumption	209,103	15%	Residential, commercial, and industrial consumption from PG&E.
Industrial Processes	201,290	14%	Based on MBUAPCD inventory data.
Landfill Emissions	32,829	2%	Based on CIWMB data.
Offroad Equipment Use	152,114	11%	Based on OFFROAD model with apportionment
Fugitive Methane from Nat. Gas Pipelines	5,417	0%	Based on California per capita average
Total	1,394,404	100%	

Note: The 2006 Monterey County GHG inventory is the latest inventory as presented in the Final EIR (FEIR) for the 2010 General Plan and was adopted October 2010. (Monterey County 2010). Additionally, the FEIR states that within 12 months of adoption of the General Plan, the County shall quantify the current and projected (2020) GHG emissions associated with County operations and adopt a GHG Reduction Plan for County Operations.

4.7a.2 Regulatory Setting

State Laws, Policies, and Plans

California has taken proactive steps to address the issues associated with GHG emissions and climate change. A summary of California GHG regulations are presented below.

Table 4.7a-2: Summary of State laws and Executive Orders that address climate change

Legislation Name	Signed into Law/ Ordered	Description	CEQA Relevance
SB 1771	09/2000	Establishment of California Climate Registry to develop protocols for voluntary accounting and tracking of GHG emissions.	In 2007, DWR began tracking GHG emissions for all departmental operations.
AB 1473	07/2002	Directs ARB to establish fuel standards for noncommercial vehicles that would provide the maximum feasible reduction of GHGs.	Reduction of GHG emissions from noncommercial vehicle travel.
SB 1078, 107, EO S-14-08	09/2002, 09/2006, 11/2008	Establishment of renewable energy goals as a percentage of total energy supplied in the State.	Reduction of GHG emissions from purchased electrical power.
EO S-3-05, AB 32*	06/2005, 09/2006	Establishment of statewide GHG reduction targets and biennial science assessment reporting on climate change impacts and adaptation and progress toward meeting GHG reduction goals.	Projects required to be consistent with statewide GHG reduction plan and reports will provide information for climate change adaptation analysis.
SB 1368	9/2006	Establishment of GHG emission performance standards for base load electrical power generation.	Reduction of GHG emissions from purchased electrical power.
EO S-1-07	01/2007	Establishment of Low Carbon Fuel Standard.	Reduction of GHG emissions from transportation activities.
SB 97*	08/2007	Directs OPR to develop guideline amendments for the analysis of climate change in CEQA documents.	Requires climate change analysis in all CEQA documents.
SB 375	09/2008	Requires metropolitan planning organizations to include sustainable communities strategies in their regional transportation plans.	Reduction of GHG emissions associated with housing and transportation.
EO S-13-08 *	11/2008	Directs the Resource Agency to work with the National Academy of Sciences to produce a California Sea Level Rise Assessment Report. And directs CAT to develop a California Climate Adaptation Strategy.	Information in the reports will provide information for climate change adaptation analysis.

*Most significant laws and orders, elaborated further below.

California Environmental Quality Act and SB 97

The California Environmental Quality Act (CEQA) requires lead agencies to consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn,

global climate change has the potential to: raise sea levels, affect rainfall and snowfall, and affect habitat.

Senate Bill 97

The provisions of Senate Bill 97, enacted in August 2007 as part of the State Budget negotiations and codified at Section 21083.05 of the Public Resources Code, direct the Office of Planning and Research (OPR) to propose CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions." SB 97 directs OPR to develop such Guidelines by July 2009, and directs the State Resources Agency (now Natural Resources Agency), the agency charged with adopting the CEQA Guidelines, to certify and adopt such Guidelines by January 2010. In April 2009, OPR prepared draft CEQA Guidelines and submitted them to the Natural Resources Agency (see below). On July 3, 2009, the Natural Resources Agency began the rulemaking process established under the Administrative Procedure Act. These amendments to the CEQA Guidelines became effective on March 18, 2010.

The Natural Resources Agency recommended amendments for GHGs fit within the existing CEQA framework for environmental analysis, which calls for lead agencies to determine baseline conditions and levels of significance, and to evaluate mitigation measures. The guideline amendments did not identify a threshold of significance for GHG emissions nor did they prescribe assessment methodologies or specific mitigation measures. The guidelines amendments encouraged lead agencies to consider many factors in performing a CEQA analysis, but preserved the discretion that CEQA grants lead agencies to make their own determinations based on substantial evidence.

Guidelines Section 15064.4, *Determining the Significance of Impacts from Greenhouse Gas Emissions*, encouraged lead agencies to consider three factors to assess the significance of GHG emissions: (1) will the project increase or reduce GHGs as compared to baseline; (2) will the project's GHG emissions exceed the lead agency's threshold of significance; and (3) does the project comply with regulations or requirements to implement a statewide, regional, or local GHG reduction or mitigation plan. CEQA Guidelines Section 15064.4 also recommended that lead agencies make a good-faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions associated with a project.

CEQA Guidelines Section 15126.4, *Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects*, included considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, including but not limited to project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions; compliance with the requirements in a previously approved plan or mitigation program for the reduction or

sequestration of GHG emissions, which plan or program provides specific requirements that will avoid or substantially lessen the potential impacts of the project; and measures that sequester carbon or carbon-equivalent emissions. In addition, amended CEQA Guidelines Section 15126.4 included a requirement that where mitigation measures are proposed for reduction of GHG emissions through off-site measures or purchase of carbon offsets, these mitigation measures must be part of a reasonable plan of mitigation that the relevant agency commits itself to implementing.

In addition, as part of the CEQA Guideline amendments and additions, a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G are included. The new set asks whether a project would

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Executive Order S-3-05

Executive Order (EO) S-3-05 made California the first state to formally establish GHG emissions reduction goals. EO S-3-05 includes the following GHG emissions reduction targets for California:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

The final emission target of 80 percent below 1990 levels would put the state's emissions in line with estimates of the required worldwide reductions needed to bring about long-term climate stabilization and avoidance of the most severe impacts of climate change (IPCC, 2007).

EO S-3-05 also dictated that the Secretary of the California Environmental Protection Agency coordinate oversight of efforts to meet these targets with the Secretary of the Business, Transportation and Housing Agency; Secretary of the Department of Food and Agriculture; Secretary of the Resources Agency; Chairperson of the Air Resources Board; Chairperson of the Energy Commission; and the President of the Public Utilities Commission. This group was subsequently named the Climate Action Team (CAT).

As laid out in the EO, the CAT is required to submit biannual reports to the governor and State legislature describing progress made toward reaching the targets. The latest CAT biannual report, *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*, was published in December 2010 and described the effects of climate change on California's resources (Cal/EPA 2010).

Assembly Bill 32

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32). AB 32 further details and puts into law the mid-term GHG reduction target established in EO S-3-05—reduce GHG emissions to 1990 levels by 2020. AB 32 also identifies CARB as the state agency responsible for the design and implementation of emissions limits, regulations, and other measures to meet the target.

The statute lays out the schedule for each step of the regulatory development and implementation.

- By June 30, 2007, CARB had to publish a list of early-action GHG emission reduction measures.
- Prior to January 1, 2008, CARB had to: identify the current level of GHG emissions by requiring statewide reporting and verification of GHG emissions from emitters and identify the 1990 levels of California GHG emissions.
- And by January 1, 2010, CARB had to adopt regulations to implement the early-action measures

In December 2007, CARB approved the 2020 emission limit (1990 level) of 427 million metric tons of CO_2e of GHGs. The 2020 target requires the reduction of 169 million metric tons of CO2e, or approximately 30 percent below the state's projected "business-as-usual" 2020 emissions of 596 million metric tons of CO2e. Also in December 2007, CARB adopted mandatory reporting and verification regulations pursuant to AB 32. The regulations became effective January 1, 2009, with the first reports covering 2008 emissions. The mandatory reporting regulations require reporting for major facilities, those that generate more than 25,000 metric tons/year of CO_2e. To date CARB has met all of the statutorily mandated deadlines for promulgation and adoption of regulations.

Climate Change Scoping Plan

On December 11, 2008, pursuant to AB 32, CARB adopted the Climate Change Scoping Plan (CCSP). This plan outlines how emissions reductions will be achieved from significant sources of GHGs via regulations, market mechanisms, and other actions. Six key elements, outlined in the scoping plan, are identified to achieve emissions reduction targets:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

The Climate Change Scoping Plan also included recommended 18 measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. These measures also put the state on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. The measures in the approved Scoping Plan were be developed over the next two years to be in place by 2012.

Executive Order S-13-08

EO S-13-08, issued November 14th, 2008, directs the California Natural Resources Agency, Department of Water Resources, Office of Planning and Research, Energy Commission, State Water Resources Control Board, State Parks Department, and California's coastal management agencies to participate in a number of planning and research activities to advance California's ability to adapt to the impacts of climate change. The order specifically directs agencies to work with the National Academy of Sciences to initiate the first California Sea Level Rise Assessment and to review and update the assessment every two years after completion; immediately assess the vulnerability of the California transportation system to sea level rise; and to develop a California Climate Change Adaptation Strategy.

California Climate Change Adaptation Strategy

In cooperation and partnership with multiple state agencies, the 2009 California Climate Adaptation Strategy summarizes the best known science on climate change impacts in seven specific sectors (public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture; forestry, and transportation and energy infrastructure) and provides recommendations on how to manage against those threats.

4.7a.3 Regional Plans and Policies

The CARB Scoping Plan (January 2009) ("The Scoping Plan") states that local governments are "essential partners" in the effort to reduce GHG emissions. The Scoping Plan also acknowledges that local governments have "broad influence and, in some cases, exclusive jurisdiction" over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions. The Scoping Plan encourages local governments to reduce GHG emissions by approximately 15 percent from current levels by 2020 (CARB, 2008b).

The Monterey Bay Unified Air Pollution Control District (MBUAPCD) does not currently regulate emissions of GHGs. However, in June 2011, the MBUAPCD released a document considering various GHG thresholds, though no thresholds have been adopted yet. The document looks at the following GHG significance thresholds, though no significance thresholds for construction projects were considered.

- Stationary Sources: a threshold of 10,000 metric tons / year of CO2 Equivalents;

- Land Use Projects: an Efficiency Metric of 4.6 tons / year of CO2 Equivalents per Service Population or demonstrated compliance with a qualified Greenhouse Gas Reduction Strategy / Climate Action Plan; and

- Land Use Plans: an Efficiency Metric of 6.6 tons / year of CO2 Equivalents per Service Population or demonstrated compliance with a qualified Greenhouse Gas Reduction Strategy / Climate Action Plan.

The Monterey County Board of Supervisors adopted a revised General Plan in October 2010, but was sued in November 2010. The FEIR for the 2010 General Plan discusses the policies that relate to reduction of GHGs and concern six different subjects: land use, transportation, water efficiency, energy, open space/conservation, and waste reduction. These policies address focusing growth in a limited number of communities that can provide services, jobs and housing. This is intended to result in a reduction in vehicle miles traveled. These

policies also would result in a limitation on the conversation of agricultural land to residential and commercial development. Additionally, the FEIR states that within 24 months of adoption of the General Plan, the Monterey County should adopt a GHG Reduction Plan for County Operations.

In addition, the Carmel Valley Master Plan has implemented the following policies to reduce GHGs:

- **CV-1.6 limits new residential subdivision in Carmel Valley to creation of 266 new lots with preference to projects including at least 50% affordable housing units. Given that the location of much of Carmel Valley is far from centers of commerce and employment, the limitation of development in remote areas supports development in areas with shorter travel for services and work.**
- **CV-2.1 requires exploration of public transit and new development to include a road system adequate for bus (both transit and school), pedestrian, and bicycle traffic as well as vehicles.**
- **CV-2.3 requires all new road work or major work on existing roads within the commercial core areas to provide room for use of bicycles and separate pedestrian walkways and the provision of bicycle routes on the shoulders between development areas throughout the Carmel Valley.**
- **CV-2.4 requires that all new bridge construction or remodeling include provision for pedestrians and bicyclists.**
- **CV-2.15 requires that new major developments with access adjacent to Carmel Valley Road provide space for the transit buses to stop, the parking of cars and facilities for the safe storage of bicycles.**
- **CV-3.11 discourages removal of native trees.**
- **CV-3.14 encourages a network of shortcut trails and bike paths to interconnect neighborhoods, developments and roads.**
- **CV-3.19 supports potential dedication of trail easements as a condition of development approval.**
- **CV-5.3 requires development to incorporate designs with water reclamation and conservation.**
- **CV-5.4 supports the use of reclaimed water to replace potable water in landscape** irrigation.

4.7a.4 Additional Technical Advisory Information

OPR Technical Advisory, CEQA and Climate Change

In June 2008, OPR published a technical advisory on CEQA and Climate Change to provide interim advice to lead agencies regarding the analysis of GHGs in environmental documents (OPR, 2008). The advisory encourages lead agencies to identify and quantify the GHGs that could result from a proposed project, analyze the impacts of those emissions to determine whether they would be significant, and to identify feasible mitigation measures or alternatives that would reduce any adverse impacts to a less-than-significant level. The advisory recognizes that OPR will develop, and the Natural Resources Agency will adopt amendments to the CEQA Guidelines pursuant to SB 97.

The advisory provides OPR's perspective on the emerging role of CEQA in addressing climate change and GHG emissions and recognizes that approaches and methodologies for calculating GHG emissions and determining their significance are rapidly evolving. OPR concludes in the technical advisory that climate change is ultimately a cumulative impact realizing that no individual project could have a significant impact on global climate. Thus, projects must be analyzed with respect to the incremental impact of the project when added to other past, present, and reasonably foreseeable probable future projects. In order to make a determination of cumulative significance, OPR recommends that lead agencies undertake an analysis, consistent with available guidance and current CEQA practice (OPR, 2008).

The technical advisory points out that neither CEQA nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. "This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable" (OPR, 2008). OPR recommends that "the global nature of climate change warrants investigation of a statewide threshold of significance for GHG emissions" (OPR, 2008). Until such a standard is established, OPR advises that each lead agency should develop its own approach to performing an analysis for projects that generate GHG emissions (OPR, 2008).

OPR sets out the following process for evaluating GHG emissions. First, agencies should determine whether GHG emissions may be generated by a proposed project, and if so, quantify or estimate the emissions by type or source. Calculation, modeling or estimation of GHG emissions should include the emissions associated with vehicular traffic, energy consumption, water usage and construction activities (OPR, 2008).

Agencies should then assess whether the emissions are "cumulatively considerable" even though a project's GHG emissions may be individually limited. OPR states: "Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment" (OPR, 2008).

Individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice (OPR, 2008).

Finally, if the lead agency determines emissions are a cumulatively considerable contribution to a significant cumulative impact, the lead agency must investigate and implement ways to mitigate the emissions (OPR, 2008). OPR states: "Mitigation measures will vary with the type of project being contemplated, but may include alternative project designs or locations that conserve energy and water, measures that reduce vehicle miles traveled (VMT) by fossil-fueled vehicles, measures that contribute to established regional or programmatic mitigation strategies, and measures that sequester carbon to offset the emissions from the project" (OPR, 2008). OPR concludes that "A lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant" (OPR, 2008). The technical advisory includes a list of GHG reduction measures in Attachment 3 that can be applied on a project-by-project basis.

4.7a.5 California Air Pollution Control Officers Association (CAPCOA)

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a "white paper" on evaluating and addressing GHGs under CEQA (CAPCOA, 2008). This resource guide was prepared to support local governments as they develop their climate change programs and policies. Though not a guidance document, the paper provides information about key elements of CEQA GHG analyses, including a survey of different approaches to setting quantitative significance thresholds. Some of thresholds discussed include:

- **Zero (all emissions are significant);**
- **900 metric tons/year CO2e (90% market capture for residential and non-residential discretionary development);**
- **10,000 metric tons/year CO2e (potential CARB mandatory reporting level for Cap and Trade program);**
- **25,000 metric tons/year CO2e (the CARB mandatory reporting level for the statewide emissions inventory);**
- **Unit-based thresholds – based on identifying thresholds for each type of new** development and quantifying significance by a 90% capture rate.

4.7a.4 Impact Analysis

Significance Criteria

It is unlikely that any single project by itself could have a significant impact on the environment. However, the cumulative effect of human activities has been

clearly linked to quantifiable changes in the composition of the atmosphere, which in turn have been shown to be the main cause of global climate change (IPCC, 2007). Therefore, the analysis of the environmental effects of GHG emissions from this project will be addressed as a cumulative impact analysis.

The Department of Water Resources has not established a quantitative significance threshold for GHG emissions; instead each project is evaluated on a case by case basis using the most up to date calculation and analysis methods. The proposed project could result in a significant impact if it would generate GHG emissions:

- either directly or indirectly, that may have a significant cumulative impact on the environment;
- that would conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases, including the state goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, California Global Warming Solutions Act of 2006.

Based on the size, scope, and purpose of this project the following significance criteria will be used to determine the significance of GHG emissions from this project:

A. Whether the proposed project has the potential to conflict with or is consistent with plans to reduce or mitigate greenhouse gases, including:
   - the six key elements of the Climate Change Scoping Plan (see list above);
   - CARB's eighteen (18) recommended actions in the Climate Change Scoping Plan,
   - regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions; or .
   - Whether the proposed project is part of a plan that includes overall reductions in greenhouse gas emissions

B. Whether the relative amounts of greenhouse gas emissions over the life of the proposed project are small in comparison to the amount of greenhouse gas emissions for major facilities that are required to report greenhouse gas emissions (25,000 metric tons of CO_2e/yr); and

C. Whether the proposed project has the potential to contribute to a lower carbon future, such as:
   - whether the design of the proposed project is inherently energy efficient;

- **whether all applicable best management practices that would reduce greenhouse gas emissions are incorporated into the proposed project design;**
- **whether the proposed project implements or funds its fair share of a mitigation strategy designed to alleviate climate change?**
- **whether there are process improvements or efficiencies gained by implementing the proposed project?**

The project would result in a significant GHG emission impact if construction emissions from the project exceed any of the significance thresholds set forth above.

Calculation of GHG Emissions

Construction emissions associated with Alternative 3 occur from the following construction sources. A detailed description of the construction sources can be found in Appendix X.

- **Exhaust GHG emissions from off-road equipment for dam site construction in including sediment excavation, construction of the Diversion Channel and Diversion Dike, operation of sediment screening plant, removal of SCD, construction of the Reservoir Access Road and improvements to existing access roads including the Jeep Trail and several locations along Cachagua and Tassajara Roads and improvement to Bridge 529.**

- **Exhaust GHG emissions from on-road delivery haul trucks, additional haul trucks delivering** boulders, and from worker vehicles.

All construction equipment will be fuel based, and none of the equipment will be operated using electricity.

The latest models released by CARB for estimating GHG emissions are the OFFROAD2011 and EMFAC2011 models. These models incorporate the latest regulations including the Pavely rule for light duty vehicles. All construction related activities were assumed to take place in the worst case year of 2012 (with the exception of the additional truck trips hauling boulders) because the 2012 emission factors in both OFFROAD2011 and EMFAC2011 would be more conservative than emission factors in subsequent years when the models assume that new regulations would reduce GHG emissions in later years. The GHG emissions estimates below include all equipment associated with the project.

Off-road equipment emissions from for dam site construction, additional sediment excavation, screening plant operation, and access road improvements were estimated using the CARB OFFROAD 2011 model. The emissions factors were obtained for construction and mining off-road equipment in 2012 for

Monterey County. Table 4.7a-3 shows the resultant emission factors for diesel exhaust. Off-road construction GHG emissions were estimated using the OFFROAD2011 emissions factors along with engineers estimates of the number of pieces of equipment, horsepower, and schedule of operations. These inputs can be found in Appendix X.

Table 4.7a-3: GHG Off-Road Diesel Equipment Emission Factors in Pounds/hour

Emission Factors	Hp	CO_2
Cranes	50 - 9999	23 - 971
Excavators	50 - 750	25 - 387
Off-Highway Trucks	175 - 1000	125 - 625
Rollers	50 - 500	26 - 219
Rubber Tired Dozers	175 - 750	129 -399
Rubber Tired Loaders	50 - 1000	31 - 594
Other Construction Equipment	50 – 500	28 - 254
Other General Industrial Equipment	50 - 1000	22 – 560
Other Material Handling Equipment	50 - 9999	30 - 741

Project-related traffic GHG emissions from the haul truck trips (construction haul trucks and additional truck carrying boulders) and worker vehicle trips were estimated using the CARB EMFAC2011 model. Table 4.7a-4 shows the resultant emission factors for on-road truck travel in 2012 for Monterey County for construction haul trucks and worker vehicles.. The on-road haul trucks are assumed to be travelling at a speed of 15 mph. The worker vehicles were assumed to be traveling at the model default combined speed. The haul trucks were estimated to be traveling from Salinas to the project site, a one-way distance of approximately 23 miles. The worker vehicles were estimated to be traveling a one-way distance of approximately 17 miles (based on the default work commute values in the URBEMIS model).

Table 4.7a-4: GHG On-Road Diesel Equipment Emission Factors in Grams per Mile

Emission Factors	CO_2
Heavy Heavy Duty Truck (2012)	2,726
Worker Vehicles* (2012)	409

* Worker vehicles are assumed to be 50% light duty automobiles and 50% light duty trucks

Table 4.7a-5 presents to the total construction GHG emission rates associated with all construction activities for Alternative 3. Detailed emission calculations can be found in Appendix X.

Table 4.7a-5: Estimated Total Construction Phase GHG Emissions for Alternative 3

Activity	CO_2	CO_2	CH_4	N_2O	CO_2e
	Tons	Metric tons	*Tons*	*Tons*	*Metric tons*
Dam Site	4621	4192	*0.47*	*0.63*	*4377*
Project Related Traffic	2393	2170	*0.38*	*0.04*	*2191*
Additional Sediment Excavation	596	541	*0.06*	*0.08*	*564*
Screening Plant	18	16	*0.00*	*0.00*	*16*
Access Road Improvements	1176	1067	*0.12*	*0.15*	*1111*
Additional Truck Trips	22	20	*0.00*	*0.00*	*20*
Total Construction GHG Emissions	8828	8009	*1*	*1*	*8314*

The construction contractor will work to implement various GHG reduction and efficiency programs (best management practices [BMPs]) that would further reduce emissions from the levels presented above. Potential BMPs include:

- **Maximize fuel efficiency by using engines on off-road construction equipment that are no more than 10 years old or have equivalent carbon dioxide emissions of an engine 10 years old or newer.**
- **Include a VMT reduction plan for the project and demonstrate that the plan can minimize overall VMT to project site, including minimizing the distance for truck haul trips.**
- **Reduce worker-related VMT to restoration or construction projects through use of carpool, vanpool, or shuttle service from a single central location to the work-site.**
- **Reduce unnecessary idling through the use of auxiliary power units, electric equipment, and strict enforcement of idling and speed limits.**
- **Through contract language or other means, encourage good engine maintenance to meet manufacturer standards, and properly train operators to run equipment efficiently.**
- **Include a construction and demolition (C&D) plan that will result in at least 50 percent diversion of C&D waste through reuse or recycling of non-hazardous construction waste from disposal (including, but not limited to, concrete, lumber, metal, and cardboard).**

- **Building or construction materials that are not recyclable or re-usable for another project are hauled to the nearest waste disposal facility or C&D recycling facility rather than transporting such materials farther from the project site, thereby generating increased emissions from waste transportation.**

Construction contractors would need to assess the feasibility and reasonableness of these BMPs, taking into consideration cost, environmental or economic co-benefits, schedule, and other Project-specific requirements.

Significance Determination

The project construction GHG emissions were compared to the aforementioned significance thresholds to determine the significance of the impacts.

A. Consistency or potential for conflict with plans to reduce greenhouse gas emissions.

The proposed project would not conflict with the Monterey County General Plan or Carmel Valley Area plan GHG reduction policies such as VMT reduction or MBUAPCD regulations for GHGs. In addition, wherever feasible and practicable, the contractor would be consistent with and implement the AB32 GHG reduction measures such as the use of low carbon fuels, construction recycling and reuse, and the proper use and maintenance of off-road construction equipment. In addition, this project would not impede the state's ability to achieve GHG emissions reductions outlined in AB 32.

B. Relative amounts of greenhouse gas emissions

Construction of Alternative 3 would emit GHG annual emissions of approximately 8,000 metric tons of CO_2e during the construction phase of the project and there would be no ongoing emissions of GHGs after completion of the project. The one-time emission of approximately 8,000 metric tons of CO_2e for this project is well below the level of *annual* emissions (25,000 metric tons) established by the US Environmental Protection Agency and California Air Resources Board for mandatory reporting of GHG emissions (74 FR 56260 and Cal. Code of Regs. Title 17, Div. 3 Chapt. 1, subchapt. 10, article 2). Relative to this reporting threshold, emissions associated with this project will be minor. In addition, no national, statewide, or air basin/air district thresholds of significance have been established for discrete, non-recurring GHG emissions.

C. Potential to Contribute to a Lower Carbon Future and Energy Efficiency

This project does not contribute to lowering GHG emissions or improving energy efficiency in the future. However, it will not require any ongoing use of energy or emission of GHGs. Therefore, the project is neutral with respect to this criteria.

Discussion of other Significance Criteria

The review of criteria A, B, and C indicates that the proposed project would not conflict with the state goals of AB 32 or any regional plan to reduce or mitigate GHG, would result in relatively limited emissions of GHG in comparison to the levels of emissions that might be considered significant and would be neutral with respect to contributing to a lower carbon and energy efficient future. The emissions of GHG from this alternative would not be considered a cumulatively considerable contribution to a significant impact and are therefore considered less than significant.

4.8 NOISE

This section describes the potential impacts of the San Clemente Seismic Safety Project on the noise characteristics in the Project Area. Noise characteristics include sensitive receptors influenced by the project. In response to comments, additional information provided in ~~this~~ **the** Final EIR/EIS clarifies and amplifies the information included in the Draft EIR/EIS. The following environmental setting section was prepared using information developed from the documents provided by the RDEIR (Denise Duffy & Associates 2000).

Revisions to the Noise section were made to evaluate potential noise impacts resulting from additional access road improvements, increased traffic using Tassajara Road and the southern portion of Cachagua Road, and work at night at the Dam and reservoir sites.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.8.1 ENVIRONMENTAL SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is defined as unwanted sound. Environmental noise is frequently measured in decibels (dB). The A-weighted decibel (dBA) refers to the human ear's sensitivity to sounds of different frequencies. On this scale, the sound level of normal talking is about 60 to 65 dBA. Due to evolutionary factors, humans are more sensitive to nighttime noise; sleep disturbance usually occurs at 40 to 45 dBA.

The most commonly used measurement scale to account for a person's increased sensitivity to nighttime noise is the community noise equivalent level (CNEL). The CNEL is a noise scale used to describe the overall noise environment of a given area from a variety of sources. The CNEL applies a weighting factor to evening and nighttime values.

Excessive noise may not only be undesirable, but also may cause physical and/or psychological damage. The effects of noise, whether ambient or project-related, may be categorized as auditory or non-auditory. Auditory effects include interference with communication and, in extreme circumstances, hearing loss. Non-auditory effects include physiological reactions such as a change in blood pressure or breathing rate, interference with sleep, adverse effects on human performance, and mental well being.

Generally, noise levels diminish with distance from the source of the noise. Some land uses are more sensitive to noise than others. Noise-sensitive land uses include residences, transient lodging, schools, hospitals, nursing homes, churches, meeting halls, and office buildings.

Monterey County Noise Regulations

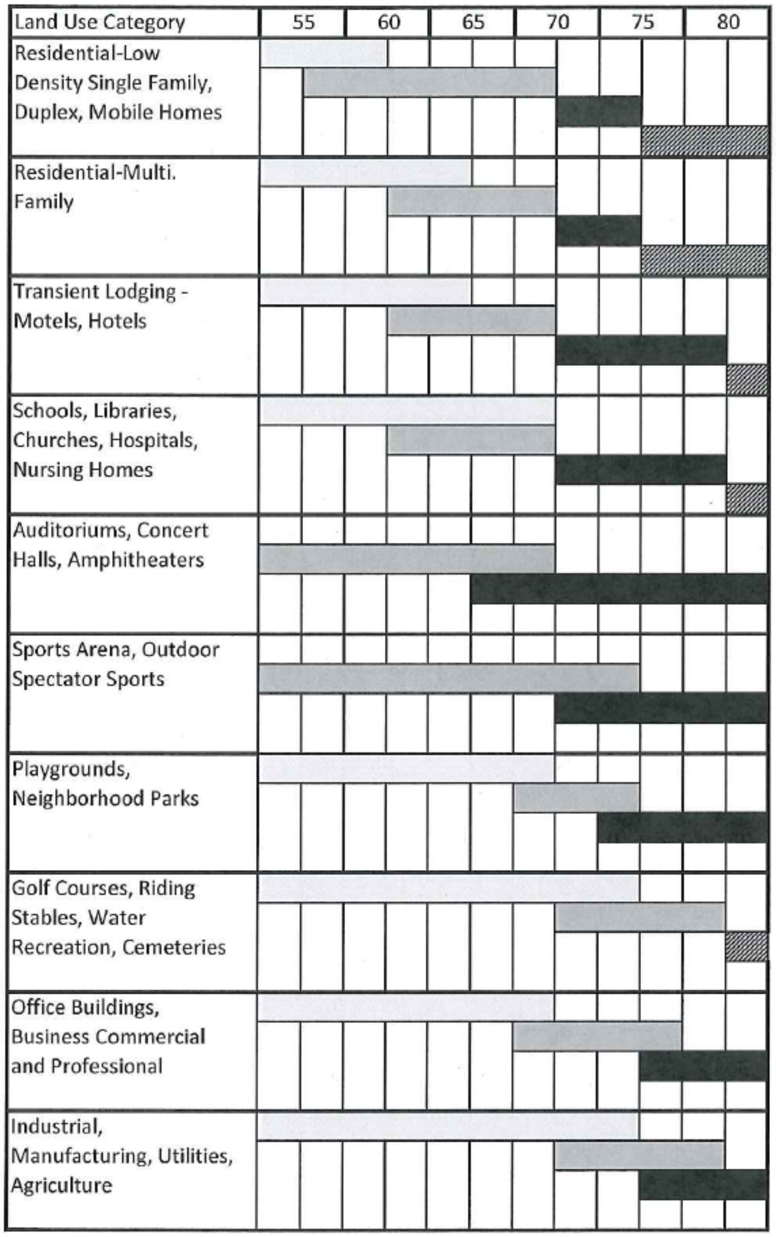
The Proponent's Proposed Project area is located in an unincorporated portion of Monterey County. The California Department of Health Services (CDHS) Office of Noise Control has established categories for judging the severity of noise impacts on specific land uses based on studies of noise levels and their effects. The Monterey County General Plan (~~1996~~ **2010**) contains a Noise Element that establishes noise exposure standards for land use compatibility based on CDHS categories. According to these standards, shown in Table 4.8-1, normally acceptable exterior noise levels for residential areas are 50 to 60 decibels (day-night sound level [L_{dn}] or CNEL), although levels between 60 and 70 decibels are conditionally acceptable with appropriate noise insulation and other attenuation measures. Most of areas affected by project noise are isolated and would be passively used open space (Table 4.8-1).

~~***Table 4.8-1: Monterey County Land Use Compatibility Standards for Exterior Community Noise[21]***~~

~~***Land Use Category***~~	~~***Noise Ranges (L_{dn} or CNEL) dBA***~~			
	~~***I***~~	~~***II***~~	~~***III***~~	~~***IV***~~
~~*Passively used open spaces*~~	~~*50*~~	~~*50–55*~~	~~*55–70*~~	~~*70+*~~
~~*Auditoriums, concert halls, amphitheaters*~~	~~*45–50*~~	~~*50–65*~~	~~*65–70*~~	~~*70+*~~
~~*Residential — low density single family, duplex, mobile homes*~~	~~*50–60*~~	~~*60*~~**55**~~*–70*~~	~~*70–75*~~	~~*75+*~~
~~*Residential — multi. family*~~	~~*50–60*~~ ~~***65***~~	~~*60–70*~~	~~*70–75*~~	~~*75+*~~
~~*Transient lodging — motels, hotels*~~	~~*50–60*~~ ~~***65***~~	~~*60–70*~~	~~*70–80*~~	~~*80+*~~
~~*Schools, libraries, churches, hospitals, nursing homes*~~	~~*50–60*~~ ~~***70***~~	~~*60–70*~~	~~*70–80*~~	~~*80+*~~
~~***Auditoriums, concert halls, amphitheaters***~~	~~***–***~~	~~***50–70***~~	~~***65+***~~	~~***–***~~
~~***Sports arena, outdoor spectator sports***~~	~~***–***~~	~~***50–75***~~	~~***70+***~~	~~***–***~~
~~*Actively used open spaces — Playgrounds, neighborhood parks*~~	~~*50–67*~~ ~~***70***~~	~~***67–75***~~	~~*67–*~~ ~~***373+***~~	~~*73+*~~
~~*Golf courses, riding stables, water recreation, cemeteries*~~	~~*50–70*~~ ~~***75***~~	~~***–***~~	~~*70–80*~~	~~*80+*~~
~~*Office buildings, business commercial and professional*~~	~~*50–67*~~ ~~***70***~~	~~*67–75*~~ ~~***77***~~	~~*75+*~~	~~***–***~~
~~*Industrial, manufacturing, utilities, agriculture*~~	~~*50–70*~~ ~~***75***~~	~~*70–75*~~ ~~***80***~~	~~*75+*~~	~~***–***~~
~~*Noise Range I — Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any building involved are of normal conventional construction without any special noise insulation requirements.*~~				
~~*Noise Range II — Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, which includes closed windows and conventional air supply systems or air conditioning, will normally suffice.*~~				
~~*Noise Range III — Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.*~~				
~~*Noise Range IV — Clearly Unacceptable: New construction or development should generally not be undertaken.*~~				

~~[21] — *Monterey County General Plan, 1996*~~ ~~***2010***~~

TABLE 4.8-1
Community Noise Exposure
Ldn or CNEL, dB



INTERPRETATION:

Normally Acceptable
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply or air conditioning.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable
New construction or development should generally not be undertaken.

Source: Monterey County 2010
(from OPR General Plan Guidelines)

Noise Sources in the Proponent's Proposed Project Area

The dominant source of noise in the Carmel Valley project area is traffic on Carmel Valley Road. Carmel Valley Road and San Clemente Drive represent the only access route to the Proponent's Proposed Project area at present. Typical peak noise levels due to passenger vehicles driving by on local streets are 55 to 65 dBA at 15 meters. Trucks, motorcycles, and poorly muffled automobiles produce noise levels 5 to 15 dBA higher.

Traffic noise is controlled by four major factors: speed, acceleration, road grade, and road surface. As speed, acceleration, and road grade increase, and as road surface worsens, vehicular noise levels would increase. Another consideration in highway noise is the escape of air between the tire treads as vehicles travel along the highways. Many four-wheel drive vehicles have large treads that produce excessive noise when traveling at high speeds.

Overflying aircraft can be heard at times in the Proponent's Proposed Project area, but are infrequent and not a significant noise source relative to traffic noise. Other sources of noise such as barking dogs, chain saws, and off-road vehicles are present in particular areas, but are not significant compared to noise produced by the transportation sources.

Sensitive Receptor Locations and Baseline Ambient Noise Levels

The Stone Cabin is listed as HR-8 in Section 4-10 Cultural Resources. It is located approximately 0.75 mile (3,960 feet, 1,207 meters) southwest of Site 4R at the closest point. The Stone Cabin is used as a remote recreational refuge by an ownership group of 10 individuals. The Jeep Trail (i.e., 4WD road) which serves the Stone Cabin would be improved to provide access above the Dam via Cachagua Road. **<u>The Jeep Trail would be used for access to the work site for construction personnel, heavy equipment mobilization, and materials delivery.</u>**

Additionally, in 1997, four residential locations nearest Proponent's Proposed Project activity areas were selected as representative sensitive noise receptors, as shown generally in Figure 4.8-1. Other nearby residential receptor locations not specifically evaluated would have similar or lesser project noise impacts. The four representative sensitive receptor locations are shown on the map as numbered below:

- North bend in San Clemente Drive (Lot 11)
- Residence off Center Court Place (Lot 10)
- Residence above new intersection (Lot 9)
- South end of San Clemente Drive (Lot 1)

In October 1997, ambient noise levels were monitored at the representative receptor locations. Existing noise levels recorded at each site are summarized in Table 4.8-2. Standard statistical noise descriptors were recorded at each receptor location. The L_{90} is the noise level exceeded 90 percent of the time, and is generally considered the background noise level. The L_{50} and L_1 are the noise levels exceed 50 percent and 1 percent of the time, respectively. The L_{eq} is the single noise level that has a noise energy equivalent to the overall varying noise monitored. The L_{dn} is the long-term average L_{eq}, with a night time "penalty" of 10 dBA, when noise levels are expected to be significantly lower. The L_{dn} was computed for each location using the field measurements, a standard model of hourly traffic distribution and an updated National Center for Highway Research traffic noise model.[22]

To determine the potential impacts of nighttime construction activities at the Dam and reservoir, the baseline nighttime noise environment was quantified by a noise measurement survey conducted on August 3 and August 4, 2011. Ambient noise measurements were taken at three locations within the Sleepy Hollow community north of SCD, and at the Stone Cabin located south of SCD (see Figure 4.8-2). The ambient noise measurements were conducted at night between the hours of 10:00 pm and to 7:00 am. Sound level meters (SLMs) were placed in locations that represented the ambient noise levels at nearby noise-sensitive receptors. The calibration of each meter was verified in the field before and after each measurement period.

The October 1997 and August 2011 noise measurements were conducted at different locations. The October 1997 ambient noise level survey was to characterize the day-night sound level (Ldn) in the existing community with an emphasis on the change in noise levels due to construction-related traffic. The purpose of the August 2011 ambient noise level survey was to characterize the existing noise exposure in the Sleepy Hollow community and at the Stone Cabin during nighttime hours and to assess the change in nighttime noise levels that would occur at these locations due to nighttime construction activities near the SCD.

[22] Highway Research Board, 1971.

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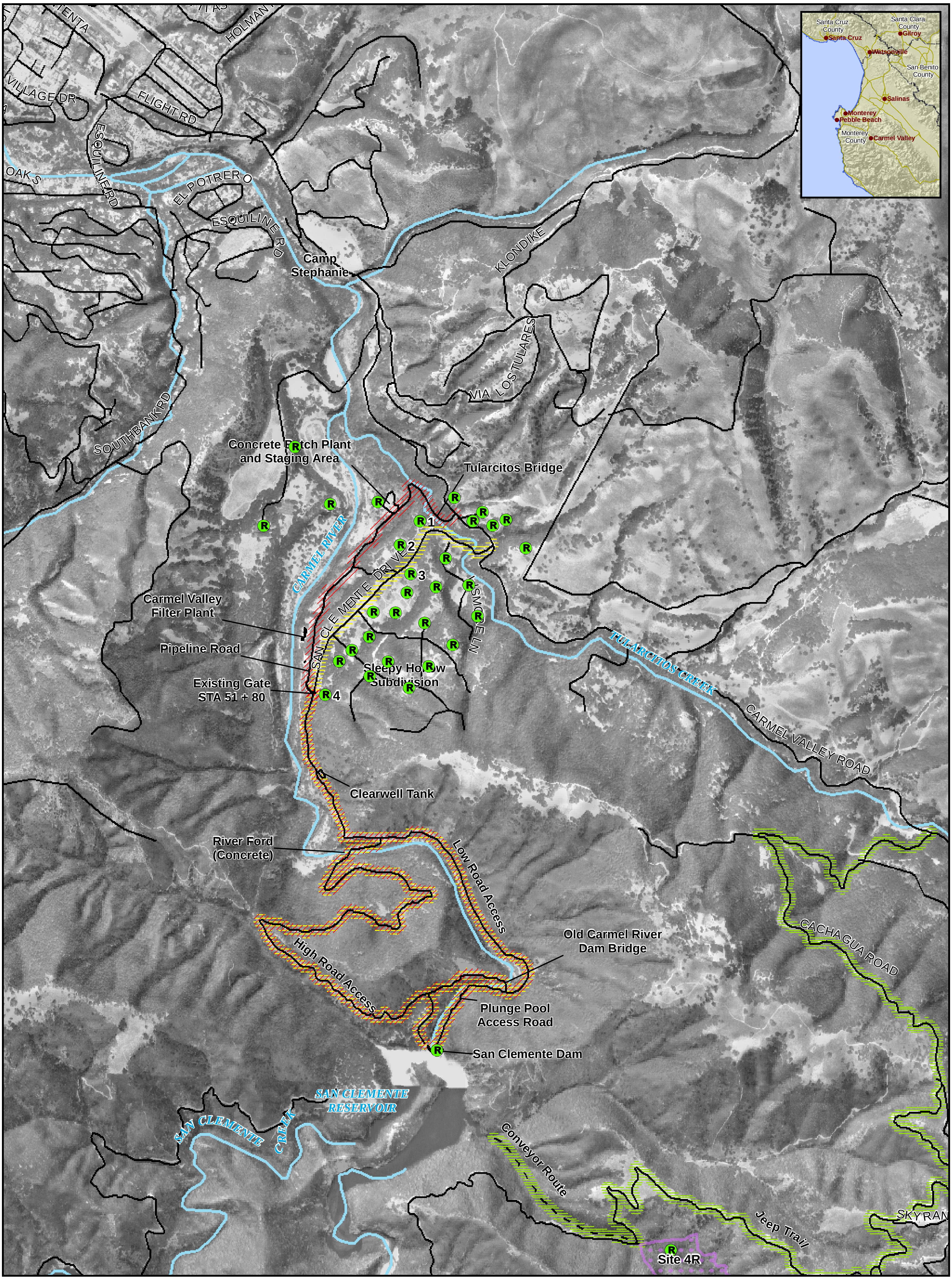

Legend

Access Routes

- Cachugua / 4R
- Sleepy Hollow
- Tularcitos
- Sleepy Hollow / Tularcitos*

- Stream
- Existing Road
- Proposed Road

- Sediment Disposal Site
- R Sensitive Receptor

1. North Bend in San Clemente Drive (Lot 11)
2. Residence off Center Court Place (Lot 10)
3. Residence above new intersection (Lot 9)
4. South end of San Clemente Drive (Lot 1)

*Note: Sleepy Hollow and Tularcitos access routes share the same roads between the filter plant and the dam

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 4.8-1

Sensitive Receptors Map

0 0.15 0.3 0.6 Miles N

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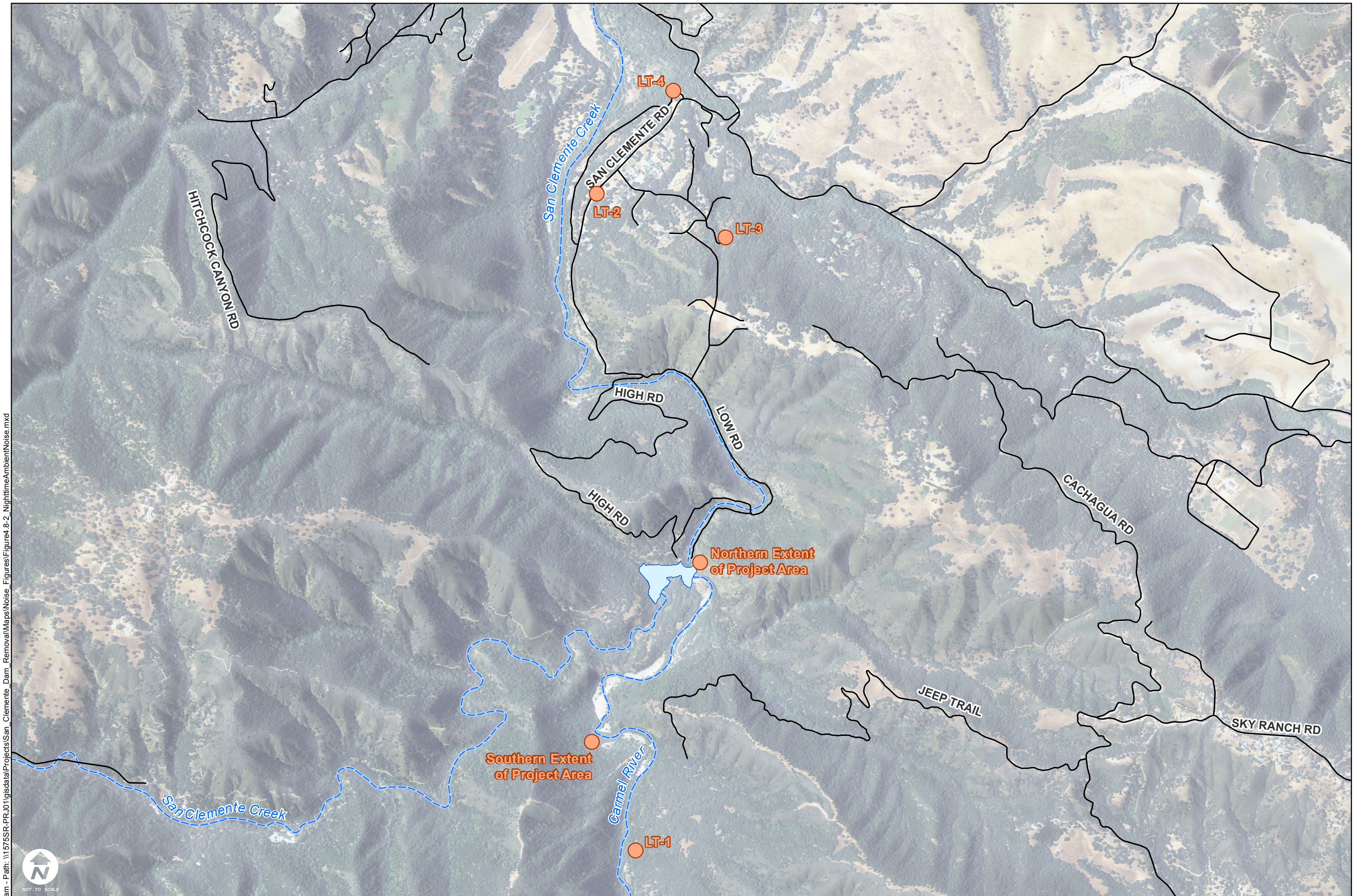

	PROJECT NO. 26818107 CARMEL RIVER REROUTE & SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	Nighttime Ambient Noise Measurement Locations	**FIGURE** 4.8-2

Table 4.8-2: Baseline Ambient Noise (dBA)[23]

Receptor Location	L_{90}	L_{50}	L_{eq}	L_1	L_{dn}
1. North bend in San Clemente Drive (Lot 11)	37	39	46	56	49
2. Residence off Center Court Place (Lot 10)	36	38	47	56	47
3. Residence above new intersection (Lot 9)	37	41	51	60	51
4. South end of San Clemente Drive (Lot 1)	36	38	46	58	46
Adjacent to Carmel Valley Road (reference, not a receptor)	41	44	58	70	57

Ambient noise levels in 1997 reflected the traffic characteristics at each location: nearby traffic volume, average speed, and distance to the nearest road. In these locations background noise levels are established by natural sounds such as birds and wind in the trees, and by traffic on Carmel Valley Road. Since Carmel Valley Road is the only arterial with significant traffic (approximately 120 trips per hour), noise levels decrease with distance from this road. However, the "background" noise level (L90) reflected a generally quiet ambient noise level (37 dBA). The L_{dn} levels were within land use compatibility standards, with the highest levels found adjacent to Carmel Valley Road.

Baseline nighttime noise levels recorded on August 3 and August 4, 2011 are summarized in Table 4.8-2a.

Table 4.8-2a: Baseline Nighttime Ambient Noise collected from 10:00 pm to 7:00 am (in dBA)

Receptor Location	L_{90}	L_{50}	L_{eq}	L_{10}	L_{dn}
1. LT 1 Stone Cabin	**38.8**	**39.0**	**39.0**	**39.1**	**NA**
2. LT-2 Sleepy Hollow (across from Lot 3)	**23.4**	**24.2**	**29.7**	**28.8**	**NA**
3. LT-3 Sleepy Hollow (Lot 16)	**20.3**	**23.2**	**25.9**	**28.8**	**NA**
4. LT-4 Sleepy Hollow (across from Lot 11)	**24.8**	**30.1**	**35.4**	**39.1**	**NA**

NA – Not Applicable. Noise measurements are direct nighttime measurements.

2030 Baseline Conditions

Since the Proponent's Proposed Project area is a sparsely populated rural zone with larger parcels of land occupied by individual residences with limited additional development potential, there would be no anticipated potential for significant changes in the ambient background noise summarized in Table 4.8-2. Therefore, the 1997 baseline ambient noise levels are not expected the change significantly in the future out to the year 2030.

[23] The ambient noise levels computed fell in the "normally acceptable" range (Noise Range 1) of the Monterey County Land Use Compatibility Standards for residential uses. **(Monterey County General Plan 2010).**

4.8.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

In accordance with CEQA and County of Monterey land use compatibility standards for exterior community noise, a project impact would be significant if:

- Ambient noise levels in adjoining areas or in areas of sensitive receptors would increase substantially; or

- The proposed land uses are not compatible with ambient noise level standards.

Impact Assessment Methodology

The impact assessment utilizes estimates of project noise levels that are based on empirical calculations using literature-based noise source data and standardized calculations of noise attenuation with distance from the source. Since the complex nature of outdoor acoustics as affected by terrain and vegetation creates variability in noise levels at a given distance, the calculated noise levels associated with construction-related activities such as truck traffic and equipment operation may vary from those experienced during construction.

During the construction phase of the project, haul truck traffic noise level will vary depending on the quantities and frequency of trucks, which operate at any particular time. A maximum noise level for typical trucks in decibels (dBA) was correlated from industrial hygiene and noise measurement reference tables for characteristic industrial noise sources at reference distances.

Noise attenuation over distance from the alternative access roads was calculated on the basis of sound pressure level (SPL) converted to dB ("A" weighting, dBA). Sound pressure level (SPL, µbar, 0.1 N/m^2) attenuates with respect to the inverse distance law, where sound pressure is inversely proportional to the distance from the noise source. The decibel is defined as ten times the base 10 logarithm of the ratio between the two quantities of pressure squared, or:

$$SPL = 10 \log (p^2 / p_o^2) = 20 \log (p / p_o) \text{ dB}$$

where p is the sound pressure being measured and p_o is the reference sound pressure (in air 0.0002 µbar = 2×10^{-5} N/m^2, in water 0.00001 µbar = 1×10^{-6} N/m^2). This relationship is used to calculate attenuated noise levels for truck traffic at discrete distance intervals from the alternative access roads. Receptors range from about 60 to 600 meters in the receptor zone, with estimated attenuation shown in Table 4.8-3. At a sufficient distance from a particular noise source, with respect to intensity, noise becomes insignificant, particularly in complex, obstructed terrain covered with vegetation.

Table 4.8-3: Typical Noise Attenuation

Construction Equipment	Line-of-Sight Estimated Noise Level, dBA						
	15 m.	30 m.	60 m.	100 m.	150 m.	300 m.	600 m.
Dump Truck	91	85	79	75	71	65	59
Backhoe	85	79	73	69	65	59	53
Drilling Equipment Diesel Engines	100	94	88	84	80	74	68
Flatbed Truck	85	79	73	69	65	59	53
Pickup Truck	70	64	58	54	50	44	38
Tractor Trailer	85	79	73	69	65	59	53
Crane	85	79	73	69	65	59	53
Pumps	70	64	58	54	50	44	38
Welding Machine	72	66	60	56	52	46	40
City Street Traffic	80	74	68	64	60	54	48
Average for Truck Traffic	**87**	**81**	**75**	**71**	**67**	**61**	**55**

Table 4.8-4 shows that blasting noise at the dam site would not cause impacts due to the very long attenuation distance from the dam site to the receptor locations, 3900 to 5300 meters (see Figure 4.8-1). At these distances, transmitted noise would become insignificant, particularly in the complex obstructed terrain covered with vegetation.

Table 4.8-4: Typical Estimated Noise Impacts from Blasting

Activity	Line-of-Sight Estimated Noise Level, dBA						
	15 m.	**1000 m.**	**2000 m.**	**3000 m.**	**4000 m.**	**5000 m.**	**6000 m.**
Blasting (120 dBA)	120	84	78	74	71	70	68
Blasting (140 dBA)	140	104	98	94	91	90	88

In addition to the line-of-sight attenuation effects described above, the steep and convoluted terrain would cause construction noise to turn and bounce multiple times in order to reach a receptor. As noise turns or bounces in complex vegetated terrain, it is significantly reduced, typically 30 to 40 dBA.

Two aspects are important when considering potential noise impacts of a project: the increase in noise level, and the overall noise level produced. In terms of noise increases, persons exposed to an increase of 2 dBA or less would not notice the difference. Some persons exposed to increases of 3 to 4 dBA notice the increase in noise level, although the increase would not be serious. Noise increases of 5 dBA and above are very noticeable, and, if these are frequent incidents or continuous in nature, could represent a significant disturbance. Because of the existing low ambient levels in the Proponent's Proposed Project area, very noticeable short-term noise increases of 5 dBA or more could be produced by Proponent's Proposed Project activities.

Nighttime Construction Noise Modeling

Excavation, and other construction activities may occur at night at the Dam and reservoir. To determine specific noise impacts of nighttime excavation on residential receptors in the area, a supplemental noise assessment was conducted (see Appendix BB).

Noise generated by proposed nighttime construction activities was modeled using Cadna/A®, a three-dimensional software program designed to predict and assess noise levels in the vicinity of industrial and construction operations. The program uses internationally recognized algorithms (ISO 9613 2) for the propagation of sound to calculate noise levels and allows for input of all pertinent features, such as terrain or structures, that could affect the propagation of noise.

For modeling purposes, night work was assumed to simultaneously use up to 3 excavators, 9 dump trucks, and 2 auger drill rigs. No blasting or dam removal activities would occur at night.

Sound levels were estimated for work conducted at the northern end of the project site near SCD and nearest the Sleepy Hollow community, as well as at the southern end of the project site nearest the Stone Cabin.

4.8.3 IMPACTS AND MITIGATION

The following impacts have been defined for noise related activities:

- Issue NO-1: Dam Site Activities (noise from construction equipment and activity)
- Issue NO-2: Access Road Upgrades (noise generated during access road improvements)
- Issue NO-3: Project-Generated Traffic (noise from construction-related travel, including mobilization, materials, and workers)
- Issue NO-4: Concrete Batch Plant Operation (noise from operation of a new temporary stationary source)
- Issue NO-5: Sediment Disposal Site 4R Activities (noise from construction-related travel and activity)

Potential noise impacts associated with the seismic safety project would only occur during construction, would be intermittent and would not involve continuous noise sources, even during the primary construction period.

Proponent's Proposed Project

Impacts and mitigation measures for Noise Issue NO-5 (Sediment Disposal Site 4R Activities) do not apply to Proponent's Proposed Project.

Issue NO-1: Dam Site Activities

Noise from construction equipment and activity
Determination: **significant, unavoidable, short-term**

IMPACT

Noise-generating activities associated with the Proponent's Proposed Project would cause temporary, short-term noise. Although most activities at the dam site would be audible and temporarily increase noise levels, they would not generate continuous noise. Because of their typically short duration, they would not affect the L_{dn} noise level.

The primary types of noise-generating construction activities that would occur in the area of the dam site include access road and bridge improvements; foundation preparation; parapet wall and spillway pier demolition; and concrete from construction and concrete pouring. These activities would involve the use of large diesel engine equipment, which produce noise levels of 75 to 85 dBA at 15 meters under full load. Jackhammers, if employed in the demolition phase, could produce noise levels of up to 90 dBA at 15 meters. A list of typical construction equipment and the associated noise levels is presented in Table 4.8-5, along with the "usage" level, or the portion of the time the equipment is generally used (that is, 0.4 means the equipment is used 40 percent of the time).[24]

No receptor areas would have a direct noise path and none are located in the vicinity of the Dam. Significant noise impacts would not occur due to the very long attenuation distance from the dam site to the receptor locations (3900 to 5300 meters; see Figure 4.8-1). At these distances, transmitted noise would likely become insignificant, particularly in complex terrain covered with vegetation. Residential noise levels in the Proponent's Proposed Project area, except for those adjacent to Carmel Valley Road, have existing L_{dn} noise levels below 50 dBA. Project noise sources of longer duration could temporarily increase the daily L_{dn}, but would rarely approach the 55 dBA limit considered acceptable for low-density residential use. Once the dam retrofit is complete, no long-term noise-generating activities would occur. However, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact will be less than significant.

MITIGATION

Standard measures such as limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near sensitive receptors and it is unlikely that dam site activities would have a significant noise impact. However, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact will be less than significant.

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[24] U.S. EPA 1971

Table 4.8-5: Typical Ranges of Construction Equipment Noise Levels[25]

Equipment Type	Noise levels, dBA @ 15 m	Typical Usage
Mobile Equipment		
Front Loader	75–80	0.4
Backhoe	75–85	0.2
Bulldozer, tractors	75–85	0.4
Scraper	80–90	0.4
Grader	75–85	0.1
Truck	75–90	0.4
Paver	80–90	0.1
Materials Handling Equipment		
Concrete mixer	75–85	0.4
Concrete pump	75–80	0.4
Crane	75–85	0.2
Derrick	75–90	0.2
Stationary Equipment		
Pumps	70–75	1.0
Generators	75–80	1.0
Compressors	75–80	1.0
Saws	75–80	0.05
Impact Equipment		
Pile drivers	95–100	0.05
Jackhammers	75–90	0.1
Rock drills	80–100	0.05
Pneumatic tools	80–85	0.2

Issue NO-2: Access Road Upgrades

Noise generated during access road improvements
*Determination: **significant, unavoidable, short-term***

IMPACT

Road and bridge widening and improvement would generate noise transmitted from the following activities:

- Minor pruning and removal of some trees and underbrush. Gas engine chain saws typically produce sound levels of 82 to 87 dBA and would be used intermittently over a period of weeks.
- Delivery of aggregate materials and bridge building tasks. Diesel trucks produce noise levels of 80 to 85 dBA and would make several trips per day over a period of several months.
- Installing retaining walls along some embankments, by drilling holes and placing steel posts in concrete, to retain heavy wood timbers. This activity would require diesel equipment producing noise levels of 80 to 85 dBA for brief periods and would be completed within a few weeks.

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[25] U.S. EPA 1971

- Widening and grading would require heavy machinery, such as small bulldozers, bobcats, backhoes, and diesel trucks. These have medium diesel engines and typically produce noise levels of 80 to 85 dBA under full load and 75 to 80 dBA while idling. This activity could occur sporadically at any particular location over a period of several months.

A summary of the typical intermittent conservative line-of-sight noise levels produced by road improvement activities at the representative receptors is presented in Table 4.8-6. Actual attenuated noise levels would likely be less than the calculated levels due to terrain and vegetation factors which would mitigate transmitted noise by approximately 3 to 7 dBA[26]. Resultant noise levels at some times at some locations may be above the normally acceptable range and/or more than 5 dBA above background. These instances would be transient and temporary. The noise exposures associated with road improvement would be very noticeable above the low background noise levels during several months of dam retrofit preparations. For comparison, a standard auto passby produces a maximum noise level of 55 to 65 dBA in the front yard of a residential property (15 meters). Thus, at some locations during road improvements, noise level increases could exceed that of a passing auto (or more than 5 dBA).

Table 4.8-6: Typical Estimated Road Improvement Noise

Receptor Location[27]	Estimated Noise Level, dBA
1. Lot 11 at north bend in San Clemente Drive (45 m)	60–70
2. Lot 10 residence off Center Court Place (60 m)	55–65
3. Lot 9 residence above new intersection (150 m)	55–65
4. Lot 1 at south end of San Clemente Drive (30 m)	70–80

Access roads and the OCRD Bridge could result in intermittent, short-term noise impacts for residential receptor areas shown in Figure 4.8-1 during daytime operations. Table 4.8-7 shows typical estimated attenuated noise levels at typical residential receptor distances from the prospective access routes (San Clemente Drive, Cachagua, Tularcitos) against a 37 dBA background (100 meters). The nearest receptor to an access route could receive about 75 dBA of equipment and traffic noise during daytime hours while the furthest receptor from an access route could receive about 55 dBA of equipment and traffic noise during daytime hours.

MITIGATION

Road construction and improvements would require contractor implementation of equipment maintenance and management practices to reduce construction-related noise. The following mitigation measures would be required to reduce this impact; however it may remain at a significant level for several weeks.

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[26] Detailed terrain and vegetation attenuation analyses are beyond the scope of this study.
[27] The approximate distance to the road is in parentheses.

Table 4.8-7: Typical Estimated Short-term Intermittent Noise Impacts

Reference Level (15 meters)	Nearest Receptor (60 meters)	Furthest Receptor (600 meters)	Background Level (100 meters)
Attenuated noise level: 87 dBA	Attenuated noise level: 75 dBA	Attenuated noise level: 55 dBA	Attenuated noise level: 37 dBA

For off-road equipment:

- Use construction equipment that is of quiet design, has a high-quality muffler system, and is well maintained. This includes trucks used to haul materials. Examples of quiet-design construction equipment include the following:

  - For pile drivers: SPC Co. "Hush" models, Taywood Co. "Pilemaster" model, Dawson Co. "Quiet Piling Rig", for example.

  - For rock drills, mufflers have been developed by H.K. Porter and Acme Muffler. Both rock drill exhaust mufflers and body mufflers have been developed under contract to the U.S. Bureau of Mines Research Center. Pittsburgh Mining and Safety Research Center studies have shown that partial length constrained layer damping for drill steels is effective in reducing noise from drill bit vibration.

  - Install engine enclosure panels when required on stationary gas, diesel, or pump equipment.

  - Eliminate unnecessary idling of machines when not in use.

  - Use good maintenance and lubrication procedures to reduce operating noise.

  - Timing restrictions (i.e., daytime operations only) would be applied to construction activities in and near the concrete batch plant and staging site and access to and from this site from Carmel Valley Road via San Clemente Drive and Center Court Place.

For on-road vehicles:

- Passenger vehicle (including van pools) access for construction workers would be limited to between 7:00 a.m. and 7:00 p.m. Monday through Saturday during the construction season (typically April through October).

- Truck deliveries of construction material and equipment to the batch plant and from the batch plant to the Dam, and construction activities and equipment operation in and around the batch plant would be limited to between 8:00 a.m. and 6:00 p.m. Monday through Saturday during the construction season (typically April through October).

- Enforce California Vehicle Code prohibitions against faulty or modified loud vehicle exhaust systems (Sections 27150 and 27151).[28]

- Post low speed limits (15 mph as stated in the air quality section) on the unpaved access roads, not only to reduce noise levels and dust, but also to maintain safe operation conditions.

These mitigation measures would reduce the impacts of noise generated during access road improvements. Although the impacts will be transient and temporary, it is difficult to say with certainty that the mitigation measures will reduce the short-term impacts to less than significant.

Issue NO-3: Project-Generated Traffic

Noise from construction-related travel, including mobilization, materials, and workers
Determination: ***significant, unavoidable, short-term***

IMPACT

Typical project-generated traffic would be comprised of material delivery trucks, concrete-mixing trucks, and construction worker vehicles traveling to and from the site. Large diesel trucks would be employed to deliver aggregate, sand and concrete to the mixing plant site, as well as equipment to the dam site. These trucks have large diesel engines and produce noise levels of 75 to 80 dBA under full load and 70 to 75 dBA while idling (30 meters). An estimated 20 truck trips per day, with a maximum of about 4 trips per hour, would be expected under typical conditions.[29]

During dam construction, diesel concrete mixing trucks would pick up loads at the batch plant and deliver them to the dam site, creating noise levels of 70 to 80 dBA at 30 meters. Under peak conditions approximately 50 trips per day, or about 6 trips per hour, could travel the road.[30]

Construction worker vehicles traveling to and from the dam site include standard gas-engine cars, pickups and vans, producing noise levels of 55 to 65 dBA at 15 meters. The number of worker trips to and from the mixing plant or dam site is estimated to be about 90 per day, with about 25 to 30 in the morning and evening peak hours.[31]

Receptors for noise transmitted from project-generated car and truck trips to the dam site are described below for each route segment shown generally in Figure 4.8-1:

- On Carmel Valley Road to San Clemente Drive, receptors include several residential properties adjacent to the Carmel Valley Road.

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[28] Vehicles with poorly muffled unmuffled or modified engine or exhaust systems that cause excessive noise can be cited by any peace officer according to this code.
[29] Woodward-Clyde, October 1997 and Higgins & Associates, 1998, also MWH, 2005.
[30] Woodward-Clyde, October 1997 and Higgins & Associates, 1998.
[31] Woodward-Clyde, October 1997 and Higgins & Associates, 1998.

- On the Tularcitos Creek Access Route connection, receptors include residential properties on San Clemente Drive, particularly those near the entrance to Center Court Place.

- On the improved access road from new batch mixing plant location past filter plant, receptors include residential properties on San Clemente Drive, particularly those from the entrance to Center Court Place and Lot 1 at end of San Clemente Drive.

- On the improved access road from the extension of San Clemente Drive via the higher access road to the Dam, receptors include residential properties at the south end of San Clemente Drive.

Table 4.8-8 summarizes typical conservative line-of-sight noise levels due to various types of traffic on nearby properties at different sections of the access route. Actual attenuated noise levels would likely be less than the calculated levels due to terrain and vegetation factors which would mitigate transmitted noise by approximately 3 to 7 dBA[32]. Resultant noise levels at some times at some locations may be above the normally acceptable range and/or more than 5 dBA above background. These instances would be transient and temporary. Except for the receptors adjacent to Carmel Valley Road at road level, sensitive receptors would be protected not only by distance, but also by steep terrain and vegetation.

Table 4.8-8: Typical Estimated Project-Generated Traffic Noise

Receptor Location[33]	Worker Trips to the Dam (30/hr max), dBA	Truck Trips to Plant/Dam (6/hr max), dBA
1. Lot 11 at north bend in San Clemente Drive (45 m)	47–57	62–77
2. Lot 10 residence off Center Court Place (60 m)	40–50	60–75
3. Lot 9 residence above new intersection (30 m)	50–60	65–80
4. Lot 1 at south end of San Clemente Drive (30 m)	50–60	65–80

Since background levels are relatively low in the area away from Carmel Valley Road, new truck traffic passing the road several times per hour would be very noticeable, producing noise levels of up to 80 dBA at some receptors. Worker vehicles would be noticeable, but to a much lesser extent. For comparison, a standard auto passby would create a maximum noise level of 55 to 65 dBA in the front yard of a residential property, 15 meters from the road. In summary, most project-generated worker trips would produce lower noise levels than a typical auto passby due to lower speeds that would be required on the access roads during the course of the Proponent’s Proposed Project. The noise produced by construction workers' vehicles would not cause a significant noise impact, however material delivery trucks and concrete mixing trucks would result in significant noise impacts.

[32] Detailed terrain and vegetation attenuation analyses are beyond the scope of this study.
[33] The approximate distance to project traffic is in parentheses.

MITIGATION

Mitigation for issue NO-2 (Access Road Upgrades) would also mitigate Impact NO-3 (Project-Generated Traffic). These mitigation measures would reduce the impacts of noise from construction related travel. Although the impacts would be transient and temporary, it is difficult to say with certainty that the mitigation measures can reduce the short-term impacts to less than significant.

Issue NO-4: Concrete Batch Plant Operation

Noise from operation of a new temporary stationary source
*Determination: **significant, unavoidable, short-term***

IMPACT

The concrete to be used for thickening and reinforcing SCD would be mixed at a small temporary batch plant to be constructed in an open area at the bend in the access road approximately a half mile northeast of the existing filter plant. Because of the proximity to at least two Sleepy Hollow properties, Proponent's Proposed Project activities occurring in the concrete mixing plant area potentially could cause construction noise disturbances. The activities occurring in the mixing plant area would be:

- Material loading into plant conveyors would involve the use of diesel engine loaders, producing short-term, intermittent noise levels of 70 to 80 dBA at 15 meters.

- Batch plant mixing operations would include various types of hoppers, conveyors, and motors to load and mix aggregate sand and cement. This stationary equipment produces noise levels to 70 to 78 dBA at 30 meters. This could be a relatively steady noise during days that concrete is being delivered to the site.

- Diesel trucks would deliver aggregate, sand and dry concrete to the mixing plant and also mixing trucks would deliver concrete to the dam site. The truck noise would occur several times per hour. (The noise impacts from trucks delivering materials to the plant and trucks delivering concrete to the Dam were considered in Issue NO-3.)

A summary of typical batch plant conservative line-of-sight noise levels at the affected receptor areas are presented in Table 4.8-9. Actual attenuated noise levels would likely be less than the calculated levels due to terrain and vegetation factors which would mitigate transmitted noise by approximately 3 to 7 dBA[34]. Resultant noise levels at some times at some locations may be above the normally acceptable range and/or more than 5 dBA above background, however, these instances would be significant and unavoidable would be short-term in nature.

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[34] Detailed terrain and vegetation attenuation analyses are beyond the scope of this study.

Table 4.8-9: Typical Estimated Concrete Batch Plant Noise

Receptor Location[35]	Plant Noise, dBA
1. Lot 11 at north bend in San Clemente Drive (45 m)	55–60
2. Lot 10 residence off Center Court Place (60 m)	53–58
3. Lot 9 residence above new intersection (30 m)	Near Background
4. Lot 1 at south end of San Clemente Drive (30 m)	Near Background

The receptors that could be disturbed by plant noise would be limited to properties on San Clemente Drive that are within about 150 meters of the plant, a total of two lots. Both would be partly protected by terrain and vegetation attenuation, so there would be no actual direct noise transmission path (line-of-sight) between the plant and the property. Plant noise would often be audible above the ambient noise, but it would generally be low enough not to be considered intrusive. The analysis above shows that the resulting receptor noise levels when the plant is operating would fall within the Monterey County "Normally Acceptable" standard between 50 and 60 dBA for the closest locations, and would be lower at all other receptor locations.

Traffic and batch plant noise would not additively increase the severity of the impacts of either one alone. Since neither source of noise is steady and consistent, nor do the two have the same character or sound level, they would not be additive. Whichever noise is the loudest at the time or closest to a given receptor would be noticeable within the noise level ranges stated in this chapter.

MITIGATION

The batch plant would be quieted by the installation of sound damped conveyors and equipment enclosures, as well as fitting exhaust manifolds with high quality mufflers. Aggregate material piles at the batch plant site would be arranged to protect receptor locations. Wherever possible, materials would be piled to act as noise berms between residential locations and the truck and mixing plant noise sources.

- For the four sensitive receptor locations (Lots 1, 9, 10, and 11), periodically monitor noise generated by batch plant operation to determine actual noise levels and significance of impacts.

- The mitigation measures will minimize the short-term impacts associated with NO-4 (Concrete Batch Plant Operation) but it is difficult to say with certainty that the mitigation measures can reduce the short-term impacts to less than significant.

Alternative 1 (Dam Notching)

Impacts and mitigation measures for Noise Issues NO-2 (Access Road Upgrades), NO-3 (Project-Generated Traffic), and NO-4 (Concrete Batch Plant Operation) would be the same as the Proponent’s Proposed Project.

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[35] The approximate distance to the batch plant is in parentheses.

Issue NO-1: Dam Site Activities

Noise from construction equipment and activity
Determination: **significant, unavoidable, short-term**

IMPACT

Impacts from dam notching and sediment disposal would be similar in most respects to those caused by the activities characterized for the Proponent's Proposed Project. Blasting may be used to break up large concrete pieces. At the dam site, blasting would cause brief intermittent noise impacts of a few seconds duration in the range of 120 to 140 dBA at 15 meters.[36,37]

MITIGATION

Noise generated at the Dam and sediment disposal sites, including blasting, would be attenuated by the very long distance to the receptor locations (3,900 to 5,300 meters) and by local terrain, as discussed above. Blasting would be restricted to daytime operations, between 8:00 a.m. and 6:00 p.m. Monday through Saturday during the construction season (typically April through October). The blasting schedule would be communicated to local residents.

Standard measures such as limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near sensitive receptors and it is unlikely that dam site activities would have a significant noise impact. However, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact will be less than significant.

Issue NO-5: Sediment Disposal Site 4R Activities

Noise from construction related travel and activity
Determination: significant, unavoidable, short-term

IMPACT

The Stone Cabin is located approximately 0.75 miles (3,960 feet, 1,207 meters) southwest of Site 4R at the closest point. A 700 foot (213 meter) high ridge separates the Stone Cabin from Site 4R at the closest point. Thus, there is no direct line-of-sight from Site 4R to the Stone Cabin. Since there is no direct line-of-sight, noise from Site 4R would be deflected and attenuated by the interceding ridge. This spatial relationship would significantly reduce noise impacts on the Stone Cabin. As shown on the map, traffic on the improved Site 4R access road would not traverse the last mile (1,609 meters) of Jeep Trail beyond Site 4R.

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[36] Barbara A. Plog, Ed. 1988. Fundamentals of Industrial Hygiene 3rd Edition. National Safety Council, Table 9-b, page 168
[37] Bruel & Kjaer, 1971, Acoustic Noise Measurements, Figure 2-10, page 20.

Typical project-generated traffic noise at Site 4R would be comprised of trucks and equipment with large diesel engines and produce estimated noise levels of 75 to 85 dBA under full load and 70 to 80 dBA while idling (30 meters).

Table 4.8-10 shows typical estimated attenuated noise levels at the Stone Cabin from the proposed Site 4R activity against an estimated 40 dBA or less background[38].

Table 4.8-10: Typical Estimated Short-term, Intermittent Noise Impacts

Reference Level (15 meters)	Straight Line (1200 meters)	Complex Terrain (1200 meters)	Background Level (1200 meters)
Attenuated noise level: 87 dBA	Attenuated noise level: 49 dBA	Attenuated noise level: 34 dBA	Attenuated noise level: ≤40 dBA[39]

Impacts from transmitted noise from Site 4R to the Stone Cabin would become insignificant due to absorption by the complex terrain covered with vegetation which intercedes between Site 4R and the Stone Cabin. As shown in Table 4.8-10, the actual complex terrain attenuated noise transmission from Site 4R to the Stone Cabin is estimated to be 34 dBA compared to 49 dBA estimated for straight line attenuation. The estimated complex terrain attenuated value is less than estimated background at the Stone Cabin; however, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact will be less than significant.

MITIGATION

Standard measures such as limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near the Stone Cabin and it is unlikely that sediment disposal site activities would have a significant noise impact. However, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact will be less than significant.

Alternative 2 (Dam Removal)

Impacts and mitigation measures for Noise Issues NO-1 (Dam Site Activities), NO-2 (Access Road Upgrades) and NO-3 (Project-Generated Traffic) would be the same as the Proponent's Proposed Project. Issue NO-4 (Concrete Batch Plant Operation) would not apply. Issue NO-5 (Sediment Disposal Site 4R Activities) would be the same as Alternative 1.[40]

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[38] Barbara A. Plog, Ed. 1988. Fundamentals of Industrial Hygiene 3rd Edition. National Safety Council, Table 9-b, page 168

[39] Barbara A. Plog, Ed. 1988. Fundamentals of Industrial Hygiene 3rd Edition. National Safety Council, Table 9-b, page 168

[40] Noise generated at the Dam and sediment disposal sites, including blasting, would be attenuated by the very long distance to the receptor locations (3,900 to 5,300 meters) and by local terrain, as discussed above. Blasting would be restricted to daytime operations, between 8:00 a.m. and 6:00 p.m. Monday through Saturday during the construction season (typically April through October). The blasting schedule would be communicated to local residents.

Alternative 3 (Carmel River Reroute and Dam Removal)

~~Impacts and mitigation measures for Noise Issues NO-1 (Dam Site Activities), NO-2 (Access Road Upgrades) and NO-3 (Project-Generated Traffic) would be the same as the Proponent's Proposed Project.~~ Issue NO-4 (Concrete Batch Plant Operation) and Issue NO-5 (Sediment Disposal Site 4R Activities) would not apply.[41]

Issue NO-1: Dam Site Activities

Noise from construction equipment and activity
Determination: **significant, unavoidable, short-term**

IMPACT
Daytime Activities—

Daytime noise-generating activities associated with Alternative 3 would cause audible and temporarily increase noise levels, but would not generate continuous noise and would not affect the L_{dn} noise level.

The primary types of daytime noise-generating construction activities that would occur in the area of the dam site include Diversion Dike and Reroute Channel construction (including blasting), sediment excavation and placement in the Sediment Disposal Area, and removal of the SCD and fish ladder. These activities would involve the use of large diesel engine equipment, which produce noise levels of 75 to 85 dBA at 15 meters under full load. Jackhammers, if employed in the demolition phase, could produce noise levels of up to 90 dBA at 15 meters. A list of typical construction equipment and the associated noise levels is presented in Table 4.8-5, along with the "usage" level, or the portion of the time the equipment is generally used (that is, 0.4 means the equipment is used 40 percent of the time).[42]

None of the identified receptors are located in the vicinity of the Dam and none would be in a direct noise path. Significant noise impacts would not occur due to the very long attenuation distance from the dam site to the receptor locations (approximately 2600 feet [stone cabin] and 6000 feet [Sleepy Hollow] with steep terrain between the work site and receptors; see Figure 4.8-1). At these distances, transmitted noise would likely become insignificant, particularly in complex terrain covered with vegetation. Blasting would be restricted to daytime operations, between 8:00 a.m. and 6:00 p.m. Monday through Saturday during the

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[41] Noise generated at the Dam and sediment disposal sites, including blasting, would be attenuated by the very long distance to the receptor locations (3900 to 5300 meters) and by local terrain, as discussed above. Blasting would be restricted to daytime operations, between 8:00 a.m. and 6:00 p.m. Monday through Saturday during the construction season (typically April through October). The blasting schedule would be communicated to local residents.

[42] U.S. EPA 1971

construction season (typically April through October). The blasting schedule would be communicated to local residents.

Residential noise levels in the Project area, except for those adjacent to Carmel Valley Road, have existing L_{dn} noise levels below 50 dBA. Project noise sources of longer duration could temporarily increase the daily L_{dn}, but would rarely approach the 55 dBA limit considered acceptable for low-density residential use. Once construction is complete, no long-term noise-generating activities would occur. However, given the sparsely populated rural nature of the area it cannot be determined with certainty that the impact of daytime noise-generating construction activities will be less than significant.

Nighttime Activities –

Construction activities at the Dam and reservoir sites may occur at night. Night work would be restricted to sediment excavation in the San Clemente Creek arm and placement of materials in the Sediment Disposal Area. No material delivery trucks or heavy construction equipment would be moved in or out of the site at night and no blasting would be permitted at night.

Night work would be restricted to sediment excavation activities at the dam site. Night crews would consist of approximately 20 personnel. A typical night shift would be from 5 pm to 4 am. About 8 vehicles would transport night shift workers to the project site at the end of the day shift. Most workers would be transported to and from the site using a van pool, but cars and pickup trucks may be used as well. After a night shift, 1 or 2 vans and 4 to 6 personal vehicles would leave the project site. Access would be via Cachagua Road and the Jeep Trail.

To assess the potential impact, noise modeling was conducted and compared to the measured ambient nighttime noise levels (see Appendix BB). The modeling assumed simultaneous use of up to 3 excavators, 9 dump trucks, and 2 auger drill rigs. Noise was calculated for work being conducted at the northern end of the (near SCD) and the southern end of the site (near the Reroute Channel and Diversion Dike). Results are summarized in Tables 4.8-11 and 4.8-12. Noise level contours for nighttime work are depicted in Figures 4.8-3 and 4.8-4.

Table 4.8-11. Noise Levels at Noise-Sensitive Receivers Due to Construction Activities Being Conducted at the Northern Extent of the Project Area

Receiver Site	Distance to Project Site (feet)	Measured Nighttime L_{eq} (dBA)	Modeled L_{eq} due to Construction Activities (dBA)	Cumulative L_{eq} (dBA)	Change in L_{eq} at Receiver Due to Construction Activities (dBA)
LT-1	5,000	39.0	4.0	39.0	0

LT-2	6,900	29.7	0	29.7	0
LT-3	5,900	25.9	0	25.9	0
LT-4	8,300	35.4	0	35.4	0

Table 4.8-12. Noise Levels at Noise-Sensitive Receivers Due to Construction Activities Being Conducted at the Southern Extent of the Project Area

Receiver Site	Distance to Project Site (feet)	Measured Nighttime L_{eq} (dBA)	Modeled L_{eq} due to Construction Activities (dBA)	Cumulative L_{eq} at Receiver (dBA)	Change in L_{eq} at Receiver Due to Construction Activities (dBA)
LT-1	2,600	39.0	13.8	39.0	0
LT-2	9,100	29.7	0	29.7	0
LT-3	8,600	25.9	0	25.9	0
LT-4	10,900	35.4	0	35.4	0

The modeled construction noise levels are less than the measured existing ambient nighttime Leq at all four noise-sensitive receivers, and there is expected to be no perceptible increase in noise levels at the Stone Cabin and the Sleepy Hollow community due to construction activities being conducted during nighttime hours.

It should be noted that sound levels cannot be added or subtracted directly because the decibel unit is measured on a logarithmic scale. An increase in the noise level of 3 decibels at a noise-sensitive receiver is just perceptible. For example, as shown in Table 4.8-12, the measured nighttime Leq at LT-1 was 39 dBA. The modeled Leq at LT-1 due to construction activities at the southern extent of the Project area is 13.8 dBA. If the noise level at LT-1 due to construction alone (13.8 dBA) is added to the existing measured nighttime ambient noise level (39 dBA) at LT-1, then the resulting, or cumulative, noise level at LT-1 remains 39 dBA. In order for there to be a perceptible change in noise at LT-1, the Leq due to construction activities at LT-1 would need to be 39 dBA or greater (39 dBA +39 dBA = 42 dBA).

MITIGATION

Mitigation for construction vehicle noise for issue NO-2 (Access Road Upgrades) for the Proponents Proposed Project would reduce potential noise impacts during both daytime and nighttime construction. Noise modeling results indicate it is unlikely that dam site activities would have a significant noise impact, even during nighttime hours. However, given the sparsely populated rural nature of the

area it cannot be determined with certainty that the impact of nighttime noise-generating construction activities will be less than significant.

Therefore, the overall impact of noise from construction equipment and activity would be significant and unavoidable.

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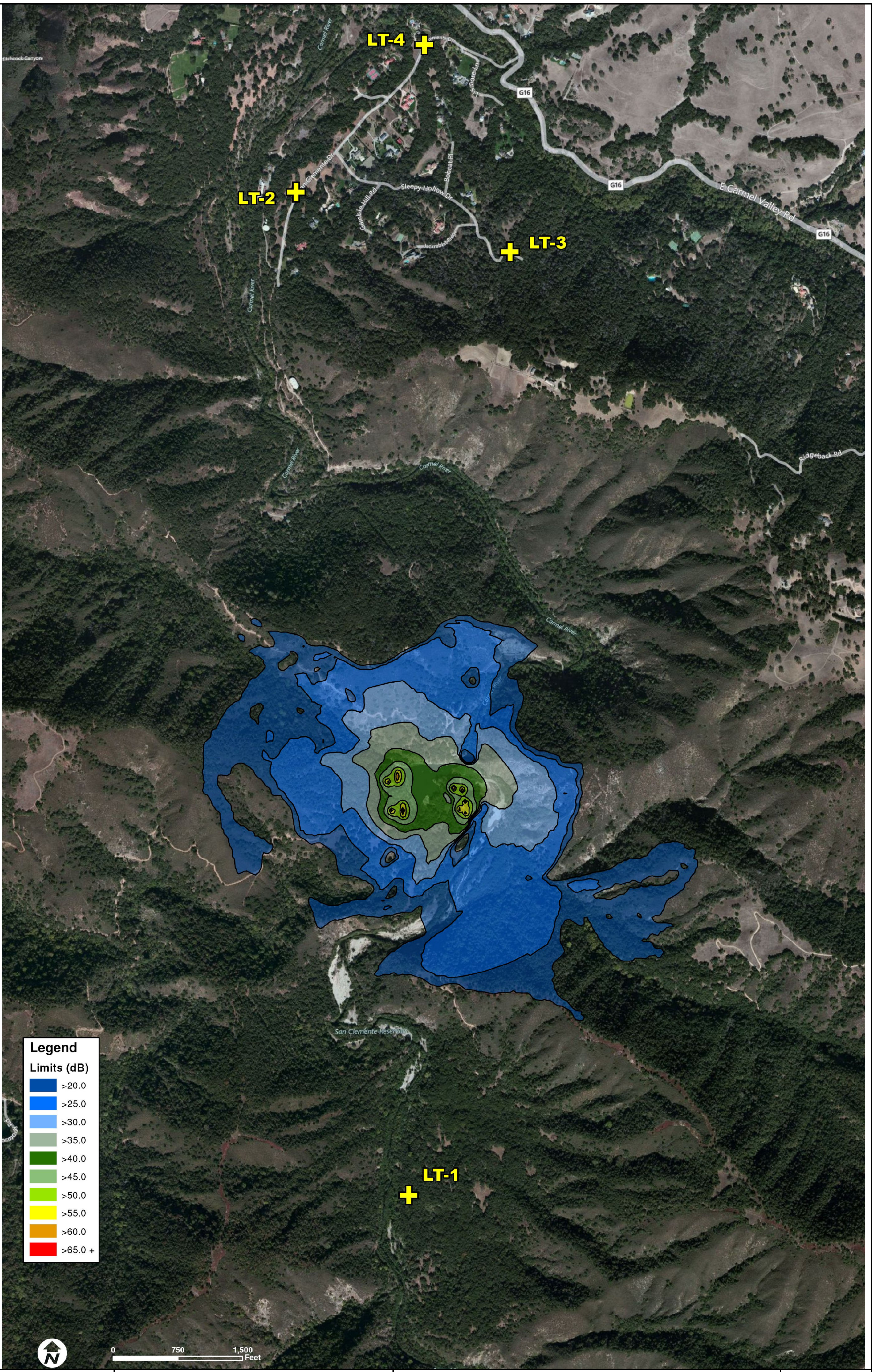

Project No. 26818107	NOISE LEVEL CONTOURS FOR CONSTRUCTION ACTIVITIES BEING CONDUCTED AT NIGHT IN THE NORTHERN EXTENT OF THE PROJECT AREA	Figure 4.8-3
CARMEL RIVER REROUTE & SAN CLEMENTE DAM REMOVAL PROJECT		

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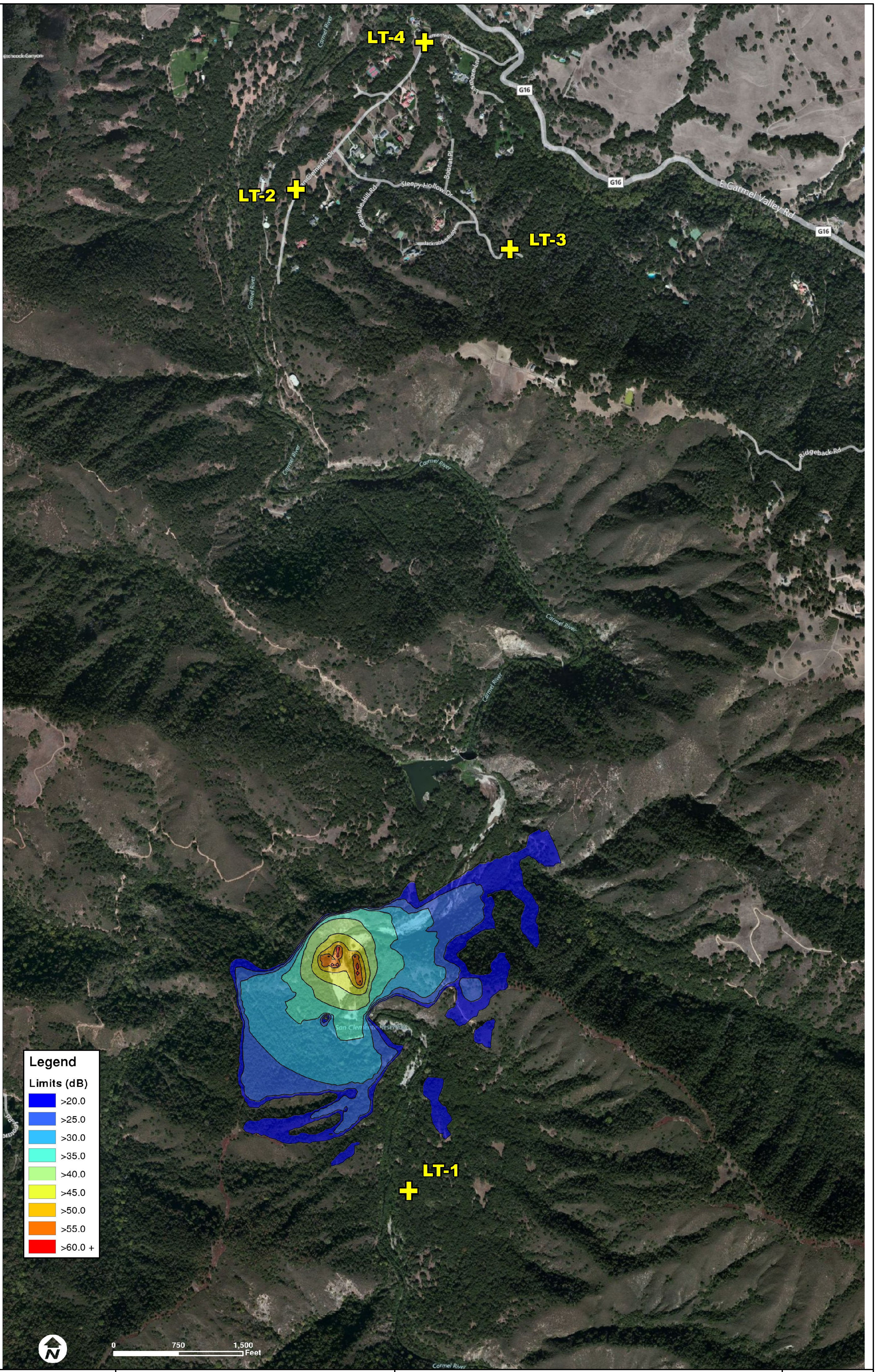

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	Project No. 26818107 CARMEL RIVER REROUTE & SAN CLEMENTE DAM REMOVAL PROJECT	NOISE LEVEL CONTOURS FOR CONSTRUCTION ACTIVITIES BEING CONDUCTED AT NIGHT IN THE SOUTHERN EXTENT OF THE PROJECT AREA	Figure 4.8-4

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Issue NO-2: Access Road Upgrades

Noise generated during access road improvements
Determination: significant, unavoidable, short-term

IMPACT

The primary access used to access the reservoir, construct the bypass, and relocate sediment from the San Clemente Creek arm to the Carmel River arm would be via Carmel Valley Road and Cachagua Road. An existing unpaved jeep road (the Jeep Trail), with entrance off Cachagua Road approximately three miles from the intersection with Carmel Valley Road, would be used. The Jeep Trail can also be accessed from Cachagua Road (from Tassajara Road) (see Figure 3.2-2a).

Cachagua Road (from Carmel Valley Road) will be used to bring construction personnel to the site and for highway-legal dump trucks and similarly sized vehicles that would haul aggregates and other construction materials to the site.

Larger construction traffic (primarily tractor-trailers mobilizing heavy construction equipment) would access the Jeep Trail via Carmel Valley Road to Tassajara Road to the southern arm of Cachagua Road, because this route has fewer difficult turns. Cachagua Road from Tassajara Road has five curves that would require widening to allow passage of the larger construction equipment. In addition, there is one load-restricted one-lane bridge that would be permanently improved to handle heavy construction equipment loads.

An approximately 2.3-mile portion of the Jeep Trail would need to be improved for construction access. The unimproved road, which currently has a width of approximately 12 feet, would be widened to approximately 18 feet. The sharper curves would be widened as necessary to allow passage of vehicles hauling construction materials and equipment. These activities would require removal of trees and other vegetation, as well as some ground disturbance. Drainage would be improved along the roadway by installing culverts along the alignment where required. The road would be surfaced with several inches of base rock, with isolated sections of asphalt pavement, as required by the slope and other conditions.

A new 0.6-mile-long access road (Reservoir Access Road) would be constructed from the improved Jeep Trail to the reservoir. The road would be excavated along the slope of the ravine and would consist of an approximately 12 foot-wide surface and two 3-foot wide shoulders. The excavated slope above the road would be stabilized with small anchors, wire mesh and shotcrete as needed. The road surface would have 6 inches of Class II base rock installed. The road's travel surface would be sealed with a double chip seal coat. Fifteen-inch diameter or larger culverts with inlet structures would be installed at approximately 400-foot intervals for drainage.

Noise-related impacts from access road upgrades would be the same as those described for the Proponent's Proposed Project. However, the location of these impacts would occur along the portion of Cachagua Road from the Jeep Trail south to Tassajara Road, rather than north of the Jeep Trail, and would affect a different set of receptors than the Proponent's Proposed Project.

Homes in the vicinity of the access road improvement locations on the southern arm of Cachagua Road may be exposed to temporary construction-related noise. The length of construction time would vary depending on the work being conducted. Grading and graveling at the locations near the intersection of Tassjara and Cachagua Roads would take less than one week, while improvements at the switchback locations and up to Bridge 529 could take up to two weeks.

Work at the switchbacks and at Bridge 529 would use a backhoe, compactor, and haul trucks for gravel, as well as a paver for applying asphalt to the widened curves. Assuming a distance of 200 to 400 feet from the road construction, nearby residents may be exposed to intermittent noise of up to 74 dBA from construction-related equipment. All access road improvement work would be conducted during daytime hours between 7 am to 6 pm. Temporary construction noise at these locations is considered a significant, unavoidable, short-term impact.

MITIGATION

Mitigation would the same as that for the Proponent's Proposed Project*, including the fact that all access road improvements will be limited to the hours between 7:00 am and 6:00 pm (see Final EIR/EIS page 4.8-13)***. The mitigation measures would reduce the impacts of noise generated during access road improvements.**

However, although the impacts will be transient and temporary, it is difficult to say with certainty that the mitigation measures will reduce the short-term impacts to less than significant. Consequently the impact of noise generated during access road improvements would be significant and unavoidable.

Issue NO-3: Project-Generated Traffic

Noise from construction-related travel, including mobilization, materials, and workers
Determination: significant, unavoidable, short-term

IMPACT

Noise impacts from project generated traffic would be the same as for the Proponent's Proposed Project, with the exception that under Alternative 3, heavy equipment and some material delivery would approach the project site via Tassajara Road and the portion of Cachagua Road south of the Jeep Trail. This would result in impacts similar to those described for the Proponent's Proposed Project, but would affect a different set of residential receptors. Pieces of heavy

equipment would be brought to and from the site as needed during the construction season (generally April to October) at a rate of approximately 10 to 60 round trips per month (average of up to two to six round trips per day). The increased noise levels would be brief in duration and would only last up to a few seconds for each truck passby.

Night work would be restricted to sediment excavation activities at the dam site as described in Issue NO-1. Night crews would consist of approximately 20 personnel. A typical night shift would be from 5 pm to 4 am. About 8 vehicles would transport night shift workers to the project site at the end of the day shift. Most workers would be transported to and from the site using a van pool, but cars and pickup trucks may be used as well. After a night shift, 1 or 2 vans and 4 to 6 personal vehicles would leave the project site.

Construction worker vehicles traveling to and from the dam site would include standard gas engine cars, pickups, and vans, which would produce maximum noise levels of 55 to 65 dBA at a distance of 15 meters. Access would be via Cachagua Road and the Jeep Trail.

There are no sensitive noise receptors along the Jeep Trail. Receptors along Cachagua Road and Carmel Valley Road include a number of residential properties. Cachagua Road is a public road and the addition of approximately 8 vehicles to the existing early morning traffic volumes is not expected to be significant.

However, since background traffic noise levels are relatively low in areas removed from Carmel Valley Road, new truck traffic passing receptors several times per day would be noticeable, and would produce peak noise levels of up to 80 dBA at some receptors. The increased noise levels would be brief in duration and would only last up to a few seconds for each truck passby. Truck passbys would likely be more noticeable along Tassajara and Cachagua Road where residences are closer to the roadway than along the Jeep Trail where the nearest sensitive receptor (Stone Cabin) is more than 2000 feet away.

The Monterey County Land Use Compatibility Standards for Exterior Community Noise show in Table 4.8-1 are in listed terms of the Community Noise Equivalent Level (CNEL) or the Day-Night Average Level (Ldn), which are descriptors of total noise exposure at a given location for an annual average day. Brief truck passbys, while noticeable at some locations, would not increase average daily noise above unacceptable levels shown in this table.

MITIGATION

Mitigation for issue NO-2 (Access Road Upgrades) for the Proponent's Proposed Project would also mitigate Impact NO-3 (Project-Generated Traffic) *except that construction activities at the SCD and reservoir sites may occur at night. Night work would be restricted to sediment excavation in the San Clemente Creek arm and* *placement of materials in the Sediment Disposal Area. No material delivery trucks or heavy construction equipment would be moved in or out of the site at night and no blasting would be permitted at night*.

These mitigation measures would reduce the impacts of noise from construction related travel. However, although the impacts would be transient and temporary, it is difficult to say with certainty that the mitigation measures can reduce the short-term impacts to less than significant. Consequently the impact of noise from construction-related travel, including mobilization, materials, and workers noise generated during access road improvements would be significant and unavoidable.

Alternative 4 (No Project)

There are no construction activities associated with the No Project Alternative; therefore there would be no additional noise beyond baseline conditions.

4.9 TRAFFIC AND CIRCULATION

This section describes the potential impacts of the San Clemente Seismic Safety Project on the traffic and transportation related conditions in the Project Area. Traffic and transportation related conditions include regional and local roadways and existing traffic operating conditions influenced by the project. In the response to comments, additional information is provided in the Final EIR/EIS which ~~clarifies~~ **clarified** and ~~amplifies~~ **amplified** the information included in ~~this~~ **the** Draft EIR/EIS. This environmental setting section was prepared using information developed from the documents provided by the RDEIR (Denise Duffy & Associates 2000).

Revisions to the Traffic and Circulation section were made to disclose and analyze potential impacts associated with use of Tassajara Road and the southern portion of Cachagua Road for heavy equipment access and construction deliveries, including additional pavement loadings and potential delays in emergency response.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. ***Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.***

4.9.1 ENVIRONMENTAL SETTING

This section describes the regional and local roadways that serve the project site and existing traffic operating conditions.

Existing Roadway System

San Clemente Drive

SCD is currently accessed from Carmel Valley Road via San Clemente Drive, a gated private road that extends from Carmel Valley Road through the Sleepy Hollow Subdivision. San Clemente Drive also provides access to the CVFP which is located adjacent to the Carmel River west of the Sleepy Hollow Subdivision. San Clemente Drive is a paved hard-surfaced road between Carmel Valley Road and a locked gate that prevents public access to the reservoir. From this locked gate on CAW property, San Clemente Drive is a one-lane unpaved roadway with turnouts to the junction of the upper and lower dam roads 3,100 feet south of the gate.

Carmel Valley Road

Carmel Valley Road extends between Highway 1 and Arroyo Seco Road west of Greenfield. It is a two-lane rural highway except for a four-lane divided section between

Carmel Rancho Boulevard and Via Petra Way. Carmel Valley Road west of Laureles Grades has 12 foot travel lanes and shoulders minimally six feet in width. East of Laureles Grade, shoulder widths narrow. Through Carmel Valley Village, Carmel Valley Road is designed with twelve-foot travel lanes with two- to four-foot shoulders. Numerous driveways exist through the Village and the speed limit is 25 miles per hour.

East of Carmel Valley Village, the shoulder widths vary from two to eight feet. The road in certain areas is extremely winding. Near the project site, a speed limit is not posted, but prevailing vehicle speeds are generally less than 30 miles per hour. At the intersection with San Clemente Drive, one travel lane is provided in each direction on Carmel Valley Road and the travel lanes are approximately 12 feet in width. Striped shoulders are not provided on this section of Carmel Valley Road.

Cachagua Road

Cachagua Road is a two-lane rural road that traverses mountainous terrain with narrow pavement widths and minimal shoulders. It intersects Carmel Valley Road about 2 miles east of San Clemente Drive and it provides access to the Cachagua area of Monterey County. Cachagua Road is generally 18 to 20 feet wide, although there are sections that are not as wide.

A corner sight distance of approximately 400 feet is currently provided to the west from the Cachagua Road approach to Carmel Valley Road. The corner sight distance to the east at this location is about 225 feet. These measurements are taken from a driver's position on the Cachagua Road approach to Carmel Valley Road that is about 13 feet back from the edge of the eastbound travel lane. Corner sight distance measurements taken from a position closer to Carmel Valley Road would yield longer corner sight distance.

Vehicle speeds were observed on Carmel Valley Road at Cachagua Road and the prevailing speed is about 40 miles per hour in each direction. Based upon the stopping distance formula published by the American Association of State Highway and Transportation Officials (AASHTO 2007) a minimum corner sight distance of 295 feet looking west and 310 feet looking east should be provided at the Carmel Valley Road/Cachagua Road intersection. With a sight distance of approximately 225 feet provided to the east, the sight distance deficiency is approximately 85 feet. With an existing sight distance of approximately 400 feet looking to the west, the sight distance looking to the west from Cachagua Road is adequate.

Tassajara Road

Tassajara Road is a two-lane rural road that provides access to the Los Padres National Forest from Carmel Valley Road. The 1.3 mile segment of Tassajara Road between Carmel Valley Road and the southern portion of Cachagua Road will be used by trailer trucks hauling materials and large equipment. This section of

<u>Tassajara Road is generally 18 to 20 feet in width, but has short road segments that are as narrow as 16 feet.</u>

State Route 1

SR 1 provides regional access and circulation functions in Monterey County. SR 1 is two lanes wide (1 lane each way) south of Ocean Avenue and 4 lanes wide north of Ocean Avenue. Traffic movements at the intersection of Highway 1 and Carmel Valley Road are controlled by a fully actuated traffic signal.

State Route 68

SR 68 can be accessed from Carmel Valley Road via Laureles Grade, a two-lane rural highway. SR 68 is a State highway connecting the Monterey Peninsula with Salinas and the Salinas Valley. It has a predominately east-west orientation. It is a four-lane freeway for the first one-half mile east of SR 1. Four travel lanes are also provided east of Toro Park. Two lanes are provided for approximately 10 miles between these four lane segments.

Laureles Grade

Between Carmel Valley Road and SR 68, Laureles Grade has a long, uphill grade in the northbound direction from Carmel Valley Road towards Highway 68. This is followed by a long downhill grade in the northbound direction on its approach to Highway 68. Twelve-foot wide travel lanes and two- to six-foot wide shoulders are provided along Laureles Grade. The road is extremely winding along most of its length.

Jeep Trail

The Jeep Trail is an unimproved private dirt road that is used to access the San Clemente Open Space and an 18-acre privately owned parcel located off of Cachagua Road. The Open Space is owned and managed by the Monterey Peninsula Regional Park District (MPRPD) and is not currently open to visitors. The 18-acre parcel is used for recreational purposes by its owners. Access to the Jeep Trail is controlled by a locked Park District gate located near Cachagua Road. Therefore, current usage of the Jeep Trail by motor vehicles is low and not frequent.

<u>Existing Traffic Volumes and Traffic Operations</u>

Road Segment Daily Traffic Volumes and Level of Service

CARMEL VALLEY ROAD

Table 4.9-1 identifies existing daily traffic volumes and Level of Service for various segments of Carmel Valley Road and SR 1. The road segments subject to Carmel Valley Master policies are identified in Table 4.9-1 with a segment number between 1 and 12.

The Carmel Valley Master Plan divides Carmel Valley Road from Highway 1 through Carmel Valley Village into 10 segments. Three segments of Carmel Valley Road currently exceed threshold levels established in the Carmel Valley Master Plan. These segments are as follows:

Segment 3: Laureles — Ford	12,073 vpd	[1]LOS E
Segment 6: Schulte — Robinson	15,514 vpd	[1]LOS E
Segment 7: Rancho San Carlos — Schulte	17,012 vpd	[1]LOS E

Notes

[1]LOS=Level of Service

The other Carmel Valley Road segments that are subject to the policies of the Carmel Valley Master Plan operate at or better than the maximum level of service allowed by the Carmel Valley Master Plan.

CARMEL RANCHO BOULEVARD AND RIO ROAD

Carmel Rancho Boulevard and Rio Road (Segments 11 and 12) are also subject to the policies of the Carmel Valley Master Plan. These segments currently operate at LOS B.

~~Table 4.9-1: Road Segment Volumes and Levels of Service~~ (Replaced by Table 4.9-1a)

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Table 4.9-1a Revised Road Segment Volumes and Levels of Service (Replaces Table 4.9-1)

ROAD SEGMENT		LEVEL OF SERVICE THRESHOLD		EXISTING VOLUMES		PROJECT TRAFFIC	EXISTING PLUS PROPOSED PROJECT			EXISTING PLUS ALTERNATIVE 1			EXISTING PLUS ALTERNATIVE 2			EXISTING PLUS ALTERNATIVE 3			EXISTING PLUS NO PROJECT		
		24-HOUR					PROPOSED PROJECT	TOTAL EXISTING + PROJECT		ALT 1	TOTAL EXISTING + ALT 1		ALT 2	TOTAL EXISTING + ALT 2		ALT 3	TOTAL EXISTING + ALT 3		NO PROJECT	TOTAL EXISTING + NO PROJECT	
NO.	DESCRIPTION	VOLUME	LOS	ADT	LOS	DISTRIBUTION	TRIPS	VOLUMES	LOS	TRIPS	VOLUMES	LOS	TRIPS	VOLUMES	LOS	TRIPS	VOLUMES	LOS	TRIPS	VOLUMES	LOS
	A. CARMEL VALLEY ROAD																				
	East of Tassajara	N/A	N/A	410	B	5%	-	-	-	-	-	-	-	-	-	120	530	B	-	-	-
	Cachagua - Tassajara	N/A	N/A	2,100	B	5%	20	2,120	B	14	2,114	B	12	2,112	B	120	2,220	B	6	2,106	B
1.	Holman - Cachagua	8,487	D	4,208	D	95%	372	4,580	D	266	4,474	D	228	4,436	D	264	4,472	D	122	4,330	D
2a.	Esquiline - Holman	6,835	C	4,341	C	95%	372	4,713	C	266	4,607	C	228	4,569	C	264	4,605	C	122	4,463	C
2b.	Ford - Esquiline	N/A	D	8,984	D	90%	353	9,337	D	252	9,236	D	216	9,200	D	256	9,240	D	115	9,099	D
3.	Laureles - Ford	11,600	D	*12,073*	E	80%	314	*12,387*	E	224	*12,297*	E	192	*12,265*	E	240	*12,313*	E	102	*12,175*	E
5.	Robinson - Laureles	12,752	D	11,947	D	80%	314	12,261	D	224	12,171	D	192	12,139	D	240	12,187	D	102	12,049	D
6.	Schulte - Robinson	15,499	D	*15,514*	E	80%	314	*15,828*	E	224	*15,738*	E	192	*15,706*	E	240	*15,754*	E	102	*15,616*	E
7.	Rancho San Carlos - Schulte	16,340	D	*17,012*	E	78.5%	308	*17,320*	E	220	*17,232*	E	188	*17,200*	E	238	*17,250*	E	100	*17,112*	E
8.	Rio - Rancho San Carlos	48,487	C	21,892	A	75%	294	22,186	A	210	22,102	A	180	22,072	A	232	22,124	A	96	21,988	A
9.	Carmel Rancho - Rio	51,401	C	25,632	A	75%	294	25,926	A	210	25,842	A	180	25,812	A	232	25,864	A	96	25,728	A
10.	Highway 1 - Carmel Rancho	27,839	E	24,404	E	70%	274	24,678	E	196	24,600	E	168	24,572	E	224	24,628	E	90	24,494	E
	B. CARMEL RANCHO BOULEVARD																				
11.	Carmel Valley - Rio	33,495	C	10,901	B	2.5%	10	10,911	B	7	10,908	B	6	10,907	B	4	10,905	B	3	10,904	B
	C. RIO ROAD																				
12.	Carmel Rancho - Highway 1	33,928	C	15,179	B	2.5%	10	15,189	B	7	15,186	B	6	15,185	B	4	15,183	B	3	15,182	B
	D. SR 1																				
	North of Carmel Valley Rd	N/A	N/A	53,000	F	70%	274	53,274	F	196	53,196	F	168	53,168	F	224	53,224	F	90	53,090	F
	South of Carmel Valley Rd	N/A	N/A	30,000	F	2.5%	10	30,010	F	7	30,007	F	6	30,006	F	4	30,004	F	3	30,003	F
	E. CACHAGUA ROAD																				
	Carmel Valley - Jeep Road	N/A	N/A	760	C	(See Note 5.)	0	760	C	266	1,026	C	228	988	C	152	912	C	0	760	C
	Jeep Road - Tassajara Road	N/A	N/A	760	C	0.0%	0	760	C	0	760	C	0	760	C	112	872	C	0	760	C
	F. TASSAJARA ROAD																				
	Carmel Valley - Cachagua Road	N/A	C	670	C	0.0%	0	670	C	0	670	C	0	670	C	112	782	C	0	670	C

Notes: (Source: Monterey County Annual Average Daily Traffic 2010):
1. LOS: Level of Service.
2. ADT: Average Daily Traffic.
3. N/A: Not applicable.
4. Numbers in ***italics*** exceed Carmel Valley Road Master Plan threshold volume.
5. Cachagua Rd Distribution:
   - Project = 0%
   - Alt 1 = 95%
   - Alt 2 = 95%
   - Alt 3 = 95%
   - No Project = 0%
6. For Alternative 3, all truck haul trips assigned to Highway 1 north of Carmel Valley Road; Carmel Valley Road between Highway 1 and Tassajara Road; Tassajara Road between Carmel Valley Road and Cachagua Road; and Cachagua Road between Tassajara Road and the Jeep Trail.

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STATE ROUTE 1

According to Caltrans statistics, SR 1 north of Carmel Valley Road carried 53,000 vehicles per day (vpd) and SR 1 south of Carmel Valley Road carried 30,000 vpd in 2004. Based on planning level of service threshold volumes, these links currently operate at LOS F.

SAN CLEMENTE DRIVE

San Clemente Drive currently carries an estimated 140 vehicles per day. Residential streets typically carry low volumes of traffic such that the traffic load does not meet or exceed the street capacity. Quality of life for residents is more important than street capacity in assessing impacts to residential streets.

Based on criteria provided in the literature, the following daily traffic volume thresholds provide a basis to assess the relationship between traffic volume and quality of life for residential streets:

Average Level of Service	Daily Traffic
A	1,200
B	1,400
C	1,600
D	1,800
E	2,000
F	>2,000

Currently, San Clemente Drive operates at the low end of LOS A.

CACHAGUA ROAD

The existing daily traffic volume and level of service for Cachagua Road are listed in Table 4.9-1**a**. According to statistics published by Monterey County, Cachagua Road ~~south of~~ **between** Carmel Valley Road **and Tassajara Road** carried an average of 760 per day in ~~2004~~ **2006** (MCDPWTE **2006** ~~2004~~). **Cachagua Road** ~~The segment between Carmel Valley Road and the Jeep Access Road~~ currently operates at LOS C. Traffic volumes on Cachagua Road are relatively low and the LOS C operating condition is primarily due to the extended 11 percent grade extending in the southbound direction from Carmel Valley Road.

Intersection Traffic Volumes and Level of Service

CARMEL VALLEY ROAD/SAN CLEMENTE DRIVE

AM and PM peak period intersection turning movement counts were conducted at the Carmel Valley Road/San Clemente Drive intersection on Wednesday March 23, 2005. On this day, Carmel Valley Road west of San Clemente Drive carried 191 vehicles per hour (vph) during the AM peak hour and 205 vph during the PM peak hour. The existing AM and PM peak hour volumes were adjusted based on seasonal traffic volume statistics published by the Monterey County *Resource Management Agency (RMA)-Planning* ~~*Public Works*~~ Department. The existing intersection volumes were increased by 9 percent to adjust the volumes to account for seasonal variations in traffic volumes. The adjusted existing AM and PM peak hour volumes are shown in Figure 4.9-1.

Based on technical procedures documented in the 2000 Highway Capacity Manual (HCM), the Carmel Valley Road/San Clemente Drive intersection currently operates at LOS A during both peak hours. The existing AM and PM peak hour intersection levels of service are summarized in Table 4.9-2.

CARMEL VALLEY ROAD/CACHAGUA ROAD

AM and PM peak period intersection turning movement counts were conducted at the Carmel Valley Road/Cachagua Road intersections on Thursday March 24, 2005. On these days, Carmel Valley Road west of San Clemente Drive carried 191 vehicles per hour (vph) during the AM peak hour and 205 vph during the PM peak hour. The existing AM and PM peak hour volumes were adjusted based on seasonal traffic volume statistics published by the Monterey County *RMA-Planning* ~~Public Works~~ Department. The existing intersection volumes were increased by 9 percent to adjust the volumes to account for seasonal variations in traffic volumes. The adjusted existing AM and PM peak hour volumes are shown in Figure 4.9-1.

Based on technical procedures documented in the 2000 Highway Capacity Manual, the Carmel Valley Road/Cachagua Road intersection currently operates at LOS A during both peak hours. The existing AM and PM peak hour intersection levels of service are summarized in Table 4.9-2.

Figure 4.9-1: Existing AM and PM Peak Hour Intersection Volumes

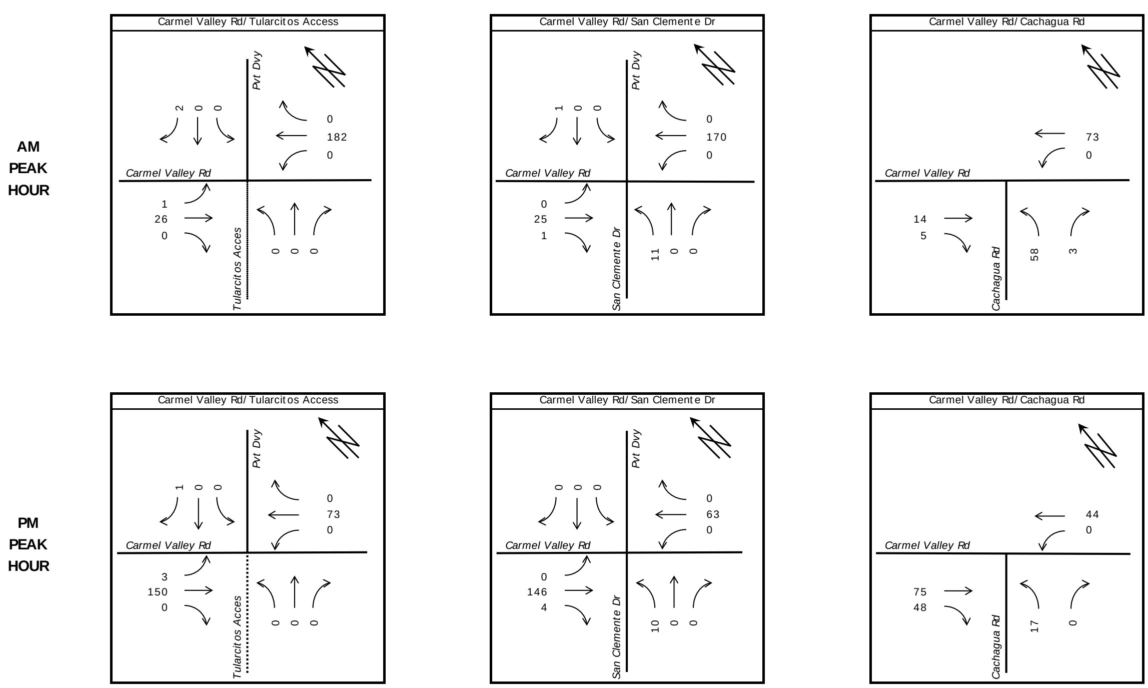
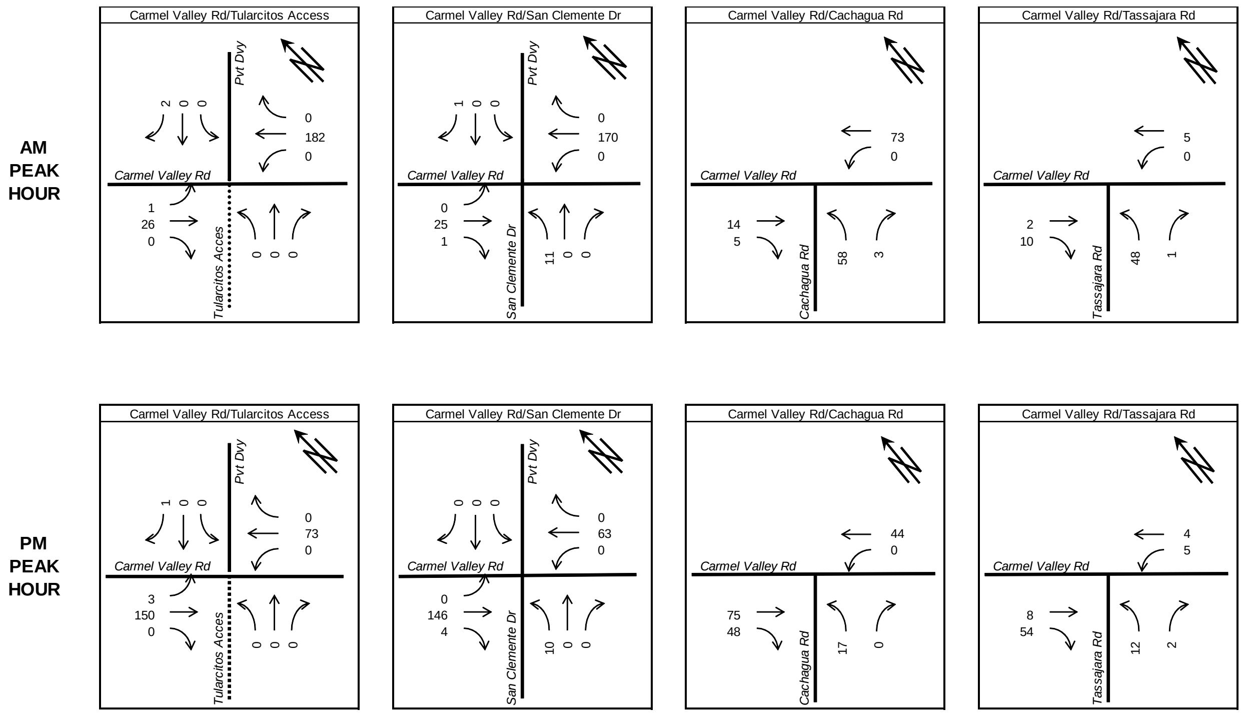


Figure 4.9-1a Revised Existing AM and PM Peak Hour Intersection Volumes



CARMEL VALLEY ROAD/TASSAJARA ROAD

AM and PM peak period intersection turning movement counts were conducted at the Carmel Valley Road/Tassajara Road intersections on Tuesday January 31, 2012. On this day, Carmel Valley Road west of Tassajara Road carried 61 vehicles per hour (vph) during the AM peak hour and 74 vph during the PM peak hour. The existing AM and PM peak hour volumes were adjusted based on seasonal traffic volume statistics published by the Monterey County *RMA* **~~Public Works~~ Department. The existing intersection volumes were increased by 6 percent to adjust the volumes to account for seasonal variations in traffic volumes. The adjusted existing AM and PM peak hour volumes are shown in Figure 4.9-1a.**

Based on technical procedures documented in the 2000 Highway Capacity Manual, the Carmel Valley Road/Tassajara Road intersection currently operates at LOS A during both peak hours. The existing AM and PM peak hour intersection levels of service are summarized in Table 4.9-2a.

~~Table 4.9-2: Intersection Levels of Service~~ (Replaced by Table 4.9-2a)Table 4.9-2a Revised Intersection Levels of Service

Table 4.9-2a Revised Intersection Levels of Service (Replaces Table 4.9-2)

	N-S ROAD	E-W ROAD	EXISTING LANE CONFIGURATION	EXISTING INTERSECTION CONTROL	LO STANDARD	EXISTING CONDITIONS				EXISTING PLUS PROPOSED PROJECT				Existing PLUS ALTERNATIVE 1				EXISTING PLUS ALTERNATIVE 2				EXISTING PLUS ALTERNATIVE 3				EXISTING PLUS NO PROJECT			
						AM PEAK HR		PM PEAK HR		AM PEAK HR		PM PEAK HR		AM PEAK HR		PM PEAK HR		AM PEAK HR		PM PEAK HR		AM PEAK HR		PM PEAK HR		AM PEAK HR		PM PEAK HR	
						DELAY (SEC)	LO	DELAY (SEC)	LO	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS	DELAY (SEC)	LOS
1	Private Dvwy/ Tularcitos Access Road (Future)	Carmel Valley Road	EB 1-L/T WB 1-T/R SB 1-L/R	Stop Sign (SB) Northbound Approach Southbound Approach	C	0.1 - 9.5	A - A	0.1 - 8.7	A - A	0.6 10.4 9.5	A B A	1.1 10.5 8.7	A B A	0.3 10.8 9.5	A B A	0.7 10.8 8.8	A B A	0.1 - 9.5	A - A	0.1 - 8.9	A - A	0.1 - 9.5	A - A	0.1 - 8.8	A - A	0.1 - 9.2	A - A	0.1 - 8.7	A - A
2	San Clemente Drive	Carmel Valley Road	EB 1-L/T/R WB 1-L/T/R SB 1-L/T/R NB 1-L/T/R	Stop Sign (NB & SB) Northbound Approach Southbound Approach	C	0.6 10.3 9.4	A B A	0.4 9.9 0.0	A A A	0.6 10.3 9.4	A B A	0.4 9.9 0.0	A A A	0.5 10.6 9.4	A B A	0.4 10.3 0.0	A B A	0.5 10.7 9.4	A B A	0.4 10.4 0.0	A B A	0.5 10.0 9.1	A A A	0.4 10.3 0.0	A B A	0.8 9.9 9.1	A A A	1.3 9.9 0.0	A A A
3	Cachagua Road	Carmel Valley Road	EB 1-T/R WB 1-L/T NB 1-L/R	Stop Sign (NB) Northbound Approach	C	3.7 9.3	A A	0.9 9.4	A A	3.7 9.3	A A	0.9 9.5	A A	3.3 9.5	A A	1.9 9.7	A A	3.3 9.5	A A	2.2 9.8	A A	3.3 9.5	A A	4.3 10.7	A B	3.6 9.2	A A	0.9 9.3	A A
4	Tassajara Road	Carmel Valley Road	EB 1-T/R WB 1-L/T NB 1-L/R	Stop Sign (NB) Northbound Approach	C	6.5 8.8	A A	1.9 8.9	A A	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	6.2 8.8	A A	2.1 8.8	A A	- -	- -	- -	- -

Notes: 1. L, T, R = Left, Through, Right
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. WA = Worst Approach

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Accident Rates

CARMEL VALLEY ROAD

Table 4.9-3 provides a summary of traffic accidents that have occurred on Carmel Valley Road between 2002 and 2004. Accidents for 2004 are also summarized separately. For each road segment, accident rates are calculated as the number of accidents per million vehicle-miles of travel. Expected accident rates based on average statewide accident data compiled by Caltrans is also provided in Table 4-9.3.

Between 2002 and 2004, accident rates exceeded the statewide average for roadways of similar type on Carmel Valley Road between mileposts 5.70 and 6.26. Carmel Valley Road between mileposts 5.70 and 6.26 is the segment of road at the Mid-Valley Shopping Center. About one-half of these accidents occurred at the Doris Drive intersection. When the intersection related accidents at Doris Drive are removed from the calculation, the accident rate for the segment falls below the expected accident rate for the segment.

Accident rates in 2004 are similar to the 2002 to 2004 conditions. In 2004, the accident rate on the segment of Carmel Valley Road between the Mid-Valley Shopping Center and Laureles Grade exceeded the expected average accident rate for that segment.

From 2005 through 2011, there were 28 reported vehicle collisions on Carmel Valley Road between Cachagua Road and Tassajara Road. The accident rate for this time period on this segment of Carmel Valley Road (1.68 accidents per million vehicle-miles) is less than the expected accident rate for this type of roadway (1.84 accidents per million vehicle-miles).

CACHAGUA ROAD

Table 4.9-3 provides a summary of traffic accidents that have occurred on Cachagua Road between 2002 and 2004. Accidents for 2004 are also summarized separately. For each road segment, accident rates are calculated as the number of accidents per million vehicle-miles of travel. Expected accident rates based on average statewide accident data compiled by Caltrans are also provided in Table 4.9-3.

TASSAJARA ROAD

There were four reported vehicle collisions on Tassajara Road between 2005 and 2011 with one collision between a vehicle and a bicycle at the Carmel Valley Road/Tassajara Road intersection and three single-vehicle accidents on the segment of Tassajara Road between Carmel Valley Road and Tassajara Road. During the seven year period, the accident rate on this segment of Tassajara Road was less than the expected average accident rate based on statewide averages.

Table 4.9-3: Carmel Valley Road and Cachagua Road Accident Analysis

						2002 - 2004				2004			
Begin Milepost		End Milepost	Road Type		Expected Accident Rate (Accidents Per MVM)	Jan 01 2002-Dec 31 2004 No. Collisions	2002 - 2004 Average AADT	Time period (Years)	Jan 01 2002-Dec 31 2004 Collision Rate (Accidents Per MVM)	Jan 01 2004-Dec 31 2004 No. Collisions	2004 AADT	Time period (Years)	Jan 01 2004-Dec 31 2004 Collision Rate (Accidents Per MVM)
CARMEL VALLEY RD													
0.00	-	0.55	4 Lanes Undivided	Suburban	2.55	13	24600	3	0.88	6	23600	1	1.27
0.55	-	1.72	4 Lanes Divided	Suburban	1.70	23	20700	3	0.87	10	24700	1	0.95
1.72	-	2.80	2 Lanes	Suburban	1.90	25	16833	3	1.26	10	19400	1	1.31
2.80	-	4.19	2 Lanes	Suburban	1.90	14	16833	3	0.55	7	17100	1	0.81
4.19	-	4.87	2 Lanes	Suburban	1.90	8	14633	3	0.73	3	17100	1	0.71
4.87	-	5.70	2 Lanes	Suburban	1.90	6	14633	3	0.45	0	14700	1	0.00
5.70	-	6.26	2 Lanes	Suburban	1.90	24	12067	3	**3.24**	10	14700	1	**3.33**
6.26	-	10.16	2 Lanes	Rural	1.33	59	11367	3	1.22	24	11400	1	**1.48**
10.16	-	11.49	2 Lanes	Suburban	2.95	38	11367	3	2.30	15	11100	1	2.78
11.49	-	12.00	2 Lanes	Urban	3.05	9	9267	3	1.74	2	11200	1	0.96
12.00	-	12.47	2 Lanes	Suburban	2.95	5	3767	3	2.58	0	8900	1	0.00
12.47	-	12.77	2 Lanes	Rural	1.76	1	3533	3	0.86	0	3500	1	0.00
12.77	-	14.12	2 Lanes	Rural	1.83	16	2270	3	**4.77**	7	3100	1	**4.58**
14.12	-	16.02	2 Lanes	Rural	1.84	15	2100	3	**3.43**	5	2100	1	**3.43**
Total Coll						256				99			
CACHAGUA RD													
0.00	-	3.00	2 Lanes	Rural	2.11	8	870	3	**2.80**	3	760	1	**3.60**

NOTES:
MVM: Million Vehicle Miles
Collision rates shown in bold exceed the expected accident rate based on state-wide accident history for similar type roads.

Between 2002 and 2004, accident rates exceeded the statewide average for roadways of similar type on Cachagua Road between Carmel Valley Road and the Jeep Trail. The poor horizontal alignment and narrow width of Cachagua Road are factors that contribute to the higher than expected accident rate on Cachagua Road.

4.9.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

In accordance with CEQA and professional standards, a project impact would normally be considered significant if the project would:

- Cause an increase in traffic that is substantial in relation to the existing traffic loads and capacity of the roadway system;
- Cause a substantial deterioration of the roadway surface as a result of construction activities;
- Substantially increase the traffic delay experienced by motorists;
- Substantially alter present patterns of circulation or movement; or
- Cause traffic hazards for pedestrians or operators of motor vehicles or bicycles.

The County of Monterey intersection and road segment significance criteria was used to evaluate impacts to traffic operations. The County of Monterey uses the following significance criteria to assess traffic-related impacts to pre-project traffic operations:

Controlled Intersections

A significant impact would occur if an intersection operating at LOS A, B, or C, degrades to D, E, and F. For intersections already operating at unacceptable levels D and E, a significant impact would occur if a project adds 0.01 or more to the critical movement's volume-to-capacity ratio. If the intersection is already operating at LOS F any increase (one vehicle) in the critical movement's volume-to-capacity ratio is considered significant.

Uncontrolled Intersections

A significant impact would occur if any traffic movement has LOS F or any traffic signal warrant is met.

Roadway Segments

A significant impact would occur if a roadway segment operating at A through E degrades to a lower level of service of D, E, or F. If a segment is already operating at LOS F any increase (one vehicle) is considered significant.

Residential Streets

Residential streets typically carry low volumes of traffic such that the traffic load does not meet or exceed the street capacity. Quality of life is more important than street capacity in assessing impacts to residents on residential streets.

Impact Assessment Methodology

Analytical procedures used for this study are described below. **In addition to the procedures described below, analyses were conducted for Alternative 3 to assess impacts associated with the revised Alternative 3 access routes. To evaluate potential impacts associated with the use of Tassajara Road and the southern portion of Cachagua Road for heavy equipment access and delivery of materials, the analysis was expanded to include Tassajara Road, the section of Cachagua Road between the Jeep Trail and Tassajara Road, Carmel Valley Road between Cachagua Road and Tassajara Road and the Carmel Valley Road/Tassajara Road intersection. In addition, Alternative 3 impacts to AM and PM peak hour traffic operations at the Carmel Valley Road/Tassajara Road intersection were evaluated.**

Trip Generation

Daily and peak hour trips that would be generated by the construction project were estimated for the Proponent's Proposed Project and the project alternatives. The project would generate new vehicle trips related both to the hauling of workers and materials to the site and the volume of trips generated by the project would vary throughout the construction project according to variations in manpower requirements and material delivery schedules.

Trip generation estimates were prepared for each phase of the construction. The trip generation estimate for each construction phase represents the highest daily and peak hour trip generation expected during the construction phase. A description of the number of employees for each phase of the construction project is provided in Section 3.2. Project phasing and information regarding access road improvements is also provided in Section 3.2.

Table 4.9-1 shows the assignment of daily trips generated by the project to the study road segments as well as the existing plus project daily traffic volumes and level of service for various segments of Carmel Valley Road and SR 1. With project traffic added to the road network, the existing road segment levels of service are not changed. However, the project would add traffic to the SR 1 north and south of Carmel Valley Road, which currently operates at LOS F. The project would temporarily add traffic to the existing deficient section of SR 1 north and south of Carmel Valley Road.

PEAK HOUR TRIP GENERATION

The analysis of intersection operations is based on peak one-hour traffic volumes during the AM and PM commute periods. The AM and PM peak hour project trip assignment figures show the estimated volume of traffic that the project would add to the three study intersections during the AM and PM peak commute hours. The AM and PM peak hour project trip assignments were combined with existing intersection volumes to achieve total project condition volumes that were analyzed to determine project impacts.

The AM and PM peak hour trip generation estimates for the project were converted to "passenger car equivalent" (PCE) trips before being assigned to the road network. The truck generated trips were increased by a factor of four to reflect the greater impact that trucks have versus passenger cars.

Most of the traffic generated by the project is expected to arrive from and depart to the west. However, it is possible that some traffic may be oriented to and from the east. A trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed for the project-generated traffic.

The Proponent's Proposed Project would generate 23 inbound PCE trips and 10 outbound PCE trips. The new Tularcitos Access Road would be constructed to provide access to the Dam for the Proponent's Proposed Project. Referring to Figure 4.9-2, the AM peak hour volumes on the exhibit are as follows:

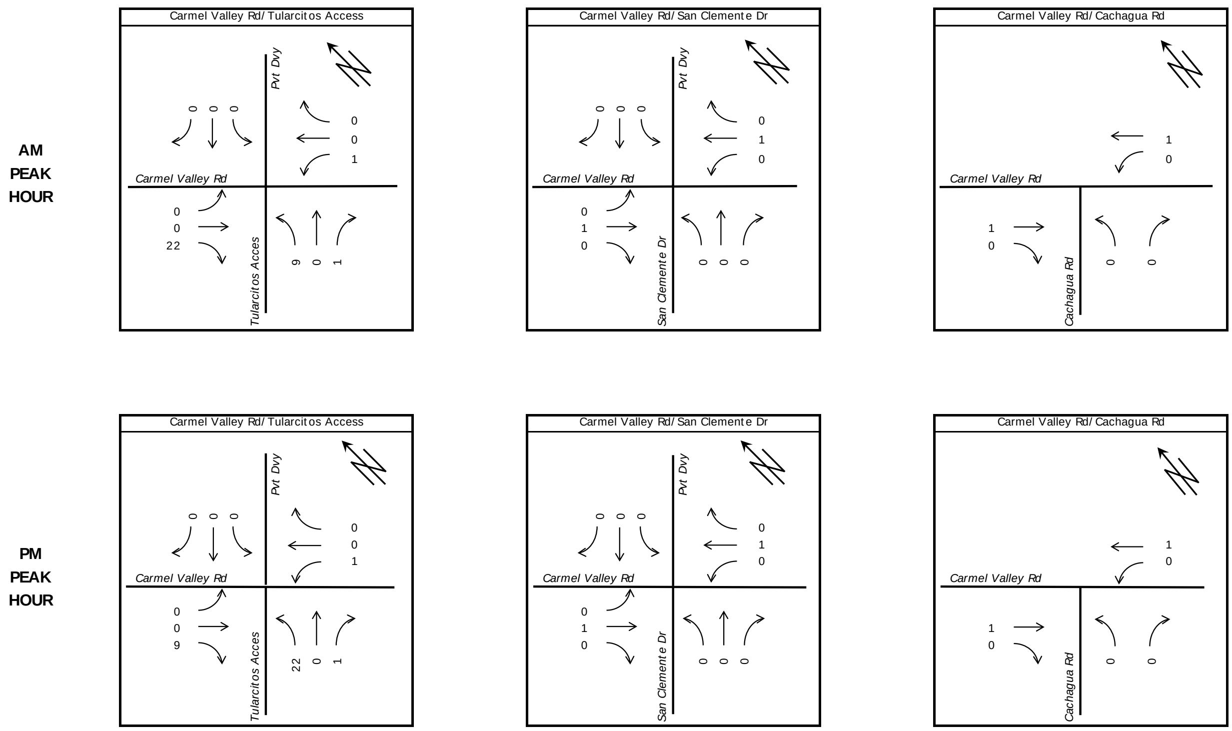
- 22 of the inbound trips are expected to arrive from the west and would make a right turn movement from eastbound Carmel Valley Road to the Tularcitos Access Road.
- One of the inbound trips is expected to arrive from the east and would make a left turn from westbound Carmel Valley Road to the Tularcitos Access Road.
- Nine of the outbound trips are expected to exit to the west and these trips would make a left turn from the Tularcitos Access Road to westbound Carmel Valley Road.
- One of the outbound trips is expected to exit to the east and this trip would make a right turn from the Tularcitos Access Road to westbound Carmel Valley Road.
- The one trip arriving from the east and the one trip departing to the east were modeled as through trips on Carmel Valley Road at the San Clemente Drive and the Cachagua Road intersections.

The trip generation during the PM peak hour is 10 inbound trips and 23 outbound trips. The trip assignment shown on Figure 4.9-2 is essentially a reverse of the AM peak hour trip assignment.

Daily Road Segment Volumes

Daily traffic volumes were estimated for Carmel Valley Road, Cachagua Road, Carmel Rancho Road, Rio Road and SR 1 for the Proponent's Proposed Project and the alternative projects and road segment levels of service were determined. The trip generation estimate for Phase 2 of the project was used in the analysis since it represents the maximum trip generation estimate for the project. A trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed for the project, reflecting an expected predominant orientation of trips generated by the project to and from the west.

Figure 4.9-2: AM and PM Peak Hour Project Trip Assignment



NOTES:
Peak Hour Trip Generation reflects adjustment to account for the passenger car equivalents of large trucks

Intersection Operations

Project Condition (existing plus project) AM and PM peak hour traffic forecasts were prepared for the following intersections:

- Carmel Valley Road/Tularcitos Access Road;
- Carmel Valley Road/San Clemente Drive; and
- Carmel Valley Road/Cachagua Road.

Project Condition intersection operations were evaluated based on technical procedures documented in the 2000 Highway Capacity Manual (HCM).

Roadway Design

The adequacy of intersection and roadway geometrics at key access locations and routes were assessed using geometric design standards published by Caltrans, Monterey County and the AASHTO. The analysis included a review of intersection geometrics, left turn and right turn channelization warrants, roadway widths and sight distances.

Additional Levels of Delay

Motorists will tolerate additional levels of delay when traveling through a construction work zone. According to Caltrans policies, a significant traffic impact in a work zone is 30 minutes above normal recurring traffic delay on the existing facility or the delay threshold set by the District Traffic Manager, whichever is less. Applied in an urban environment, a queue of 2 to 3 miles on a freeway would result in a 30 minute delay. In a rural environment, such as the project location, motorists tolerate less delay. For this evaluation, a work zone delay greater than 10 minutes is considered a significant impact. This threshold is based upon the thresholds utilized by other state highway departments and engineering judgment. For example, the Indiana Department of Transportation work zone policy sets a maximum delay time of 10 minutes, the Maryland Department of Transportation uses an 8-minute delay threshold, the Massachusetts Highway Department uses a 12-minute delay threshold and the South Dakota Department of Transportation attempts to limit delay in work zones to 10 to 15 minutes.

2030 Baseline Conditions

Traffic volumes on the roadways serving the Project Area are expected to increase over time in relation to new development and increased economic activity including tourism. Traffic volumes on Carmel Valley Road through Carmel Valley have generally increased at an average annual rate of about 2 percent for the past 20 years. Traffic on SR 1 north and south of Carmel Valley Road has increased at an average annual rate of 2 percent to 3 percent for the past 20 years. If these growth rates continue into the future, traffic on the area roads would increase 40 to 60 percent from existing levels.

The San Clemente Dam Seismic Safety Project is expected to commence within three years. Because traffic-related impacts associated with project construction would occur in the near-term conditions are used to represent baseline conditions rather than 2030 volumes.

4.9.3 IMPACTS AND MITIGATION

The following impact issues have been defined for traffic and circulation:

- TC-1: Road Segment Traffic Operations (additional traffic on area road network)
- TC-2: Intersection Traffic Operations (changes to intersection level of service)
- TC-3a: Traffic Safety Carmel Valley Road (increased accident rates)
- TC-3b: Traffic Safety San Clemente Drive (increased accident rates)
- TC-4: Inadequate Corner Sight Distances (adequate visual sight distance at intersections for stopping safety)
- TC-5: New Intersections (effect on safety and traffic)

- TC-6: Neighborhood Quality of Life (effect of increased traffic on residential neighborhoods)
- TC-7: Pavement Loadings (effect of project traffic on pavement)

TC-8: Delays to Emergency Vehicles

The traffic impacts of concern are associated with project construction. Of these, Traffic and Circulation Impact TC-6 would not apply, as residential roads would not be used for the Proponent's Proposed Project.

Proponent's Proposed Project

Issue TC-1: Road Segment Traffic Operations

Additional traffic on area road network
Determination: **less than significant with mitigation, short-term**

IMPACT
The Proponent's Proposed Project would temporarily add construction-related traffic to the area road network Traffic generated by the proposed construction project would increase traffic volumes on Carmel Valley Road, Rio Road, Carmel Rancho Boulevard, SR 1 and San Clemente Drive.

The estimated number of daily and peak hour trips that would be generated by the construction project is summarized in Table 4.9-4. It is estimated that access improvements for the Proponent's Proposed Project would require 2,120 cubic yards of material. Delivered over a 35 day period in 18 cubic yard trucks would generate an average of 4 inbound loads per day, or 8 truck haul round trips per day. With the 15 employees on the site during Phase 1, total trip generation during Phase 1 would be 68 vehicle trips per day.

It was assumed that each employee on-site would generate four vehicle trips per day (two inbound trips and two outbound trips). This daily trip rate was used in the previous traffic studies for the project and accounts for deliveries of minor construction material, equipment, supplies, visitor trips and employee trips.

During Phase 2, a total of 16,408 tons of aggregate, cement, sand and other construction products would need to be imported to the project site. Delivered over an 80 day period at 25 tons per load, an average of 9 inbound loads per day, or 18 truck haul round trips per day would be generated during Phase 2. With a maximum of 80 employees on the site during Phase 2, total trip generation during Phase 2 would be 338 vehicle trips per day.

Table 4.9-4: Proponent's Proposed Project (Dam Thickening) Trip Generation

GENERATOR	DAILY TRAFFIC GENERATION	AM PEAK HOUR: PEAK HOUR VOLUME	AM PEAK HOUR: % OF DAILY	AM PEAK HOUR: INBOUND	AM PEAK HOUR: OUTBOUND	PM PEAK HOUR: PEAK HOUR VOLUME	PM PEAK HOUR: % OF DAILY	PM PEAK HOUR: INBOUND	PM PEAK HOUR: OUTBOUND
VEHICLE TRIPS									
VEHICLE TRIPS PHASE 1									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	8	2	25%	1	1	2	25%	1	1
Total Trips	68	19	28%	16	3	19	28%	3	16
VEHICLE TRIPS PHASE 2									
Employee Trips	320	17	5%	15	2	17	5%	2	15
Truck Trips	18	4	22%	2	2	4	22%	2	2
Total Trips	338	21	6%	17	4	21	6%	4	17
PASSENGER CAR EQUIVALENCIES									
PCE's PHASE 1									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	32	8	25%	4	4	8	25%	4	4
Total Trips	92	25	27%	19	6	25	27%	6	19
PCE's PHASE 2									
Employee Trips	320	17	5%	15	2	17	5%	2	15
Truck Trips	72	16	22%	8	8	16	22%	8	8
Total PCE's	392	33	8%	23	10	33	8%	10	23

NOTES:
PCEs = Passenger Car Equivalent

Under the Proponent's Proposed Project, the Jeep Trail would not be used for access to the Dam or to the reservoir. Therefore, the Proponent's Proposed Project would not impact the Jeep Trail.

Table 4.9-1 shows the assignment of daily trips generated by the project to the study road segments as well as the Existing plus Project daily traffic volumes and Level of Service for various segments of Carmel Valley Road and SR 1. With project traffic added to the road network, the existing road segment levels of service are not changed. However, the project would add traffic to the SR 1 north and south of Carmel Valley Road, which currently operates at LOS F. The project would temporarily add traffic to the existing deficient section of SR 1 north and south of Carmel Valley Road.

MITIGATION

By implementing the following measures, the impacts from additional traffic on area road network would be reduced to less than significant.

Trip Reduction Plan for Construction Workers

The Applicant will prepare a trip reduction plan that identifies measures that would be implemented to reduce the number of vehicle trips generated by construction workers. These measures would include a ride-sharing program using buses, and/or vanpools to reduce construction worker trips. The plan would establish an off-site park-and-ride area for project employees in Carmel Valley Village or another remote location and promote the use of carpools or vanpools to transport employees to the project site.

Traffic Coordination and Communication Plan

The Applicant will prepare a traffic coordination and communication plan that would define the specific schedules for truck delivery and worker shifts to avoid periods of peak commute traffic including school bus traffic on area roadways. Truck deliveries would be prohibited at night and weekends. Delivery of major items would be limited to weekdays between 8:00 AM and 3:00 PM. Mechanisms for informing the public of construction traffic schedules and activities would be included in the plan. This would include an on-site field office for the resident Traffic/Transportation Coordinator. The Traffic/Transportation Coordinator would be available to answer questions from the public regarding scheduled construction activities and major construction traffic schedules impacting residents.

Traffic Safety Plan

The Applicant will prepare a traffic safety plan that would address the appropriate vehicle size and speed; travel routes; flag person requirements; coordination with law enforcement and fire control agencies; emergency access to ensure child, pet and livestock safety; and the need for traffic and speed limit signs including advance warning and/or construction work zone signing on Carmel Valley Road. Elements of the Traffic Safety Plan are described in greater detail below.

Vehicle Size and Traffic Limitations

The types of vehicles that would be used during the construction project and the maximum speed limit for each vehicle would be defined.

Travel Routes

The main access route for access to and from the project site would be Tularcitos Access Road. San Clemente Drive would be used during the first year of construction of the Proponent's Proposed Project, while the Tularcitos Access Route is being developed. Mobilization and demobilization of construction equipment using San Clemente Drive are expected to occur over a period of several weeks and involve 15 to 30 trips with heavy equipment. Thereafter, 5 to 10 trips per day on San Clemente Drive will be used for worker, supervisor and maintenance access over a period of up to eight months during the first year of construction. Periodic delivery of materials during project construction would occur as well, by construction vehicles for initial mobilization of equipment at the beginning of the project for several weeks, an occasional truck during the project, and demobilization of equipment at the end of the project for several weeks.

Flag person Requirements

During periods when double-trailer trucks are used, flagging personnel would be posted to direct traffic at the Carmel Valley Road/Tularcitos Access Road intersection.

Emergency Agency/Access

An emergency Contact Sheet would be posted that lists 24-hour emergency contact numbers for law enforcement and fire control agency personnel, the owner, contractor, Traffic/Transportation Coordinator, resident project representatives, and the Monterey Bay Unified Air Pollution Control District. San Clemente Drive would be used for emergency access only.

Construction Signing and Striping

The Applicant will implement a County-approved traffic control plan during project construction. The limits of the traffic control plan would extend to Carmel Village and include additional traffic control devices including speed advisory signs, curve warning signs, delineators, reflectors and edge line markings on Carmel Valley Road.

Vehicle and Driver Inspection Program

The Applicant will prepare a vehicle and driver inspection program that would require that drivers involved in project construction be properly licensed and that the vehicle be in safe condition and properly registered and loaded. The program would include requirements for inspecting heavy equipment before it enters the project construction area. It would also entail coordination with law enforcement and other agencies. All drivers employed by the contractor and subcontractors would be properly licensed and their vehicles would comply with all applicable regulations and would be in safe condition and registered. Drivers would be required to contact the Project Field Office prior to accessing the project site. A representative of the contractor or the Traffic/ Transportation Coordinator would certify that the vehicles are in safe condition and are properly registered and loaded prior to allowing access to the site. Vehicles would be weighed after loading and before entering the project site. A driver log indicating the date, time driver name, driver license number, type of vehicle, vehicle weight and verification of vehicle registration would be maintained at the field office.

Traffic Impact Fee

The Applicant will pay a traffic impact fee to the County to be applied towards improvements to SR 1 and Carmel Valley Road. The County's traffic impact fee for Carmel Valley does not specifically apply to a construction project of this nature. Therefore, the impact fee would be based on residential dwelling unit equivalents associated with the traffic generated by the project.

Per the requirements of the County's Public Works Department, a Construction Management Plan (CMP) would be prepared during the final design stage of the project, and implemented prior to commencing with the project. The CMP would include a comprehensive traffic/transportation plan that would meet the following objectives:

- Reduce the number of vehicles (construction related and other) generated by the project;

- Reduce the interaction between construction equipment and other vehicles; and
- Promote public safety through actions aimed at driver and road safety.

The Traffic Safety Plan described above would form the basis of the County-required traffic/transportation plan which would be prepared after consultation and coordination with project engineers, affected agencies and community groups. The applicant will appoint a Traffic/Transportation Coordinator to direct the development and implementation of the plan. The County of Monterey Planning and Building Department would enforce implementation of the CMP.

Issue TC-2: Intersection Traffic Operations

Changes to intersection level of service
Determination: **less than significant with mitigation, short-term**

IMPACT

An estimate of the volume of AM and PM peak hour trips that would be generated during the peak period of construction activity was prepared based upon the following assumptions:

- A vehicle occupancy ratio of 1:0 is assumed for the employees (i.e., all employees are assumed to drive alone).
- All employees arrive during the AM peak hour and depart during the PM peak hour.
- Inbound employee trips during the AM peak hour are assumed to represent 90 percent of the AM peak hour employee and miscellaneous trips and outbound employee trips during the PM peak hour are assumed to represent 90 percent of the total employee and miscellaneous PM peak hour trips.
- During Phase 1, one truckload of aggregate was assumed to arrive during the AM and PM peak hours and the empty trucks are assumed to depart during the same peak hours as well. During Phase 2, two truckloads of aggregate and construction material were assumed to arrive during the AM and PM peak hours and the empty trucks are assumed to depart during the same peak hours as well.

Based on these assumptions, the project would generate 19 trips during the Phase 1 AM and PM peak hours and 21 vehicle trips during the Phase 2 AM and PM peak hours.

For intersection capacity and channelization analyses, the peak hour truck trips generated by the project were converted to passenger car equivalent trips to account for the greater impact associated with each truck in the vehicle stream. Consistent with previous traffic analyses prepared for the project, four passenger car equivalents (PCEs) were assumed per truck (Transportation Research Board 1985). The project would generate 25 AM and PM peak hour passenger car-equivalent trips during Phase 1 and 33 AM and PM peak hour passenger car-equivalent trips during Phase 2.

Figure 4.9-2 shows the assignment of project generated AM and PM peak hour trips to the study intersections. The passenger car equivalent trip generation estimate figures for Phase 2 were used in this analysis and a trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed. Most of the ingress and egress for the Proponent's Proposed Project would occur via the new Tularcitos Access once it is completed. However during CY 1, of the Proponent's Proposed Project, mobilization and demobilization of construction equipment using San Clemente Drive are expected to occur over a period of several weeks and involve 15 to 30 trips with heavy equipment. Thereafter, 5 to 10 trips per day on San Clemente Drive will be used for worker, supervisor and maintenance access over a period of up to eight months. Periodic delivery of materials during project construction would occur as well.

Project Condition AM and PM peak hour intersection volumes were achieved by combining the AM and PM peak hour traffic assignment for the project with the existing intersection volumes. The Project Condition AM and PM peak hour volumes are shown in Figure 4.9-3.

Project Condition AM and PM peak hour intersection levels of service are summarized in Table 4.9-2. With traffic from the Proponent's Proposed Project added to the study intersections, intersection levels of service are unchanged from existing conditions. However, the residents along San Clemente Drive may experience a short-term significant impact during AM and PM peak hours upon departure and return to their residents.

MITIGATION

Mitigation Measures would be the same as Issue TC-1 (Road Segment Traffic Operations) for the Proponent's Proposed Project. The described mitigation would reduce the impact to less than significant.

Issue TC-3a: Traffic Safety Carmel Valley Road

Increased accident rates
Determination: **less than significant with mitigation, short-term**

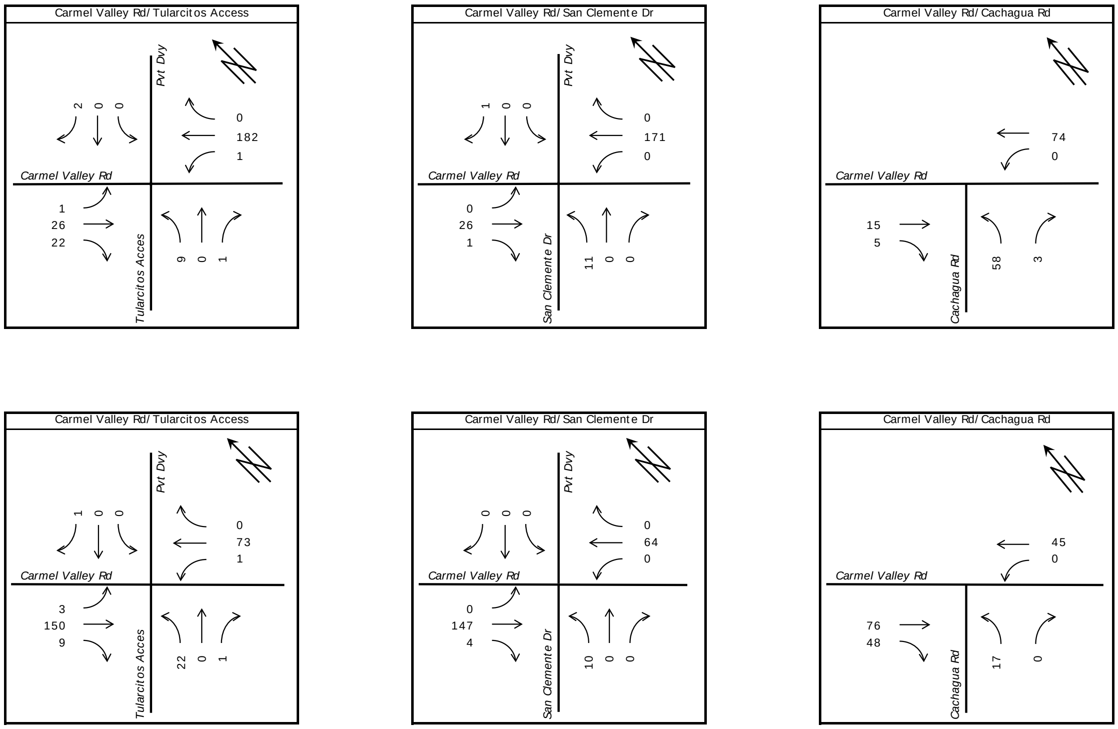
IMPACT

The project would temporarily add construction traffic to the segment of Carmel Valley Road east of Carmel Village, which has poor horizontal alignments, minimal shoulder width and narrow travel lanes in some locations. This segment of Carmel Valley Road currently experiences relatively high accident rates. Research has shown that large trucks experience accidents at a higher rate than passenger vehicles. Therefore, the Proponent's Proposed Project could potentially increase accident rates on Carmel Valley Road.

Figure 4.9-3: Existing Plus Project AM and PM Peak Hour Intersection Volumes

AM PEAK HOUR

PM PEAK HOUR



MITIGATION

The accident rate on Carmel Valley Road east of Carmel Village currently exceeds expected accident rates for the roadway and it is recommended that mitigation be directed to this segment of Carmel Valley Road. Mitigation for impacts under Issue TC-1 (Road Segment Traffic) would also apply. In addition, the Applicant will work with the County Public Works Department to determine if funding additional enforcement on Carmel Valley Road throughout the period of the project when truck traffic would be generated by the Project is appropriate and reasonable in comparison to the potential impacts. The Applicant will subsequently pay additional funding for extra enforcement, which will monitor speeds and enforce truck inspections.

Issue TC-3b: Traffic Safety San Clemente Drive

Increased accident rates
Determination: **significant, unavoidable, short-term**

Impact

The project would temporarily add construction traffic to San Clemente Drive which currently has minimal traffic as it resides between two locked gates. During the first year of construction of the Proponent's Proposed Project, site access will be developed. Mobilization and demobilization of construction equipment using San Clemente Drive are expected to occur over a period of several weeks and involve 15 to 30 trips with heavy equipment. Thereafter, 5 to 10 trips per day on San Clemente Drive will be used for worker, supervisor and maintenance access over a period of up to eight months during the first year of construction of the Tularcitos Access Road. Periodic delivery of materials would occur as well but it would not be considered significant. However, with only 140 vehicles per day using San Clemente Drive, any large vehicle traffic could be considered a significant and unavoidable impact to safety.

MITIGATION

Mitigation measures under Issue TC-1 (Road Segment Traffic) would be applied to minimize impacts under Issue TC-3b (Traffic Safety San Clemente Drive). However, even with the mitigation measures, it is not clear that the impacts would be reduced to less than significant levels.

Issue TC-4: Inadequate Corner Sight Distances

Adequate visual sight distance at intersections for stopping safety
Determination: **less than significant, no mitigation required**

IMPACT

The corner sight distance from the location of the new access road looking to the west along Carmel Valley Road is approximately 300 feet and the sight distance from the location of the new access road to the east along Carmel Valley Road is approximately 350 feet. The recommended stopping sight distance for a 40-mile per hour design speed is 300 feet. Therefore, the proposed location of the Carmel Valley Road/new access road intersection would provide adequate stopping sight distance on Carmel Valley Road.

MITIGATION

Mitigation measures would not be required under the Proponent’s Proposed Project.

Issue TC-5: New Intersections

Effect on safety and traffic
Determination: **less than significant with mitigation, short-term**

IMPACT

Construction of the Tularcitos Access Road would add a new intersection on Carmel Valley Road. The intersection would be designed to meet Monterey County design standards MCPWG 2003). During periods of peak traffic demand during the construction project, the new intersection would operate at LOS A.

MITIGATION

Per Monterey County’s required encroachment permit, the Applicant will design and construct a new intersection at Tularcitos Access and Carmel Valley Roads. The new intersection would be appropriately identified with advance warning and/or construction work zone signing on Carmel Valley Road. Analysis of the peak hour intersection operations indicates that left-turn channelization would not be required on the westbound Carmel Valley Road approach and a right turn lane would not be required on the eastbound Carmel Valley Road approach to the new Tularcitos Access Road. However, the Applicant will design and construct a right turn taper on the eastbound Carmel Valley Road approach to Tularcitos Access Road.

Issue TC-6: Neighborhood Quality of Life

Effect of increased traffic on residential neighborhoods
Determination: **significant, unavoidable, short-term**

During the first year of construction of the Proponent's Proposed Project, site access will be developed. Mobilization and demobilization of construction equipment using San Clemente Drive are expected to occur over a period of several weeks and involve 15 to 30 trips with heavy equipment. Thereafter, 5 to 10 trips per day on San Clemente Drive will be used for worker, supervisor and maintenance access over a period of up to eight months during the first year of construction of the Tularcitos Access Road. The construction of the Tularcitos Access Route will occur during the initial phase of project work, before extensive work is done at the dam site. After Tularcitos construction, access to the project site would be provided via the Tularcitos Route, avoiding San Clemente Drive for most construction equipment and materials. These short-term, significant, unavoidable impacts would only occur during a portion of CY 1.

MITIGATION

Mitigation measures required under the Proponent's Proposed Project would be the measures implemented for TC-1 on San Clemente Drive. While these measures will minimize impacts, they would not reduce them to less than significant levels.

Issue TC-7: Pavement Loadings

Effect of project traffic on pavement
Determination: **less than significant with mitigation, short-term**

The Proponent's Proposed Project would generate estimated 1,582-truck trips over the duration of the project. Over a 10-year design period, the project would generate an average of 0.61 truck trips per day, which would generate 2,101 equivalent single axle loads (ESALs). It is estimated that the segment of Carmel Valley Road near the project site is subject to the application of 76,824 ESALs over a 10-year time period based on the existing ADT of 2,230 vehicles per day and assuming 1 percent trucks on this segment of Carmel Valley Road. The existing truck loadings equate to a Traffic Index (TI) of 6.6. The TI is a measure of axle loadings that determines pavement structure requirements. With the project traffic loadings added to the existing ambient loadings, the total ESALs would increase to 78,925, which equates to a TI of 6.7. Because the TI changes with the additional loadings generated by the project, the project would have a significant impact to the pavement loadings on Carmel Valley Road east of Carmel Village.

MITIGATION

The Proponent's Project Proponent would repair any damage to Carmel Valley Road east of Carmel Village and restore it to its pre-project condition immediately after construction has been completed. In addition, the Applicant will coordinate with local agencies to determine whether the proposed routes for truck travel are appropriate before beginning construction.

Alternative 1 (Dam Notching)

Impacts and mitigation measures for Traffic and Circulation Issue TC-5 (New Intersections) would not apply to Alternative 1.

Impact TC-1: Road Segment Traffic Operations

Additional traffic on area road network
Determination: **significant, unavoidable, short-term**

IMPACT

Alternative 1 would temporarily add construction-related traffic to the area road network. Traffic generated by the proposed construction project would increase traffic volumes on Carmel Valley Road, Rio Road, Carmel Rancho Boulevard, SR 1 and Cachagua Road.

The estimated number of daily and peak hour trips that would be generated by the Alternative 1 (Dam Notching) is summarized in Table 4.9-5. Trip generation estimates were prepared for each phase of the construction. The trip generation estimate for each construction phase represents the highest daily and peak hour trip generation expected during the construction phase. A description of the number of employees for each phase of the Alternative 1 construction project is provided in Section 3.3. Phasing and information regarding access road improvements is also provided in Section 3.3.

Under Alternative 1, the Jeep Trail from Cachagua Road to the disposal site, a distance of 1.5 miles, would be widened to 20-foot. A minimum width of 15 feet with turnouts for passing would be provided in tight reaches. The radius of curvature at sharper curves would be widened and a drainage ditch would be constructed on the uphill edge of the road. The surface would consist of 6 inches of Class II base rock and a double chip seal coat. A "Truck Crossing 500 Feet" sign would be installed on both Cachagua Grade approaches to the Jeep Trail. In addition, the Jeep Trail approach to Cachagua Road would be paved. It is estimated that access improvements for the Jeep Trail and the new road between the Jeep Trail and the Dam for Alternative 1 would require 4,250 cubic yards of material. Delivered over a 100-day period in 18 cubic yard trucks, an average of 5 inbound loads per day, or 10 truck haul round trips per day would be required to import the material for road improvements. With the 20 employees on the site during Phase 1, total trip generation during Phase 1 would be 90 vehicle trips per day.

Table 4.9-5: Alternative 1 (Dam Notching) Trip Generation

GENERATOR	DAILY TRAFFIC GENERATION	AM PEAK HOUR				PM PEAK HOUR			
		PEAK HOUR VOLUME	% OF DAILY	INBOUND	OUTBOUND	PEAK HOUR VOLUME	% OF DAILY	INBOUND	OUTBOUND
VEHICLE TRIPS									
VEHICLE TRIPS PHASE 1 (Year 1)									
Employee Trips	80	22	28%	20	2	22	28%	2	20
Truck Trips	10	2	20%	1	1	2	20%	1	1
Total Trips	90	24	27%	21	3	24	27%	3	21
VEHICLE TRIPS PHASE 2 - (Year 2)									
Employee Trips	180	26	14%	23	3	45	25%	22	23
Truck Trips	0	0	-	0	0	0	-	0	0
Total Trips	180	26	14%	23	3	45	25%	22	23
VEHICLE TRIPS PHASE 2 - (Year 3)									
Employee Trips	240	42	18%	38	4	60	25%	22	38
Truck Trips	10	2	20%	1	1	2	20%	1	1
Total Trips	250	44	18%	39	5	62	25%	23	39
PASSENGER CAR EQUIVALENCIES									
PCE's PHASE 1 (Year 1)									
Employee Trips	80	22	28%	20	2	22	28%	2	20
Truck Trips	40	8	20%	4	4	8	20%	4	4
Total Trips	120	30	25%	24	6	30	25%	6	24
PCE's PHASE 1 (Year 2)									
Employee Trips	180	26	14%	23	3	45	25%	22	23
Truck Trips	0	0	-	0	0	0	-	0	0
Total Trips	180	26	14%	23	3	45	25%	22	23
PCE's PHASE 2 (Year 3)									
Employee Trips	240	42	18%	38	4	60	25%	22	38
Truck Trips	40	8	20%	4	4	8	20%	4	4
Total PCE's	280	50	18%	42	8	68	24%	26	42

NOTES:
PCE's = Passenger Car Equivalent

Phase 2 would require two years to complete. The first year of Phase 2 would consist primarily of sediment transfer. Sediment transfer would be accomplished in two shifts. For the trip generation analysis, the 45 workers were split between the day and swing shift. On this basis, 180 trips would be generated per day during the first year of Phase 2.

Sediment transfer would continue during the second year of Phase 2. In addition, fish ladder and spillway overflow improvements would be constructed with the potential for this work to overlap with the sediment transfer operation. For the trip generation analysis, the 45 sediment transfer workers were split into two shifts and 15 additional workers were included in the day shift. Alternative 1 would require the import of 1,500 cubic yards of concrete, which would be accomplished near the end of the project, at a rate of 4 to 5 loads per day. For this analysis, it was assumed that these trips would overlap sediment transfer operations. On this basis, 250 trips would be generated per day during the second year of Phase 2.

Table 4.9-1 shows the assignment of Alternative 1 project daily trips to the study road segments and the road segment levels of service. Adding traffic generated by Alternative 1 to the road network, the existing road segment levels of service would not be changed. The impact significance to Carmel Valley Road and SR 1 would be the same as discussed for TC-1 (Road Segment Traffic) for the Proponent's Proposed Project, The additional trips added by Alternative 1 to Cachagua Road would not change the operating level of service for this facility.

Under Alternative 1, a new 0.5-mile access road (Conveyor Road) with a width of 25 feet and a 3 foot drainage ditch would be built from the disposal site to the reservoir. The excavated slope would be stabilized with anchors, wire mesh and shotcrete as needed. The surface would consist of 6 inches of Class II base rock with a double chip seal coat. Fifteen-inch diameter culverts with inlet structures would be installed at 400 foot intervals. The belt conveyor would be installed along the outside edge of the road.

The sediment disposal plan proposed in the Draft EIR/EIS would have intersected and cut off the Jeep Trail that leads to the Stone Cabin, denying access beyond the site during construction (two years). However, as discussed in Chapter 3, the disposal site (4R) has been moved uphill and a conveyor overcrossing would be provided to avoid any impact on access to the cabin via the Jeep Trail during construction.

With the exception of the narrower sections, two-way vehicular operations would be feasible on the improved Jeep Trail. The narrower sections would be limited to one-way vehicular operation. Turnouts would be provided where necessary to provide adequate traffic flow.

The Jeep Trail would be used for employee access and for the delivery of conveyor equipment and other construction equipment for Alternative 1. Improvements to the Jeep Trail would be made and the conveyor road would be constructed during the first construction season. Use of the Jeep Trail and conveyor road under Alternative 1 is estimated as follows:

- Project worker access during the construction season (all year during the first construction season and May to October during the following two seasons) through the Jeep Trail that leads by the Stone Cabin and then the conveyor road (once constructed).

- Mobilization of conveyor equipment during the first and third seasons, resulting in roughly 150 trips over 2 to 3 month for each mobilization.

- Mobilization of heavy earth moving and construction equipment (roughly 20 to 40 trips of large equipment) at the beginning and end of each construction season (May and October) for 3 seasons, averaging 2 to 3 loads per day for the first and last month of construction.

- Occasional (bi-weekly) mid-size equipment mobilization (e.g., equipment/supply trucks, cranes, backhoes, and small dozers).

During the peak construction activity, it is estimated that 250 vehicle trips per day would be generated by Alternative 1, most of which would travel on the Jeep Trail between Cachagua Road and the new reservoir access road/conveyor road. The level of construction traffic generated by the project would be relatively low and at levels that could be adequately served by the proposed road design. The 20-foot wide sections of the Jeep Trail would be adequate for two-way travel. The American Association of State Highway and Transportation Officials (AASHTO) publish design guidelines for low-volume local roads.[43] The minimum recommended width is 18 feet for a recreational road and 20 feet for a resource recovery road.

The one-lane, two-way segments located along the Jeep Trail would require additional traffic control measures, particularly where sight distance is constrained approaching the one-lane sections. Turnouts would be provided along the sections of the Jeep Trail that would be limited to one-way travel. This would enhance two-way traffic operations on the one-lane sections.

During the construction of the Jeep Trail improvements, non-project related traffic traveling on the Jeep Trail would be subjected to delays. As previously stated, the volume of traffic currently using the Jeep Trail is low. However, the Jeep Trail provides access to non-project related parcels in the area and construction activity on the trail would impact access to those parcels. Construction related delays would occur during the first construction season, primarily from May through August. At this time, it is not possible to precisely estimate the delay that non-project traffic would incur on the Jeep Trail during construction of improvements to the Jeep Trail. The amount of delay that a motorist on the Jeep Trail would experience during the road construction period would depend on the construction activity underway at the time the motorist arrives at the section under construction and the amount of time required by the construction crew to create a passable surface for the motorist. Because the amount of time that would be required to create a passable road surface is not known, the impact of the project during the construction of improvements to the Jeep Trail would be significant.

During mobilization periods, heavy earth moving equipment, construction equipment and the conveyor system would be transported by truck to and from the reservoir. The largest amount of truck trips would occur at the beginning of the construction season (May) and the end of the construction season (October). However, truck trips would be generated throughout the construction season. It is estimated that the peak truck generation would be 10 trips per day.

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[43] *Guidelines for Geometric Design of Very Low-Volume Local roads (ADT<400)*, American Association of State Highway and Transportation Officials, 2001.

Traffic movements on the Jeep Trail would be controlled by flagmen when large trucks are transporting equipment to and from the project. Non-project traffic on the Jeep Trail at the same time as the project generated truck traffic could incur periods of delay. To reduce the amount of delay that non-project traffic would experience, these vehicles could be positioned in turnouts or other wide sections of the jeep trial until the large truck passed. Under a worst-case condition, non-project traffic could be required to wait at either end of the 1.5 mile section of Jeep Trail that is being used by the project until the road was clear of the large trucks. The project would use 1.5 miles of the Jeep Trail and, assuming that a large truck would travel at an average speed of 10 miles per hour while traveling between the conveyor/reservoir access road and Cachagua Road, the motorist would experience 9 minutes of delay. This delay would be less than the 10 minute work zone delay threshold and, therefore, the delay would not be a significant impact.

It is not known at this time whether delays to non-project related users could be reduced to less than 10 minutes during the construction of improvements to the trail. Therefore, the impact of Alternative 1 to Jeep Trail users during road improvements would be significant and unavoidable. Impacts during the construction of improvements to the Jeep Trail could be reduced to less than significant levels if the Communication Plan includes procedures that allow the other users of the Jeep Trail to provide the construction contractor with a schedule for their use of the Jeep Trail. Construction activities could then be planned to minimize delays to the other users of the Jeep Trail.

MITIGATION

Mitigation for Issue TC-1 would be the same as described for the Proponent's Proposed Project. The Construction Management Plan would be expanded to include Cachagua Road and the Jeep Trail and would include the following additions:

- Cachagua Road would be the main access route for the Alternative 1 project.
- During periods when double-trailer trucks are used, flagging personnel would be posted to direct traffic at the Carmel Valley Road/Cachagua Road intersection.
- The traffic control plan would include Carmel Valley Road between Carmel Village and Cachagua Road, Cachagua Road and the Jeep Trail.
- Transport trucks would be escorted when traveling between Carmel Valley Road and the Jeep Trail. The escort vehicle would assist with traffic control during the ingress and egress movements. At some locations on Cachagua Road, it will be necessary to stop control opposing traffic movements during haul operations.

The Traffic Coordination and Communication Plan would include procedures for distributing the schedule of construction activities to the other users of the Jeep Trail. Procedures would be included in the Plan that would minimize the delay to non-project related Jeep Trail users during construction of improvements to the road as well as during subsequent project activities.

Issue TC-2: Intersection Traffic Operations

Changes to intersection level of service
Determination: **less than significant, no mitigation required***.*

IMPACT

The total peak hour trip generation during Phase 1 would be 24 trips during the AM and PM peak hours. During the first year of Phase 2, 26 trips would be generated during the AM peak hour and 45 trips during the PM peak hour. During the second year of Phase 2, 44 trips would be generated during the AM peak hour and 62 trips during the PM peak hour.

Figure 4.9-4 shows the assignment of AM and PM peak hour trips generated by Alternative 1 to the study intersections. The passenger car equivalent trip generation estimates for year two of Phase 2 were used in this analysis. A trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed for the project. The volume of project traffic using San Clemente Drive will vary throughout the project, but not projected to exceed 12 trips per day. Five percent of project traffic generated during the AM and PM peak hours was assigned to San Clemente Drive and 95 percent to Cachagua Road.

Alternative 1 AM and PM peak hour intersection volumes were achieved by combining the AM and PM peak hour traffic assignment for the project with the existing intersection volumes. The Alternative 1 AM and PM peak hour volumes are shown on Figure 4.9-5.

The Alternative 1 AM and PM peak hour intersection levels of service are summarized in Table 4.9-2. With traffic from Alternative 1 added to the study intersections, intersection levels of service would be unchanged from existing conditions.

Figure 4.9-4: AM and PM Peak Hour Alternative 1 Trip Assignment

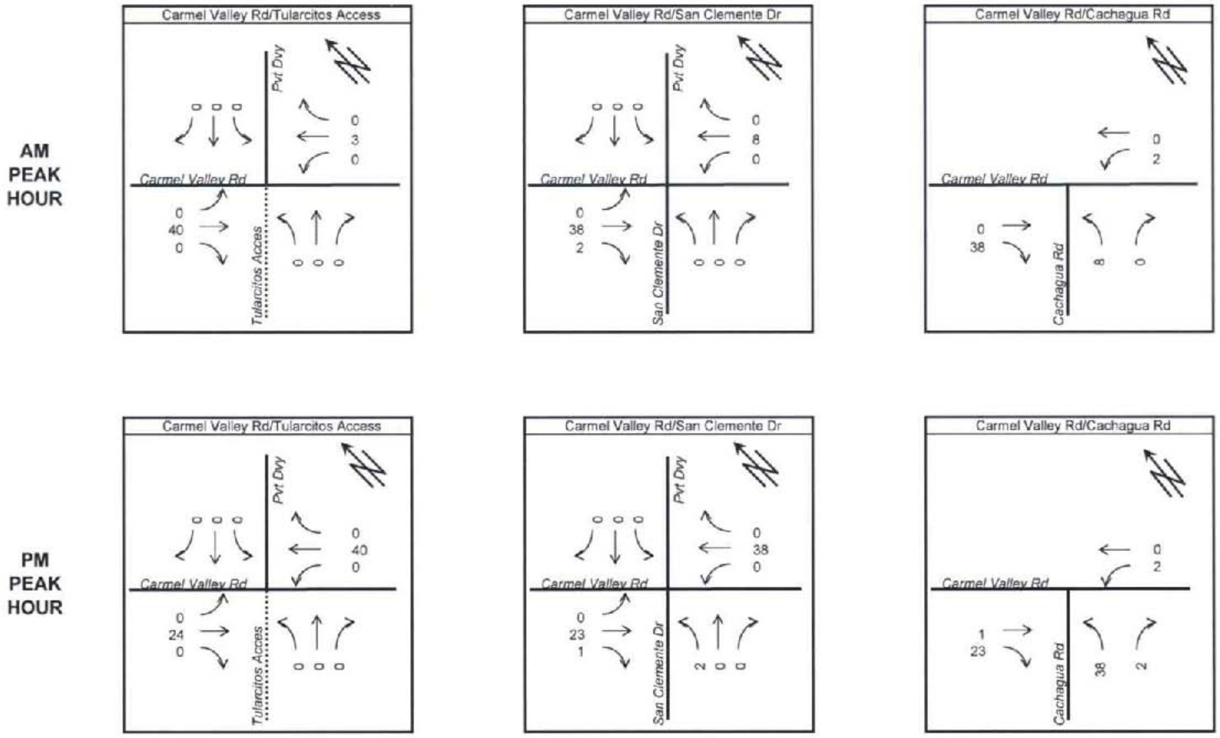
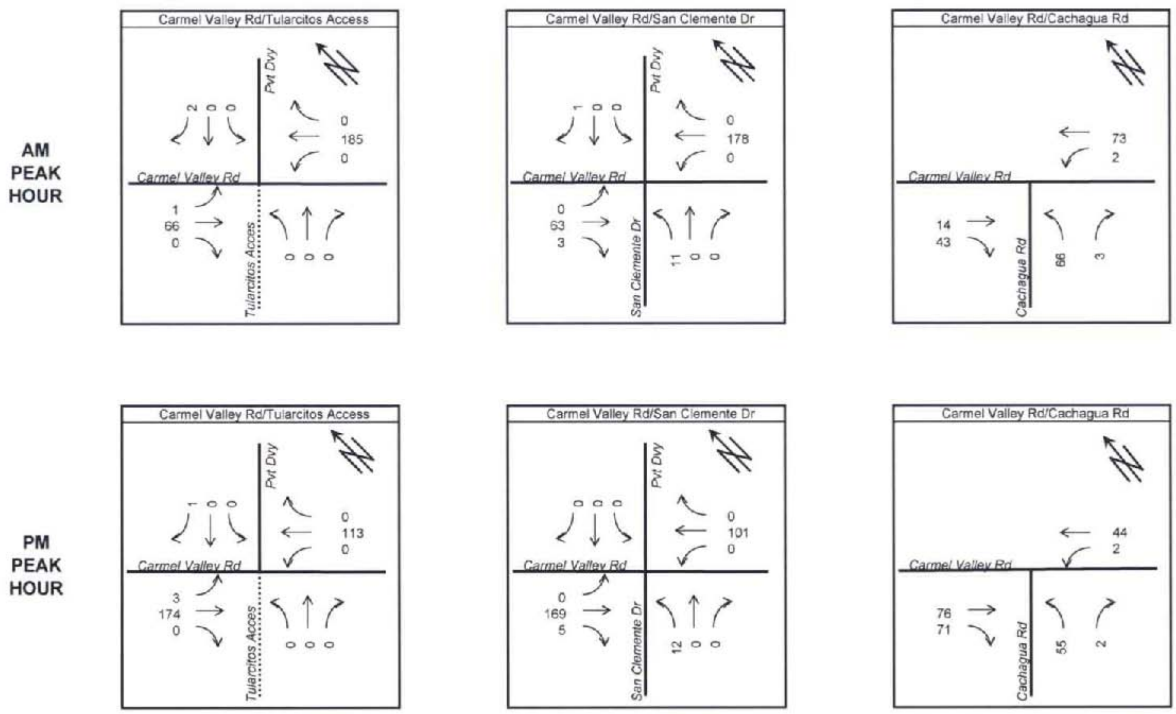


Figure 4.9-5: Existing Plus Alternative 1 AM and PM Peak Hour Intersection Volumes



Based on the forecasted traffic volumes with the addition of Alternative 1, channelization would not be required at the Camel Valley Road intersection with the Cachagua Road.

MITIGATION

Mitigation Measures would not be required under Alternative 1.

Issue TC-3a: Traffic Safety Carmel Valley Road

Increased accident rates
Determination: **less than significant with mitigation, short-term**

The impact potential to Carmel Valley Road would be the same as discussed for Impact TC-3 for the Proponent's Proposed Project. In addition, construction related traffic would be added to Carmel Valley Road up to Cachagua Road. This would extend the area of impact to these facilities.

Cachagua Road would be used to transport aggregate to the project site for improvements to dam access roads. This segment of Cachagua Road has poor horizontal alignments, minimal shoulder width and narrow travel lanes in some locations and an accident rate that exceeds the expected accident rate. Alternative 1 could potentially increase accident rates on Cachagua Road.

An analysis of the geometric alignment of Cachagua Road was performed to ensure that the transport trucks negotiate roadway. The AUTOTURN software program was used for this analysis. Figure 4.9-6 identifies locations with inadequate width to serve the turning requirements of the transport truck traveling south from Carmel Valley Road to the Jeep Trail. The locations shown on Figure 4.9-6 with inadequate geometrics require pavement widening to ensure that the transport trucks can turn without leaving the pavement. It should also be noted that the double trailer transport truck would encroach into the opposing travel lane for most of Cachagua Road given the horizontal alignment of the road.

MITIGATION

Mitigation for Issue TC-3 would be similar as described for the Proponent's Proposed Project. In addition, an improvement plan would be developed for Cachagua Road to widen the roadway providing additional pavement and ensuring haul truck turning requirements can be met.

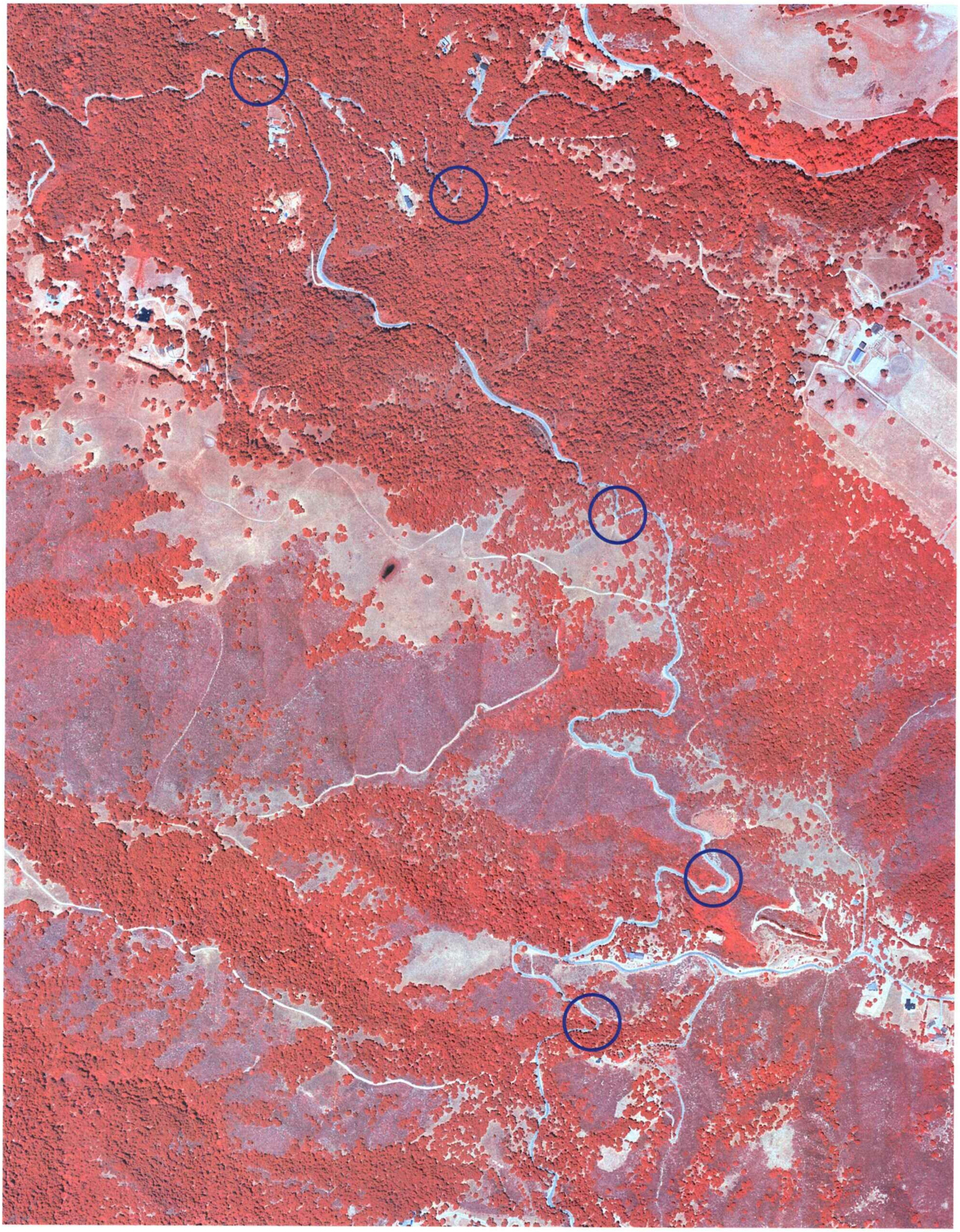
Issue TC-3b: Traffic Safety San Clemente Drive

Increased accident rates
Determination: **significant, unavoidable, short-term**

For Alternatives 1, 2 and 3 the Cachagua Access Route would be the primary route providing access above the Dam. However, San Clemente Drive would be needed to provide access below the Dam which is not accessible from the Chachagua route. San Clemente Drive would be used for initial mobilization of equipment for several weeks at the beginning of each construction year for three years, an occasional truck and workers during the project, and demobilization and equipment at the end of each construction year for a period of several weeks. The amount of trips during that several week period is expected to be 15 to 30 trips with heavy equipment. It is anticipated that less than 25 percent of the total construction traffic would use San Clemente Drive for access below the Dam. The number of trips added to San Clemente Drive is not projected to exceed 12 trips per day. San Clemente Drive is a narrow two-lane road with no facilities for pedestrians and bicyclists. The impact to pedestrian and bicycle circulation on San Clemente Drive would be a significant, unavoidable impact.

MITIGATION

Mitigation for impacts to traffic safety associated with San Clemente Drive would be the same as described for the Proponents Proposed Project TC-1 (Road Segment Traffic).

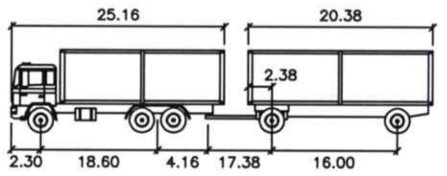


= LOCATIONS WITH INADEQUATE GEOMETRIC DESIGN TO SERVE THE TURNING REQUIREMENTS OF A TOWBAR TRAILER TRUCK.

GRAPHIC SCALE

750 0 375 750 1500

(IN FEET)
1 inch = 750 ft.



Towbar Trailer Truck feet

First Unit Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.00	Steering Angle	: 40.00
First Unit Track	: 8.00	Articulating Angle	: 70.00
Trailer Track	: 8.00		

FIGURE 4.9-6
CACHAGUA ROAD
TRUCK TURNING
STUDY

Higgins Associates

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Issue TC-4: Inadequate Corner Sight Distances

Adequate visual sight distance at intersections for stopping safety
Determination: **less than significant with mitigation, short-term**

IMPACT

The corner sight distance looking to the east from the Cachagua Road approach to Carmel Valley Road is currently not adequate. Alternative 1 would add trips to this intersection.

The corner sight distance looking to the north from the Jeep Trail approach to Cachagua Road is not adequate. The corner sight distance provided at the Cachagua Road intersection with the Jeep Trail is deficient looking to the north. The existing corner sight distance looking from the Jeep Trail to the north is 160 feet and the corner sight distance looking to the south is 350 feet. The sight distance looking to the south for a 35-mph design speed is adequate. A corner sight distance of 275 feet should be provided looking to the north.

MITIGATION

The Applicant will construct improvements at the Carmel Valley Road/Cachagua Road intersection to increase the sight distance provided for a motorist looking to the east from the Cachagua Road approach. The Applicant will also relocate the stop bar on the Cachagua Road approach to Carmel Valley Road to lengthen the sight distance looking to the east. In addition, physical improvements would be required at the intersection to provide further improvement to the sight distance. These include re-grading the embankment on the south side of Carmel Valley Road east of the Cachagua Road.

The Applicant will construct improvements at the Cachagua Road/Jeep Trail intersection to increase the sight distance provided for a motorist looking to the north from the Jeep Trail approach. The Applicant will improve the sight distance by either lowering the elevation of the embankment located on the east side of Cachagua Road north of the Jeep Trail or relocating the intersection of the Jeep Trail to increase the sight distance looking to the north.

Issue TC-6 Neighborhood Quality of Life

Effect of increased traffic on residential neighborhoods
Determination: **significant, unavoidable, short-term**

IMPACT

Under Alternative 1 construction traffic would increase on to San Clemente Drive as described under Issue TC-3b and in Chapter 3.3. San Clemente Drive is a private street that serves a residential development and provides access below the Dam. Impacts under Issue TC-6 (Neighborhood Quality of Life) would be greater than under the Proponent's Proposed Project, because San Clemente Drive would be used for mobilization and demobilization below the Dam and for occasional use during the project. Although San Clemente Drive would not be the primary access route for this

Alternative (Cachagua Access Route would be the primary access route), it would be the only access route below the Dam (whereas under the Proponent's Proposed Project this function would be served by the Tularcitos Route). San Clemente Drive would be used for initial mobilization of 15 to 30 trips with heavy equipment at the beginning of the project for several weeks, an occasional truck and workers during the project, and demobilization of equipment at the end of the project for a period of several weeks each construction year for three years. It is anticipated that less than 25 percent of the total construction traffic would use San Clemente Drive for access below the Dam. The number of trips added to San Clemente Drive is not projected to exceed 12 trips per day.

San Clemente Drive would continue to operate at LOS A based on neighborhood quality of life level of service thresholds. However, any amount of truck traffic within the gated community of Sleepy Hollow may be considered significant impact to the quality of life of the residents.

Issue TC-6 (Neighborhood Quality of Life) on the Jeep Trail would be significant for the users of the Stone Cabin. The only traffic currently on the Jeep Trail is from the recreational users of the Stone Cabin. Therefore, the increase of traffic would be a significant impact to neighborhood quality of life.

MITIGATION

Mitigation measures under TC-1 would be implemented. However, mitigation measures would not reduce impacts to San Clemente Drive and the Jeep Trail to less than significant for Issue TC-6 (Neighborhood Quality of Life) under Alternative 1.

Issue TC-7: Pavement Loadings

Effect of project traffic on pavement
Determination: **less than significant with mitigation, short-term**

IMPACT

Alternative 1 would generate an estimated 814 truck trips over the duration of the project. Over a 10-year design period, the project would generate an average of 0.31 truck trips per day, which would generate 1,078 equivalent single axle loads (ESALs). With the project traffic loadings added to the existing ambient loadings, the total ESALs would increase to 77,902, which equates to a Traffic Index (TI) of 6.6. The additional loadings would not change the existing TI.

Alternative 1 would add pavement loadings to Cachagua Road. It is estimated that Cachagua Road would be subject to the application of 26,182 ESALs over a 10-year time period based on the existing ADT of 760 vehicles per day and assuming 1 percent trucks on this segment of Cachagua Road. The existing truck loadings equate to a TI of 5.8. Adding the Alternative 1 traffic loadings to the existing ambient loadings, the total ESALs would increase to 27,261, which equates to a TI of 5.9. The TI would change with the additional loadings generated by Alternative 1.

MITIGATION

Mitigation for Issue TC-7 would be the same as described for the Proponent's Proposed Project. Additionally, the Applicant will repair of any damage to Cachagua Road between Carmel Valley Road and the Jeep Trail and restore it to its pre-project condition immediately after construction has been completed.

Alternative 2 (Dam Removal)

Traffic and Circulation impacts and mitigation for Issues TC-3a: (Traffic Safety Carmel Valley Road), TC-3b: (Traffic Safety San Clemente Drive), TC-4 (Inadequate Corner Sight Distances) and TC-6 (Neighborhood Quality of Life) would be the same as discussed for Alternative 1 except they would increase from three construction seasons to four construction seasons. Issue TC-5 (New Intersections) would not apply to Alternative 2, as there are no new intersections.

Issue TC-1: Road Segment Traffic Operations

Additional traffic on area road network
Determination: **significant, unavoidable, short-term**

IMPACT

The trip generation estimate for Alternative 2 (Dam Removal) is summarized in Table 4.9-6. A description of the number of employees for each phase of the Alternative 2 construction project is provided in Section 3.4. Phasing and information regarding access road improvements is also provided in Section 3.4.

Under Alternative 2, access improvements to the Jeep Trail as described above for Alternative 1 would be constructed. It is estimated that access improvements for Jeep Trail and the new road between the Jeep Trail and the Dam for Alternative 2 would require 4,250 cubic yards of material. Delivered over a 60 day period in 18 cubic yard trucks, an average of five inbound loads per day, or 10 truck haul round trips per day would be required to import the material for road improvements. With 15 employees on the site during Phase 1, total trip generation during Phase 1 would be 70 vehicle trips per day.

The sediment disposal plan proposed in the Draft EIR/EIS would have intersected and cut off the Jeep Trail that leads to the Stone Cabin, denying access beyond the site during construction (two years). However, as discussed in Chapter 3, the disposal site (4R) has been moved uphill and a conveyor overcrossing would be provided to avoid any impact on access to the cabin via the Jeep Trail during construction.

Table 4.9-6: Alternative 2 (Dam Removal) Trip Generation

		AM PEAK HOUR				PM PEAK HOUR			
GENERATOR	DAILY TRAFFIC GENERATION	PEAK HOUR VOLUME	% OF DAILY	INBOUND	OUTBOUND	PEAK HOUR VOLUME	% OF DAILY	INBOUND	OUTBOUND
VEHICLE TRIPS									
VEHICLE TRIPS PHASE 1 (Year 1)									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	10	2	20%	1	1	2	20%	1	1
Total Trips	70	19	27%	16	3	19	27%	3	16
VEHICLE TRIPS PHASE 2 - (Year 2-4)									
Employee Trips	240	42	18%	38	4	61	25%	23	38
Truck Trips	0	0	-	0	0	0	-	0	0
Total Trips	240	42	18%	38	4	61	25%	23	38
PASSENGER CAR EQUIVALENCIES									
PCE's PHASE 1 (Year 1)									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	40	8	20%	4	4	8	20%	4	4
Total Trips	100	25	25%	19	6	25	25%	6	19
PCE's PHASE 1 (Year 2-4)									
Employee Trips	240	42	18%	38	4	61	25%	23	38
Truck Trips	0	0	-	0	0	0	-	0	0
Total Trips	240	42	18%	38	4	61	25%	23	38

NOTES:
PCE's = Passenger Car Equivalent

Phase 2 would require three years to complete, which would primarily consist of sediment transfer operations. Sediment transfer would be accomplished in two shifts. For the trip generation analysis, 45 workers were split between the day and swing shift for sediment transfer. An additional 15 workers were assigned to the day shift. On this basis, 240 trips would be generated per day during Phase 2.

Table 4.9-1 shows the assignment of Alternative 2 project daily trips to the study road segments and the road segment levels of service. With Alternative 2 traffic added to the road network, the existing road segment levels of service would not be changed.

Use of the Jeep Trail and conveyor road under Alternative 2 is estimated as follows:

- Project worker access during construction (all year during the first construction season and May to October during the following two seasons) on the Jeep Trail that passes by the Stone Cabin and then to the conveyor road (once constructed).

- Mobilization of conveyor equipment during the first and fourth seasons, resulting in roughly 150 trips over 2 to 3 month for each mobilization.

- Mobilization of heavy earth moving and construction equipment (roughly 20 to 40 trips of large equipment) at the beginning and end of each construction season (May and October) for 4 seasons, averaging 2 to 3 loads per day for the first and last month of construction.

- Occasional (bi-weekly) mid-size equipment mobilization (e.g., equipment/supply trucks, cranes, backhoes, and small dozers).

The Jeep Trail would be used for employee access throughout the construction period and for the delivery of conveyor equipment and other construction equipment. During the peak construction activity, it is estimated that 240 vehicle trips per day would be generated by Alternative 2. Most of the vehicles would travel on the Jeep Trail between Cachagua Road and the new reservoir access road/conveyor road. The 20-foot wide sections of the Jeep Trail would be adequate for two-way travel. Turnouts would be provided along the sections of the Jeep Trail that would be limited to one-way travel to enhance two-way operations.

As in Alternative 1, non-project related traffic using the Jeep Trail would be subjected to delays during the construction of improvements to the Jeep Trail. As additionally described for Alternative 1, the impact of the project during the construction of improvements to the Jeep Trail would be significant because it is not known if the amount of delay that a motorist would experience during the road construction period would be less than 10 minutes.

Similarly to Alternative 1, during mobilization periods, heavy earth moving equipment, construction equipment and the conveyor system would be transported by truck to and from the reservoir. Traffic movements on the Jeep Trail would be controlled by flagmen when large trucks are transporting equipment to and from the project. The delay experienced by non-project traffic would be less than 10 minutes and, therefore, the delay would not be a significant impact under Alternative 2.

As in Alternative 1, a Construction Management Plan would be developed for the Jeep Trail that includes a Trip Reduction Plan for Construction Workers, Traffic Coordination and Communication Plan and a Safety Plan for Alternative 2. The CMP would include measures to minimize the delay to non-project related Jeep Trail users during construction of improvements to the road and during subsequent project activities. It is not known whether delays to non-project related users could be reduced to less than 10 minutes during the construction of improvements to the trail during road improvements. Therefore, the impact of Alternative 2 to Jeep Trail users would be significant and unavoidable. Impacts during the construction of improvements to the Jeep Trail could be reduced to less than significant levels if the Communication Plan includes procedures that allow the other users of the Jeep Trail to provide the construction contractor with a schedule for their use of the Jeep Trail. Construction activities could then be planned to minimize delays to the other users of the Jeep Trail.

MITIGATION

Mitigation would be the same as described for Alternative 1.

Issue TC-2: Intersection Traffic Operations

Changes to intersection level of service
Determination: **less than significant, no mitigation required**

IMPACT

The peak hour trip generation during Phase 1 of Alternative 2 would 19 trips during the AM and PM peak hours. The peak hour trip generation during Phase 2 of Alternative 2 would be 42 trips during the AM peak hour and 61 trips during the PM peak hour.

Figure 4.9-7 shows the assignment of AM and PM peak hour trips generated by the Alternative 2 project to the study intersection. The passenger car equivalent trip generation estimate figures for year two of Phase 2 were used in this analysis. A trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed for the project. Five percent of the peak hour traffic was assigned to San Clemente Drive and 95 percent was assigned to Cachagua Road.

Alternative 2 AM and PM peak hour intersection volumes were achieved by combining the AM and PM peak hour traffic assignment for the project with the existing intersection volumes. The Alternative 2 AM and PM peak hour volumes are shown on Figure 4.9-8.

The Alternative 2 AM and PM peak hour intersection levels of service are summarized in Table 4.9-2. With traffic from Alternative 2 Project added to the study intersections, intersection levels of service would be unchanged from existing conditions. Based on the Existing Plus Alternative 2 traffic volume forecasts, left turn and right turn channelization would not be required at the Camel Valley Road intersection with the Cachagua Road.

MITIGATION

Mitigation measures for Issue TC-2 would not be required under Alternative 2.

Issue TC-7: Pavement Loadings

Effect of project traffic on pavement
Determination: **less than significant with mitigation, short-term**

IMPACT

Alternative 2 would generate an estimated 544 truck trips over the duration of the project. Over a 10-year design period, the project would generate an average of 0.21 truck trips per day, which would generate 720 equivalent single axle loads (ESALs). With the Alternative 2 traffic loadings added to the existing ambient loadings on Carmel Valley Road, the total ESALs would increase to 72,032, which equates to a TI of 6.6. The TI would not change with the additional loadings generated by Alternative 2.

It is estimated that Cachagua Road is subject to the application of 26,182 ESALs over a 10-year period based on the existing ADT of 760 vehicles per day and assuming 1 percent trucks on this segment of Cachagua Road. The existing truck loadings equate to a Traffic Index (TI) of 5.8. With the Alternative 2 traffic loadings added to the existing ambient loadings, the total ESALs would increase to 26,903, which equates to a TI of 5.9. The TI would change with the additional loadings generated by the Alternative 2.

Figure 4.9-7: AM and PM Alternative 2 (Dam Notching) Trip Assignment

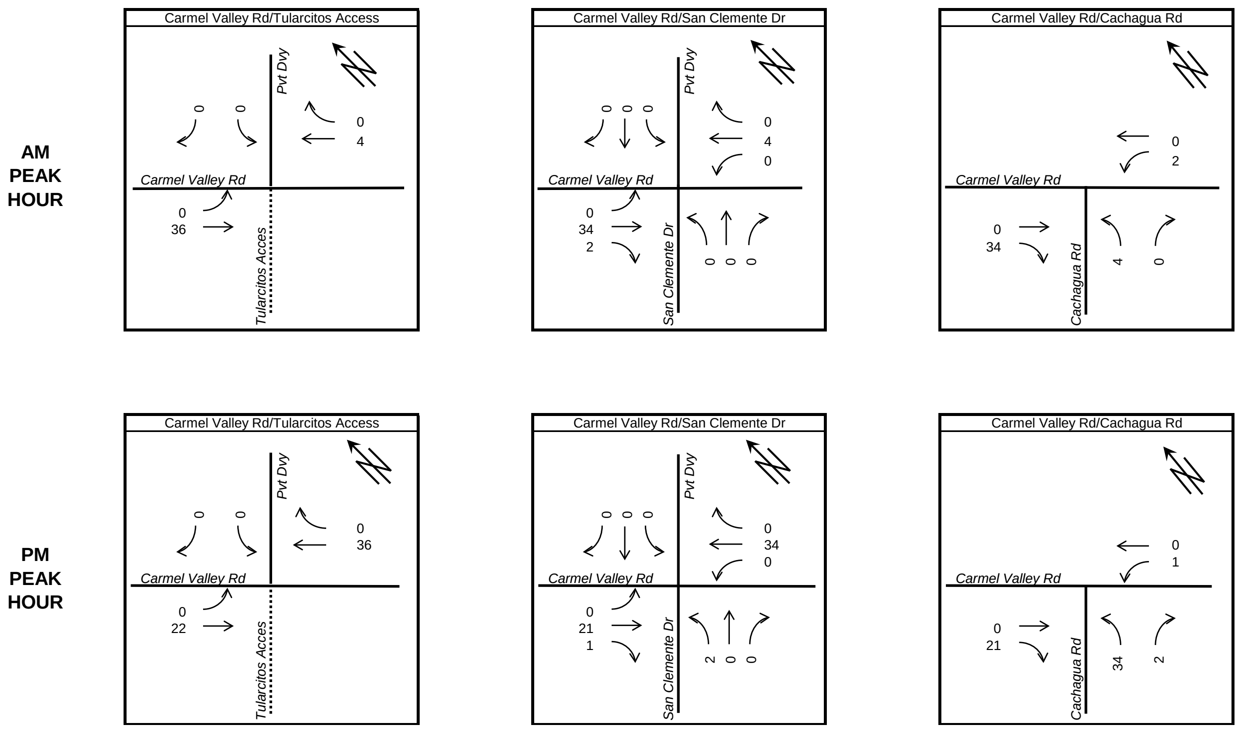
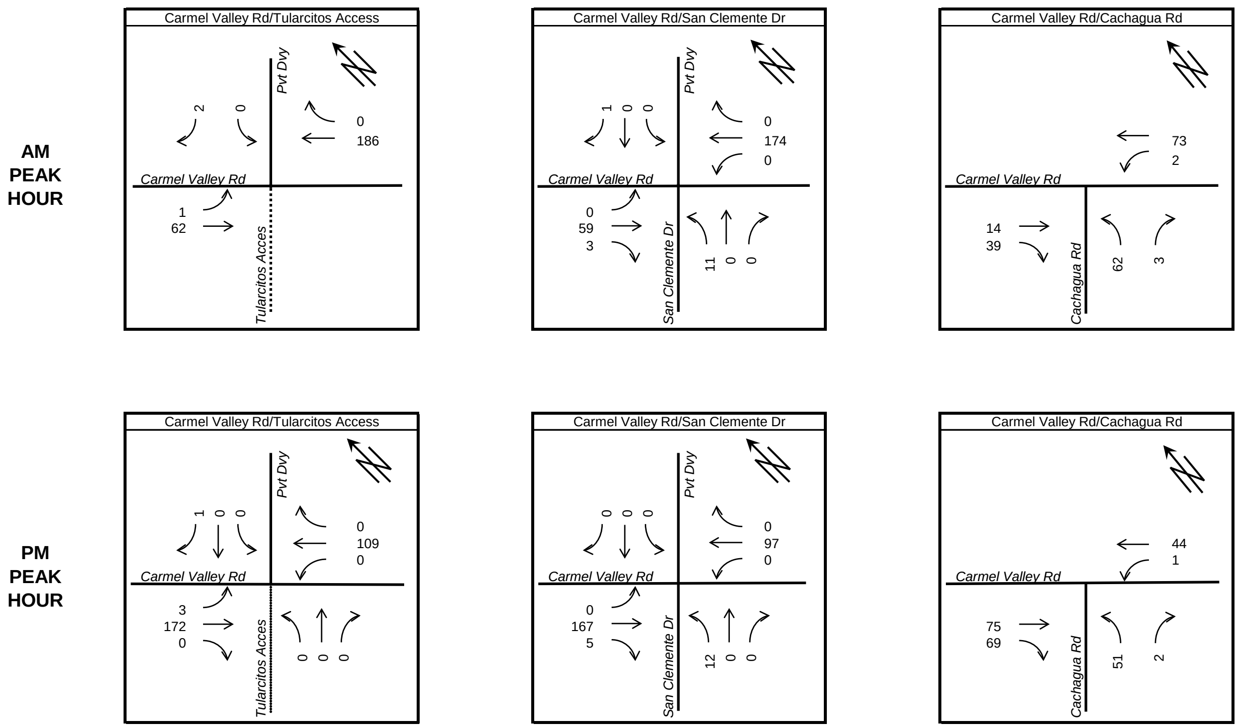


Figure 4.9-8: Existing Plus Alternative 2 AM and PM Peak Hour Intersection Volumes



Alternative 2 would also add additional traffic loadings to San Clemente Drive. Based on Monterey County pavement design standards, San Clemente Drive should be designed with a TI of 3.8 or greater. It would require over 100 large truck trips on San Clemente Drive to add the traffic loadings that would increase the TI by 0.1. The number of large truck trips added to San Clemente Drive would not approach the number of truck loadings required to change the TI.

MITIGATION

Mitigation would be the same as described for Alternative 1.

Alternative 3 (Carmel River Reroute and Dam Removal)

Traffic and Circulation impacts and mitigation measures for ~~Issues TC-3a (Traffic Safety Carmel Valley Road),~~ TC-3b (Traffic Safety San Clemente Drive), Issue TC-4 (Inadequate Corner Sight Distances), and TC-6 (Neighborhood Quality of Life) would be the same as discussed for Alternative 1. Impact TC-5 (New Intersections) would not apply, as there would be no new intersections.

Issue TC-1: Road Segment Traffic Operations

Additional traffic on area road network
Determination: **significant, unavoidable, short-term**

IMPACT

The Alternative 3 trip generation statistics are summarized in Table 4.9-6. Employee data for each phase of the Alternative 3 construction project is provided in Section 3.5. Phasing and information regarding access road improvements is also provided in Section 3.5.

During project construction, access road construction personnel will use the public park and ride area at the intersection of Highway 68 and Laureles Grade. Construction personnel for the remaining project activities would need a larger park and ride area, which will be constructed at the intersection of the Cachagua Road and the Jeep Trail. This will be coordinated by CAW and Monterey County. CAW will obtain a Use Permit for use of the new park-and-ride facility.

~~Table 4.9-6: Alternative 3~~ (Replaced by Table 4.9-6a)
~~(Carmel River Re-route and Dam Removal) Trip Generation~~

Table 4.9-6a Revised Alternative 3
(Carmel River Re-route and Dam Removal) Trip Generation

GENERATOR	DAILY TRAFFIC GENERATION	AM PEAK HOUR: PEAK HOUR VOLUME	AM PEAK HOUR: % OF DAILY	AM PEAK HOUR: INBOUND	AM PEAK HOUR: OUTBOUND	PM PEAK HOUR: PEAK HOUR VOLUME	PM PEAK HOUR: % OF DAILY	PM PEAK HOUR: INBOUND	PM PEAK HOUR: OUTBOUND
VEHICLE TRIPS									
VEHICLE TRIPS PHASE 1 (Year 1)									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	20	2	10%	1	1	2	10%	1	1
Total Trips	80	19	24%	16	3	19	24%	3	16
VEHICLE TRIPS PHASE 2 - (Year 2-4)									
Employee Trips	160	22	14%	20	2	40	25%	20	20
Truck Trips	28	2	7%	1	1	2	7%	1	1
Total Trips	188	24	13%	21	3	42	22%	21	21
PASSENGER CAR EQUIVALENCIES									
PCE's PHASE 1 (Year 1)									
Employee Trips	60	17	28%	15	2	17	28%	2	15
Truck Trips	80	8	10%	4	4	8	10%	4	4
Total Trips	140	25	18%	19	6	25	18%	6	19
PCE's PHASE 1 (Year 2-4)									
Employee Trips	160	22	14%	20	2	40	25%	20	20
Truck Trips	112	8	7%	4	4	8	7%	4	4
Total Trips	272	30	11%	24	6	48	18%	24	24

Notes:
1. PCE's: Passenger Car Equivalents

The amount of aggregate that would be required to improve the Jeep Trail and the new road between the Jeep Trail and the Dam would be less than required for Alternatives 1 and 2, because the new road would be constructed to a 15-foot width for Alternative 3, rather than the 25 foot width required for Alternatives 1 and 2. ~~It is estimated that access improvements for Jeep Trail and the new road between the Jeep Trail and the Dam for Alternative 2 would require 3,750 cubic yards of material. Delivered over a 60 day period in 18 cubic yard trucks, an average of 4 inbound loads per day, or 8 truck haul round trips per day would be required to import the material for road improvements. With 15 employees on the site during Phase 1, total trip generation during Phase 1 would be 68 vehicle trips per day.~~ **During the peak month of activity in Phase 1, 188 loads of material and equipment would be transported to the project site by single-unit trucks, for an average of 9 loads per day.** Phase 2 would require three years to complete, with ~~40~~ workers split between two shifts **during the peak period of construction activity.** On this basis, **an estimated** 160 trips would be generated per day during Phase 2 **by construction workers**. **The peak truck hauling activity is expected to occur in June of the third construction season when approximately 320 single-trip truck loads are expected to be transported during the month. The wear and tear impact on the road caused by construction equipment will be based on the average project generated truck trips per day. On average, the project would generate about 20 truck trips per day.**

Approximately 160 truck trips would also occur during the last year of construction to import boulders and other materials for channel reconstruction, if sufficient material is not found on-site.

Table 4.9-1**a** shows the assignment of Alternative 3 project daily trips to the study road segments and the road segment levels of service **during peak period of construction activity.** With Alternative 3 traffic added to the road network, the existing road segment levels of service would not be changed. **Therefore, Alternative 3 would not significantly impact traffic operations on the study road segments. This includes Tassajara Road between Carmel Valley Road and Cachagua Road and Cachagua Road between Tassajara Road and the Jeep Trail, which would be used by large trucks to transport material and equipment.**

Under Alternative 3, access improvements to the Jeep Trail as described for Alternative 1 would be constructed, except that the new road constructed from between the Jeep Trail and the reservoir would be constructed to a width of 15 feet, not 25 feet. The new road would only be used by construction personnel and not other property owners.

The Jeep Trail would be used for employee access throughout the construction period and for the delivery of construction equipment. Alternative 3 would entail use of the Jeep Trail and new road connecting the Jeep Trail to the reservoir (following the same alignment as would be used for the conveyor road under Alternatives 1 and 2). Levels of use under Alternative 3 are estimated as follows:

- Project worker access during construction ~~(all year during the first construction season and May to October during the following two seasons)~~ **will be provided by** ~~through~~ the Jeep Trail that **is used by** ~~passes by~~ the Stone Cabin **owners,** and then, once constructed, to the conveyor road **and the Reservoir Access Road. The number of construction workers on-site will vary throughout the project with peak construction activity generally occurring during the late spring, summer and fall.** *Worker access refers to how workers would travel to the construction sites, and would be the same as identified in the Final EIR/EIS with the addition of the use of Tassajara Road (see Section 3.5.5 in the Final EIR/EIS and Section 3.5.5 in the SEIR). Routes used by workers to access the construction sites would be the same regardless of work shift.* ~~***Worker access would be the same as identified in the final EIR/EIS.***~~

- Mobilization of heavy earth moving and construction equipment (roughly 20 to 40 trips of large equipment) at the beginning and end of each construction season (May and October) for 3 seasons, averaging 2 to 3 loads per day for the first and last month of construction **will occur at varying levels of intensity throughout the project. The largest number of heavy equipment transport trips (using trailers) is anticipated in July of the second construction season when 61 trips are projected, or an average of 2 to 3 trips per day on Tassajara Road to Cachagua Road. The largest number of material transport trips by single-unit trucks is anticipated in June of the third construction season when approximately 320 trips, or an average of 20 trips per day, are expected.**

- Occasional (bi-weekly) mid-size equipment mobilization (e.g., equipment/supply trucks, cranes, backhoes, and small dozers).

During the peak construction activity, it is estimated that ~~160~~ **188** vehicle trips per day, **including single-unit trucks,** would be generated by Alternative 3, most of which would use the Jeep Trail between Cachagua Road and the new access road to the reservoir. ~~*The 20-foot wide sections of the Jeep Trail between Cachagua Road and the new access road to the reservoir would be adequate for two-way travel.*~~ *The Jeep Trail will be improved to provide a 12-foot wide roadway with two 3-foot shoulders for a total width of 18 feet which would be adequate for 2-way travel.* Turnouts would be provided along the sections of the Jeep Trail that would be limited to one-way travel. During the movement of large trucks into and out of the site via the jeep trial, flagmen with radios would be used to control traffic movements on the Jeep Trail.

~~As with Alternatives 1 and 2, n~~**N**on-project related traffic using the Jeep Trail**, Tassajara Road, and the southern portion of Cachagua Road** would be subjected to delays during the construction of improvements to the Jeep Trail **and Cachagua Road, including improvements to Bridge 529.** As described for Alternatives 1 and 2, the impact of the project during the construction of improvements to the Jeep Trail would be significant because it is not known if the amount of delay that a motorist would experience during the road construction period would be less than 10 minutes. **Delays may also be significant at times on the southern portion of Cachagua Road**

during access road improvements in the first construction season. Road improvements along Cachagua Road are expected to take approximately 4 months.

During mobilization periods, heavy earth moving equipment and construction equipment would be transported by truck to and from the reservoir. Alternative 3 does not include the use of a conveyor system. **Heavy equipment and material transported by truck-trailers would access the Jeep Trail using Tassajara Road and the segment of Cachagua Road between the Jeep Trail and Tassajara Road.** As described for Alternative 1, during project operations following the completion of improvements to the Jeep Trail, the delay experienced by non-project traffic on the Jeep Trail while large trucks are traversing the trail is estimated to be less than 10 minutes and, therefore, the delay **on** **the Jeep Trail** would not be a significant impact under Alternative 3.

Motorists traveling along Tassajara Road and the southern portion of Cahagua Road to the Jeep Trail may experience delays at when trailer-trucks are transporting equipment or materials as these vehicles would be slow moving and motorists may be escorted through the area with pilot vehicles. Delays could affect both residents and recreational motorists travelling to the Los Padres National Forest. These delays would be significant because it is not known if the amount of delay that a motorist would experience would be less than 10 minutes. As with Alternatives I and 2, a Construction Management Plan would be developed for **Alternative 3**~~ the Jeep Trail ~~that includes a Trip Reduction Plan for Construction Workers, Traffic Coordination and Communication Plan and a Traffic Safety Plan.~~ for Alternative 3~~. The CMP would include measures to minimize the delay to non-project related Jeep Trail users during construction of improvements to the road and during subsequent project activities. Because it is not known whether delays to non-project related users could be reduced to less than 10 minutes during the construction of improvements to the trail, the impact of Alternative 3 to Jeep Trail users **and motorists traveling along the southern portion of Cachagua Road** would be significant and unavoidable. Impacts during the construction of improvements to the Jeep Trail could be reduced to less than significant levels if the Communication Plan includes procedures that allow the other users of the Jeep Trail to provide the construction contractor with a schedule for their use of the Jeep Trail. Construction activities could then be planned to minimize delays to the other users of the Jeep Trail.

MITIGATION

Mitigation would be the same as described for Alternative 1~~,~~ **with the following addition:**

Equipment mobilization trips would avoid peak traffic hours and would be coordinated with both the Cachagua Fire and Monterey Regional Fire Districts. Mobilization trips would also be coordinated with the local school bus schedules to avoid trips when school busses are running along Tassajara and Cachagua Roads.

Issue TC-2: Intersection Traffic Operations

Changes to intersection level of service
Determination: **less than significant, no mitigation required**

IMPACT

Alternative 3 would generate 19 trips during the AM and PM peak hours during Phase 1 and ~~22~~ **24** trips during the AM peak hour and ~~40~~ **42** trips during the PM peak hour during Phase 2. For intersection capacity and channelization analyses, the peak hour truck trips generated by the Alternative 3 project were converted to passenger car equivalent trips to account for the greater impact associated with each truck in the vehicle stream. Consistent with previous traffic analyses prepared for the project; four passenger car equivalents (PCEs) were assumed per truck**. In addition, the peak hour trip generation estimate includes a worst-case assumption that one large truck would travel to and from the project site during each peak hour.**

~~Figure 4.9-9~~ **Figure 4.9-9a** shows the assignment of AM and PM peak hour trips generated by the Alternative 3 project to the study intersection. The passenger car equivalent trip generation estimates for Phase 2 were used in this analysis. A trip distribution pattern of 95 percent to the west and 5 percent to the east was assumed for the project **employees.** Cachagua Road would be the primary access to the Dam for Alternative 3. ~~and 95 percent of the~~ **Employee** traffic generated by the project was assigned to Cachagua Road **between Carmel Valley Road and the Jeep Trail. All trucks were assigned to the southern access route between Carmel Valley Road and the Jeep Trail. In addition, all trucks were assumed to travel between the project site via Carmel Valley Road and Highway 1.**

Alternative 3 AM and PM peak hour intersection volumes were achieved by combining the AM and PM peak hour traffic assignment for the project with the existing intersection volumes. The Alternative 3 AM and PM peak hour intersection volumes are shown on ~~Figure 4.9-10~~ **Figure 4.9-10a**.

Figure 4.9-9: Alternative 3 (Carmel River Re-route and Dam Removal) AM and PM Peak Hour Trip Assignment

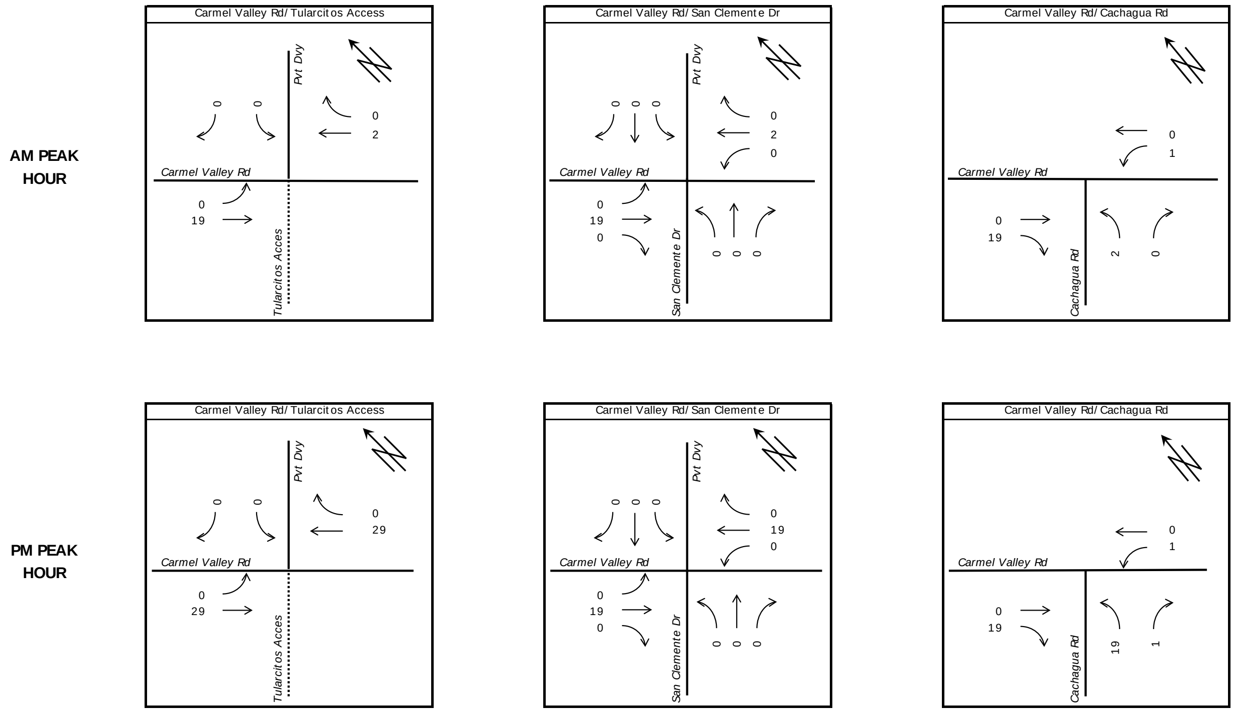


Figure 4.9-9a Revised Alternative 3 (Carmel River Re-route and Dam Removal) AM and PM Peak Hour Trip Assignment

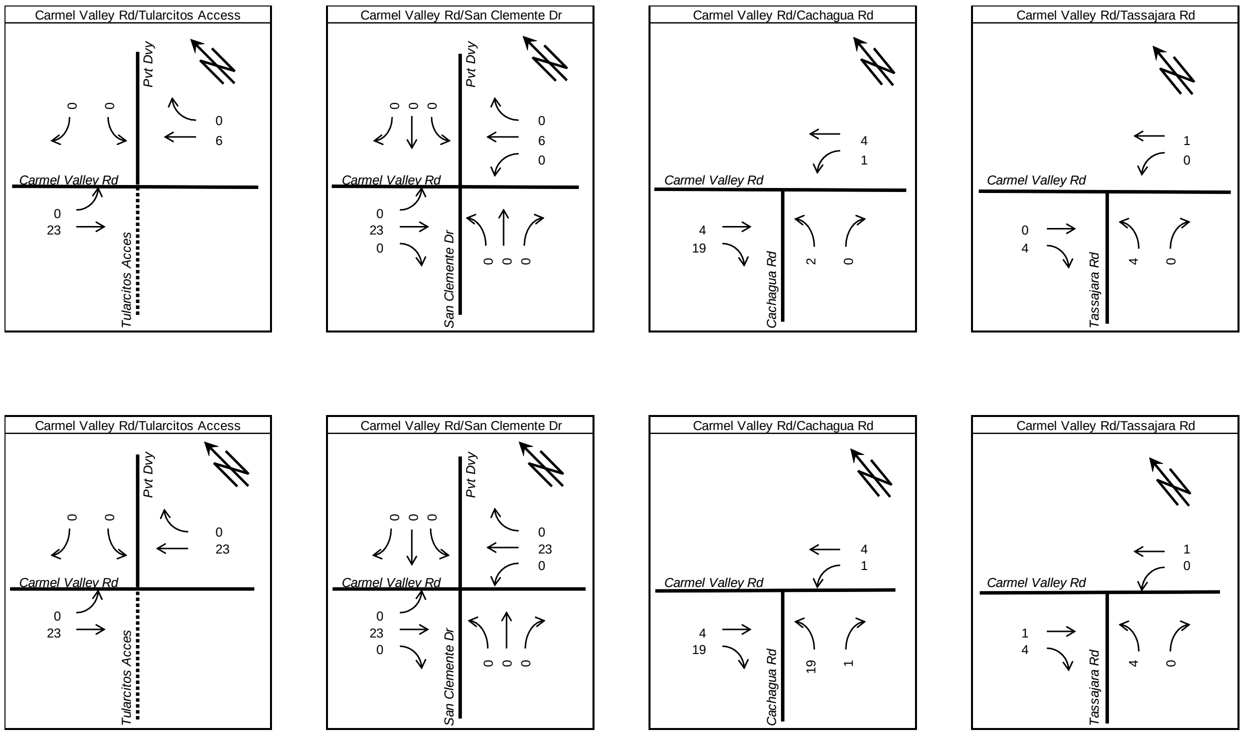


Figure 4.9-10: Existing Plus Alternative 3 AM and PM Peak Hour Intersection Volumes

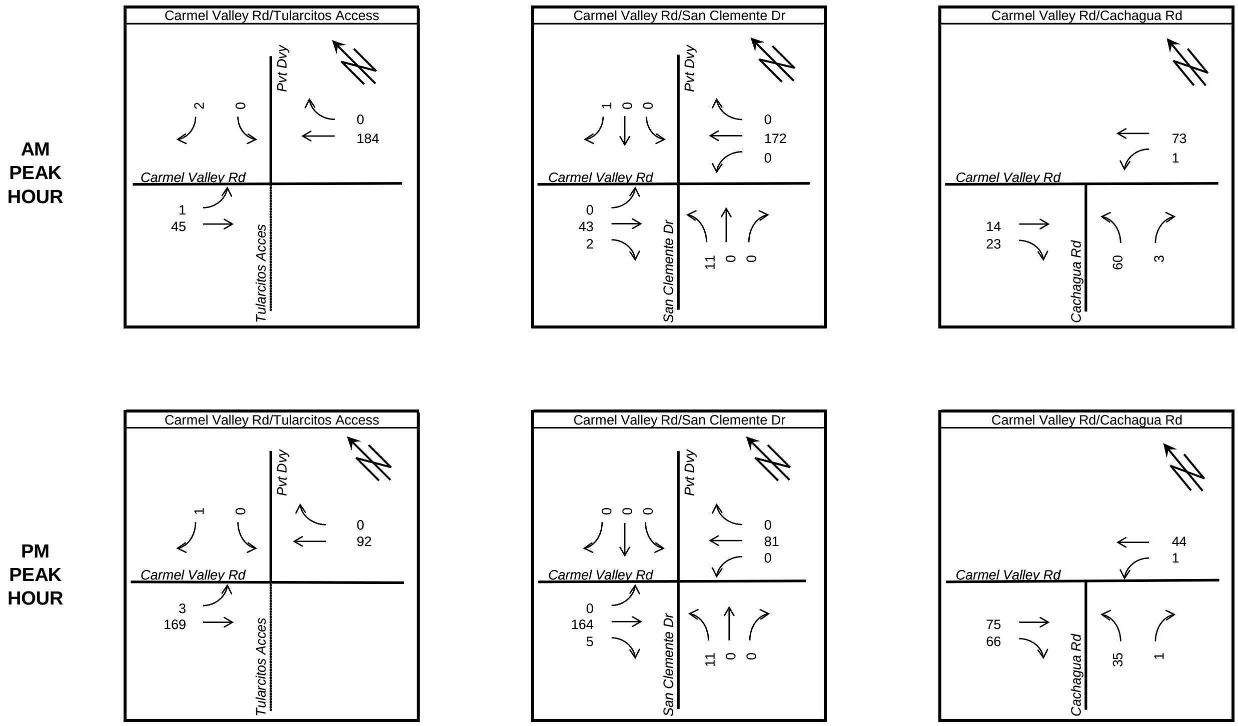
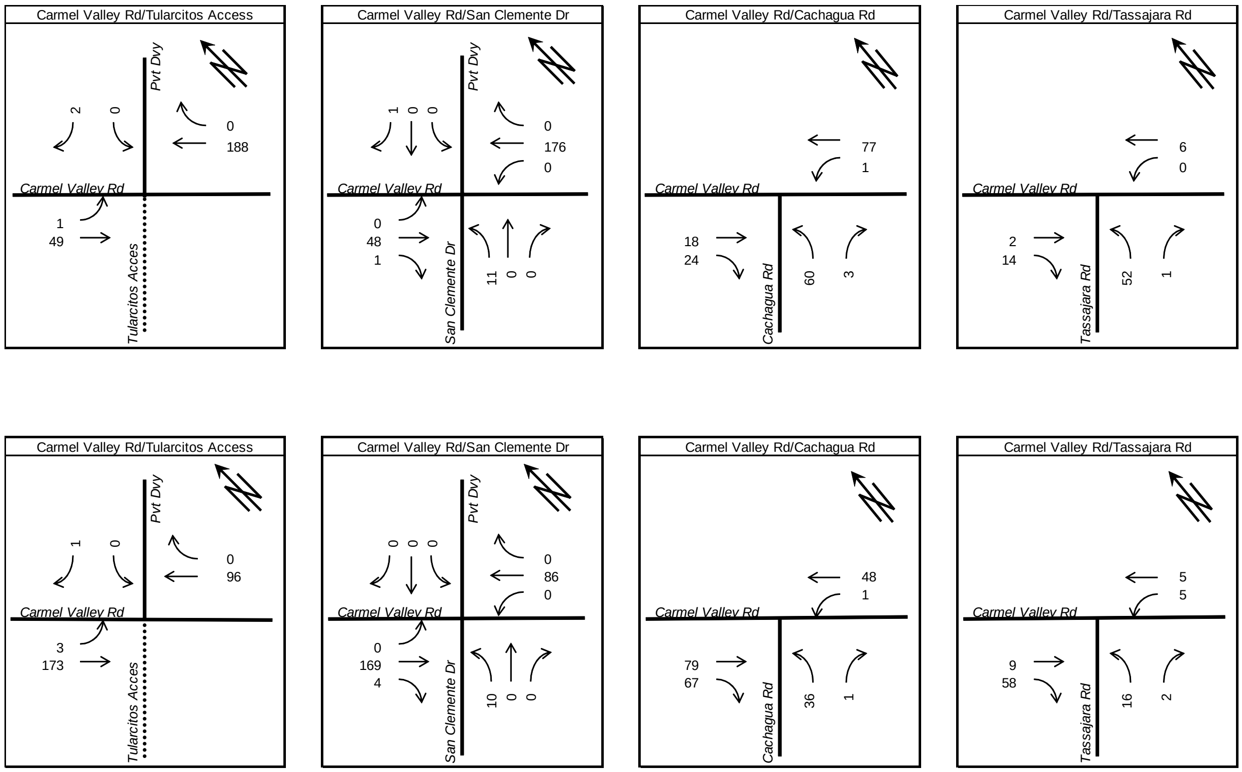


Figure 4.9-10a Revised Existing Plus Alternative 3 AM and PM Peak Hour Intersection Volumes



Alternative 3 intersection operations were evaluated based on technical procedures documented in the 2000 HCM. The Alternative 3 AM and PM peak hour intersection levels of service are summarized in Table 4.9-1. With the traffic from project Alternative 3 added to the study intersections, intersection levels of service would be unchanged from existing conditions. **Therefore, Alternative 3 would not significantly impact traffic operations at the study intersections. This includes the intersection of Carmel Valley Road and Tassajara Road, which would be used by large trucks.**

Mitigation

Mitigation for TC-~~6~~ **2** would not be required under Alternative 3.

Issue TC-3a: Traffic Safety Carmel Valley Road

Increased accident rates
***Determination:* less than significant with mitigation, short-term**

The impact potential to Carmel Valley Road to Cachagua Road would be the same as discussed for Impact TC-3 for Alternative 1 except that additional construction-related traffic would be added to Carmel Valley Road between Cachagua Road and Tassajara Road.

Carmel Valley Road between Cachagua Road and Tassajara Road, Tassajara Road between Carmel Valley Road and Cachagua Road and Cachagua Road between Tassajara Road and the Jeep Trail would be used to transport large equipment and material via truck trailers and single-unit trucks. These roads have poor horizontal alignments, minimal shoulder width and narrow travel lanes in some locations. Alternative 3 could potentially increase accident rates on these road segments.

Cachagua Road south of the intersection with the Jeep Trail has four curves that would require widening to allow passage of large truck trailers. This section of Cachagua Road also includes two one-lane bridges, one of which is load-restricted (Bridge 529). Tassajara Road includes a one-lane bridge near the intersection with Cachagua Road.

MITIGATION

Mitigation for Issue TC-3a would be similar to that described for the Alternative 1 but with the mitigation area for Carmel Valley Road extended to include the segment between Cachagua Road and Tassajara Road. An improvement plan would be coordinated with Monterey County and developed for Cachagua Road between the Jeep Trail and Tassajara Road, and Tassajara Road between Cachagua Road and Carmel Valley Road. The improvement plan would include widening roads, providing additional pavement, and ensuring haul truck turning requirements can be met. The load carrying capacity of the bridges would be verified and temporary or permanent improvements would be made to support equipment loads. Vehicles hauling equipment and material along the Tassajara access route to the Jeep Trail would be accompanied by pilot vehicles.

Issue TC-7: Pavement Loadings

Effect of project traffic on pavement
Determination: **less than significant with mitigation, short-term**

IMPACT

Alternative 3 would generate an estimated 480 truck trips over the duration of the project. Over a 10-year design period, the project would generate an average of 0.18 truck trips per day, which would generate 636 equivalent single axle loads (ESALs). With the Alternative 3 traffic loadings added to the existing ambient loadings on Carmel Valley Road, the total ESALs would increase to 77,460, which equates to a TI of 6.6. The TI would not change with the additional loadings generated by the Alternative 3.

The existing truck loadings on Cachagua Road equate to a TI of 5.8. With the Alternative 3 traffic loadings added to the existing ambient loadings, the total ESALs would increase to 26,818, which equates to a TI of 5.9. The TI would change with the additional loadings generated by the Alternative 3.

The existing truck loadings on Tassajara Road equate to a TI of 5.7. With the Alternative 3 traffic loadings added to the existing ambient loadings, the total ESALs would increase to 23,718, which equates to a TI of 5.8. The TI would change with the additional loadings generated by the Alternative 3.

Alternative 3 would also add additional traffic loadings to San Clemente Drive. Pavement loading impacts to San Clemente Drive for Alternative 3 would be the same as the impacts described for Alternative 2.

MITIGATION

Mitigation would be the same as described for TC-7 in Alternative 1~~,~~ except the Applicant will also repair any damage to Cachagua Road between the Jeep Trail and Tassajara Road, and Tassajara Road between Cachagua Road and Carmel Valley Road. All pavements will be restored to the pre-project condition immediately after construction has been completed or an in-lieu fee will be paid to Monterey County for pavement restoration.

Issue TC-8: Delays to Emergency Vehicles

Effect of project on access

Determination: **less than significant with mitigation**

IMPACT

Three fire stations are located between Carmel Valley Road and the Jeep Trail along the Tassajara/Cachagua Road access route. One station is located at Carmel Valley Road and Tassajara Road, another is located on Nasson Road off Cachagua Road, approximately halfway between Carmel Valley Road the Jeep Trail, and a third is located on the northern portion of Cachagua Road near Carmel Valley Road (Gregg Curry, NRSW Fire Department, pers.com 4/12). The Station at Carmel Valley Road and Tassajara is the main station with 2 engines and 1 rescue unit. The two other stations houses one engine each.

Emergency vehicles traveling along Tassajara Road and the southern portion of Cahagua Road to entrance of the Jeep Trail may experience delays during construction of road improvements and at times when trailer-trucks are transporting equipment or materials, as these vehicles would be slow moving.

Equipment mobilization and materials delivery would average 1-3 large trailer trucks and up to 12 single unit trucks per day. Delays could affect both fire and law enforcement vehicles when construction vehicles are also on the roadway. Motorists and trucks with equipment are required to immediately pull over as far as possible to allow emergency vehicles to pass. However, because of the narrowness of the access roads, and the size of construction vehicles, without mitigation, delays in emergency response could occur.

MITIGATION

The following mitigation measures were coordinated with the Cachagua Fire District and Monterey Regional Fire District, and will adopted in a formal traffic plan that will be developed prior to the start of construction for approval by Monterey County.

1. **The Contractor will coordinate with Monterey County, the Cachagua Fire District and the Monterey Regional Fire District throughout Project construction.**
2. **At all times, emergency vehicles will be given priority to pass through the construction areas, and on roads used by construction vehicles.**
3. **Improvements to Tassajara Road, Cachagua Road, and the Jeep Trail will include regular turn-outs for construction equipment use so that emergency vehicles can pass.**
4. **The Contractor will avoid work during hours when the roads are the busiest and will consider restricting hauling to the hours between 9 am and 3 pm.**
5. **The Contractor will coordinate construction traffic with school bus schedules to avoid school bus traffic.**
6. **Construction- related hauling will be restricted to non-holiday weekdays.**
7. **The Contractor will submit schedules of anticipated construction related traffic to the Fire Districts on a monthly basis.**
8. **The Contractor will give the Fire Districts 24-hour contact names and phone numbers and keys to all access gates.**
9. **The Contractor will establish and maintain radio contact with the Fire Districts throughout the project.**

Implementation of these measures would reduce the impacts to less than significant.

Alternative 4 (No Project)

No construction activities are associated with the No Project Alternative; therefore there would be no additional impacts an

4.10 CULTURAL RESOURCES

This section describes the effects on cultural resources of the Proponent's Proposed Project and its alternatives during construction and operations for the project site, maintenance areas and immediate surroundings. Additional information provided in ~~this~~**the** Final EIR/EIS clarifies and amplifies the information included in the Public Draft EIR/EIS. The cultural resources analysis describes short- and long-term effects that would result from construction, demolition, or operation of the Dam, reservoir, and associated infrastructure.

Revisions to the Cultural Resources section were made to identify updated cultural resource studies, and to disclose and analyze potential impacts to cultural resources not identified in the Final EIR/EIS. The addition of potentially affected cultural resources is primarily due to changes in the Area of Potential Effects (APE) due to the use of Tassajara Road and additional Cachagua Road segments for equipment access (requiring road improvements).

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

Cultural resources include historic properties that are archaeological sites or historic structures. Archaeological sites date from approximately 12,000 BC through the historic period, which can be as recent as AD 1950. In accordance with the California Office of Historic Preservation's (OHP) California Register of Historical Resources (CRHR) standard, under CEQA, historic structures must be at least 45 years old. These two types of historic properties are addressed separately in this section because the resources are affected differently by project construction and operations. Under Section 106 of the National Historic Preservation Act (NHPA), federal agencies must consider effects on historic properties. "Historic properties" are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places" (NRHP) (36 CFR 800.16). The term includes artifacts, records, and remains that are related to and located in such properties. It also includes "traditional cultural properties" (TCPs) that are eligible for inclusion on the NRHP.

The California State Parks Office of Historic Preservation administers the State's NRHP program under the direction of the State Historic Preservation Officer (SHPO). The following NRHP criteria serve as the basis for evaluating a historic property's eligibility for listing (36 CFR 60):

- Quality of significance in American history, architecture, archeology, and culture for districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association.

- Association with events that have made a significant contribution to the broad patterns of our history or embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, and/or represent a significant and distinguishable entity whose components may lack individual distinction.

- Whether the property has yielded or may be likely to yield information important in prehistory or history.

- Resources less than 50 years old do not meet the NRHP criteria unless they are of exceptional importance.

Consideration of effects must include the Area of Potential Effect (APE). The APE includes the “geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” The intent of the federal Executive Order (EO) 11593, Protection and Enhancement of the Cultural Environment has been integrated into Section 110 through 1980 amendments to the Act. Under NEPA, Federal agencies must take into account impacts to historical resources, or those resources that are eligible for the NRHP, before a project is approved. The Section 106 process has been integrated with the NEPA process for this project.

Recent amendments to Section 106 of the NHPA specify that properties of traditional religious and cultural importance to a Native American Tribe, also known as TCPs, may be determined to be eligible for inclusion on the NRHP. In carrying out its responsibilities under Section 106, the USACE is required to consult with any Native American tribe that may attach religious or cultural significance to any such properties.

<u>**Under Section 106, the USACE is currently reviewing the Section 106 technical documents. These documents include all of the previously identified, and recently identified cultural resources in the Project area. Once the USACE completes its review, it will submit the documents to the State Historic Preservation Officer for concurrence.**</u>

<u>Criteria for Evaluation of Historic Properties</u>

Federal

The NRHP is the federal list of historic, archaeological, and cultural resources worthy of preservation. Resources listed in the NHRP include districts, sites, buildings, structures, and objects that are significant in American history, prehistory, architecture, archaeology, engineering, and culture. The quality of significance in American history, architecture, archaeology, and culture is possible in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association, and meet one of the following criteria:

Criterion A: Are associated with events that have made a significant contribution to the broad patterns of our history; or

Criterion B: Are associated with the lives of persons significant in our past; or

Criterion C: Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: Has yielded, or may be likely to yield, information important in prehistory or history (36 CFR Part 60).

Archaeological sites are primarily assessed under Criterion D. Buildings less than 50 years old do not meet the NRHP criteria unless they are of exceptional importance, as described in the National Park Service (NPS) Bulletin No. 22, "*How to Evaluate and Nominate Potential National Register Properties That Have Achieved Significance within the Last 50 Years*."

State

Regulatory compliance in relation to cultural resources is governed by CEQA. CEQA guidelines define a significant cultural resource as "a resource listed in or eligible for listing on the CRHR". A historical resource may be eligible for inclusion in the CRHR if it is 45 years of age and:

- **Criterion 1**: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- **Criterion 2**: Is associated with the lives of persons important in our past;
- **Criterion 3**: Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
- **Criterion 4**: Yields, or may be likely to yield, information important to prehistory or history.

4.10.1 ENVIRONMENTAL SETTING

Archaeological Sites

No previously unrecorded cultural resources were located during the survey. ~~Two archaeological sites are located within 500 feet of the APE. CA-MNT-942 is a bedrock mortar and CA-MNT-1252H is the remains of a wood cabin. Because the resources are~~

~~outside the APE, no attempt was made to relocate them.~~ **Five archaeological sites are located within 500 feet of the APE: CA-MNT-588 is a prehistoric habitation site and isolated bedrock mortar; CA-MNT-636 is a lithic scatter and bedrock mortar complex; CA-MNT-942 is a bedrock mortar; CA-MNT-1251H and CA-MNT-1252H are the remains of wood cabins. All of these resources were determined to be outside the APE through survey and identification efforts.** Table 4.10-1 includes a list of the archaeological resources that were inventoried in the APE for the Proponent's Proposed Project **and alternatives**.

Table 4.10-1: Inventoried Archaeological Resources for Proponent's Proposed Project and Alternatives (APE)

Field Site Numbers	Resource Name (Previously Assigned Site number)	Historical Significance	Relevant inventoried NRHP/CRHR* Criteria or Reason for Omission
AR-1	Occupation Site CA-MNT-33A and CA-MNT-33B	Eligible	NRHP Criterion D CRHP Criterion 4
AR-2	Bedrock Mortar Feature CA-MNT-586	Ineligible	Site removed or destroyed
AR-3	Cabin & Outhouse CA-MNT-814H	Ineligible	Cabin demolished
AR-4	Two Bedrock Mortar Features CA-MNT-1253	~~Unknown~~ **Ineligible**	~~Testing Required~~ **Testing revealed the site to lack data potential**
AR-5	**Wooden Cabin CA-MNT-1250H**	**Ineligible**	**Site removed or destroyed**

* NRHP = National Register of Historic Places; CRHR = California Register of Historic Resources

CA-MNT-33A AND CA-MNT-33B (AR-1)

Initially discovered as early as 1948, this site is situated along the bank of the Carmel River near the current CVFP. The site consists of two large midden areas separated by a small, possibly sterile, area. Constituents of the site include shell and faunal bone fragments, some of which appear to be burned, lithic tools, mortar fragments, pestles, metates, and other possibly ground stone milling tools. At least five bedrock mortar features have been located along the riverbank.

Previous investigations at the site have included a 1972 excavation of five test pits by the Monterey County Archaeological Society, reported by Howard (1974). The reporting, however, was very limited and no further data were available until Gerrit Fenenga (1988) studied a small sample of shell artifacts from the site. Fenenga employed Bennyhoff and Hughes' (1987) typology for his analysis. Fenenga found a large assortment of *Olivella biplicata* shell beads, ranging from spire-lopped to saucer shaped specimens. Fenenga's investigation found temporally diagnostic shell artifacts are present at CA-MNT-33A, which date to the early and middle portions of the Middle Period (2100 to 1500 BP). A radiocarbon sample obtained from one excavation unit, approximately 133cm below surface returned a date of 2285 ± 100 BP (WSU-2388). Therefore, it can be assumed that CA-MNT-33A was undoubtedly occupied during the early Middle Period and possibly before.

A dirt and gravel access road is located across a portion of the site. This road appears to have been in place since the original recordation of the site. Previous site records also report other disturbances to the surface including gardens and fencing. Currently, a dirt road crosses the recorded boundaries of the site, but no other structures are evident. No disturbance of subsurface deposits seems likely with the exception of the settling ponds and the previous excavation.

Based on ethnographic maps, CA-MNT-33 may be the site of the village *Socorronda,* reported by Spanish missionaries to be located within the upper Carmel River drainage.

This large village site has the potential to contain important information on the prehistoric inhabitants of the area. Therefore, the site is recommended eligible for listing on the NRHP and CRHP under Criteria, D and 4, respectively.

CA-MNT-586 (AR-2)

This site is a possible bedrock mortar feature near a historic homestead CA-MNT-814H adjacent to Tularcitos Creek. The site was initially recorded in 1974 (Farley et al. 1974) and has since been removed or destroyed. This site is not eligible for the NRHP or CRHR.

CA-MNT-814H (AR-3)

Originally the site of a cabin and ancillary buildings, the site was reported as deteriorating in 1974 (Farley et al 1974). The cabin was located on a sloping flat above the west bank of Tularcitos Creek near a bridge crossing. A 1983 site record update reports that the cabin was bulldozed to make way for a new home built on Lismore Lane in 1979 (Jacques 1983). No evidence remained of the cabin or other structures. This site is not eligible for the NRHP or the CRHR.

Directly east of this site is the old location of the Tularcitos Guard Station, once used by the California Department of Forestry. The guard station was constructed after WWII. It was abandoned and buildings were removed during the 1980s (pers. comm. between Don Lingenfelter, CAW, and Brett Rushing, ENTRIX July 2005). A mortared river rock wall remains at this location and was not inventoried.

CA-MNT-1253 (AR-4)

Located on the peninsula at the confluence of San Clemente Creek and the Carmel River, the site consists of two bedrock mortar (BRM) features near the shoreline of the San Clemente reservoir (Westec 1983). Originally recorded as a single BRM, a subsequent survey found another BRM feature in the vicinity, which was added to the original site (Hampson 1987). The BRM features remain intact.

~~Although no artifacts have been located in association with the two features, the site area has never undergone a controlled archaeological testing program. Therefore, if the site could not be avoided, it would need to be tested to determine the nature and extent of any subsurface cultural deposit and to establish eligibility for the NRHP and CRHR.~~ **The 1987 technical report for the San Clemente Dam EIR/EIS (Hampson et al. 1987:33, 39) documents a controlled subsurface investigation of the site. This investigation consisted of a series of hand excavated test pits to 30 cm below surface. The subsurface soil was found to be dominated by course river gravels and cobbles with no indications of any cultural materials (Hampson et al. 1987:33). Given the lack of associated cultural materials and the limited data potential of the isolated bedrock mortars, the site was recommended not eligible for the NRHP. Re-survey of the site in September 2011 failed to identify any additional cultural resources and, as such, the site is still recommended as ineligible for the NRHP and CRHR.**

CA-MNT-1250H (AR-5)

The site was documented on early maps as a cabin located east of the Carmel River, approximately 200 meters north of Old Carmel River Dam. Field investigations in 1983 and 1987 documented several wooden boards and fence pieces adjacent to the Sleepy Hollow/Tularcitos access road, in the approximate location of the mapped cabin. Both studies concluded that the cabin was destroyed and removed during construction of the current road. Given the lack of integrity and/or data potential of the site, CA-MNT-1250H was recommended not eligible to the NRHP (Hampson et al. 1987:38). The location was revisited in September 2011 and no evidence of any cultural resources was observed, confirming the destruction of the historically mapped cabin site. Given the previous investigations of the site, previous recommendations of non-eligibility, and a lack of observed cultural features or archaeological remains during the current survey, CA-MNT-1250H is considered to be completely destroyed and have no physical manifestation. As such, the site is recommended not eligible for the NRHP or CRHR.

Historic Structures

The inventory resulted in the identification of ~~eight~~ **nine** individual historic **period** resources and one historic district. The individual resources included two dams and associated fish ladders, a filtration plant, two chemical treatment buildings, two dam keeper houses, ~~and~~ a Stone Cabin**, and a bridge**. ~~Their association with the Monterey Division waterworks thematically links all identified resources except for the Stone Cabin.~~ **Six of the resources are contributors to a San Clemente Dam Historic District (SCDHD), which was identified through survey in 2005. The six contributors to the district include the San Clemente Dam, and Fish Ladder; Old Carmel River Dam and Fish Ladder; Chemical Building; Dam Keeper's Cottage; Dam Keeper's House; and Filtration Plant Chemical Building. In addition to being contributors to the SCDHD, both the San Clemente Dam and Old Carmel River**

Dam were determined to be individually eligible for listing in the NRHP. A district record form was subsequently created for the SCD Historic District.

A primary record form was also prepared for each individual building or structure within the historic district. A separate inventory form was prepared for the Stone Cabin (HR-8) because that resource is contextually linked with recreational resources. The historic district form notes the presence of historical pipelines connecting the reservoir to the CVFP and the historical access road, San Clemente Drive. The APE contains one historic period bridge, Monterey County Bridge # 529 (Caltrans #44C0121) that is listed in the Caltrans Historic Bridge Log as ineligible for listing in the NRHP. Table 4.10-2 includes a list of the inventoried historic period structures associated with the project and the alternatives within the APE.

Table 4.10-2: Inventoried Historical Structures

Field Site Number	Resource Name (Previously identified site number)	Historical Significance	Relevant NRHP/CRHR Criteria or Reason for Omission
HR-1	Chemical Building near Filtration Plant	HD* Contributing Resource	NRHP Criterion A CRHR Criterion 1
HR-2	Dam Keeper's House 2	HD Contributing Resource	NRHP Criterion A CRHR Criterion 1
HR-3	Filtration Plant	Non-Compatible Non-Contributing	~~Altered~~ **Lack of integrity**
HR-4	Old Carmel River Dam & Fish Ladder CA-MNT-1249H	HD Contributing Resource & Individually Eligible	NRHP Criteria A and C CRHR Criteria 1 and 3
HR-5	Dam Keeper's House 1 CA-MNT-1248H	Contributing Resource HD	NRHP Criterion A CRHR Criterion 1
HR-6	Chemical Building near reservoir	HD Contributing Resource	NRHP Criterion A CRHR Criterion 1
HR-7	SCD & Fish Ladder CA-MNT-1248H	HD Contributing Resource & Individually Eligible	NRHP Criteria A and C CRHP Criteria 1 and 3
HR-8	Stone Cabin CA-MNT-812	Individually Eligible Resource	NRHP Criterion C CRHR Criterion 3
HR-9	SCD Historic District	Eligible	NRHP Criterion A CRHR Criterion 1
HR-10	**Monterey County Bridge #529 (Caltrans #44C0121)**	**Ineligible**	**General lack of significance**

Note: Historic resources are located within the Proponent's Proposed Project and alternatives.

CHEMICAL BUILDING FOR FILTRATION PLANT (HR-1)

This building is located directly west of San Clemente Drive just north of the Dam Keeper's Cottage 2. The building includes a small concrete block structure and storage tank enclosed by chain-link fences. The fenced area where the tanks are located has a concrete slab foundation and fencing along its perimeter. Another fenced area without a foundation is located to the east. A pipeline is located adjacent to the west side of the building (pers. comm. between David Norris, CAW Consulting Engineer and Marcia Montgomery (ENTRIX 2005b).

The CVFP was constructed by CAW's predecessor in 1947 in response to customer's complaints about water quality. This building was constructed during this same period for use as a chemical storage building.

The Chemical Building near the CVFP is eligible for the NRHP Criterion A and CRHR under Criterion 1 as a contributing resource to the SCD Historic District and dates to the secondary period of significance.

DAM KEEPER'S COTTAGE 2 (HR-2)

The SCD became the property of the California Water and Telephone Company by 1935 during a period when the region's population began to grow rapidly. From 1930 to 1950, the number of active water connections in the Monterey area more than doubled. In 1940, the California Water and Telephone Company built this house for a full-time caretaker at the San Clemente Reservoir to insure the protection of the supply (Monterey Peninsula Herald 1940). By 1947 the CVFP was added in close proximity to the house and adjacent to the San Clemente Access Road.

This one-story wood-frame house has a low-pitched intersecting gable roof. An inset porch is located on the center of the front south elevation and is supported by a square wooden post. The house is clad with horizontal wood siding and board and batten siding in the gable ends. The composite shingle roof has slightly overhanging rafter ends. The west and east elevations are void of windows. The west elevation includes a brick chimney. Windows are wood-frame and double-hung. A white picket fence encloses the yard. A wood-frame detached two-car garage with a shed roof and board-and-batten siding is located to the east of the house. The house is still in use.

The Dam Keeper's Cottage 2 is eligible for the NRHP under Criterion A and for the CRHR under Criterion 1 as a contributing resource within the SCD Historic District and is from the secondary period of significance.

CARMEL VALLEY FILTER PLANT (CVFP) (HR-3)

The CVFP was constructed in 1947 to filter solids from the water. This was partially in response to customer complaints during heavy run-off periods. The plant was built on the Carmel River one mile below the SCD. Water from the reservoir was diverted through a 30-inch transmission main to two large steel tanks, where the water was filtered by forcing it through layers of sand and gravel. After leaving the filters it was chlorinated (a second time for the system) and fed into the water system (Management Team 1954). In 1954 the plant had 12 filter units, however in the following years, 14 and then 16 filter units were used.

Filtration processes and equipment have changed since the plant was constructed, requiring many changes to the facility. The CVFP currently includes a rectangular side gable building with eight horizontally oriented tanks lying above ground on the northeast side of the structure. The building has seven square windows spaced evenly under the eaves of the standing seam roof. Another metal roof and side gable building, slightly lower in height, extends further to the west. This addition has metal slider windows and a door set in a cement wall. Southeast of the building and tanks on the grass is a small wooden shed roof building with a door and larger front gable concrete building with a standing seam roof. Two vertically oriented tanks stand east of these two buildings. A chain link fence surrounds the entire complex. A cement path leads from the road and a gate to the concrete building and tanks. The 30-inch main enters the fenced area in the southeast corner. A 1947 photograph of the CVFP shows a 1.5 story steel frame shed open at the front and sides next to horizontal tanks.

This building is ineligible for the NRHP or CRHR and classified as a non-contributing resource within the historic district because it has been extensively modified and expanded in order to keep up with existing water treatment methods. *Under the NRHP and CRHR classifications, the building is considered to have lack of integrity.*

OLD CARMEL RIVER DAM (OCRD) AND ASSOCIATED FISH LADDER (HR-4)

The OCRD is a low embankment dam that is rock fill faced with coursed rubble masonry. It is eight feet thick at the base and four feet thick at the crest. Embankment dams were first used in California by gold miners in remote areas in the 1850s. They used explosives to create rockfill out of granite and the fill was held in place by logs. These dams were called rockfill, log-crib dams. Later rockfill dams were faced with masonry, concrete, asphalt and steel. Few have been built since the early 1900s (Jones & Stokes 1998). A cement fish ladder is located on the north end of the Dam. The gate and gate controls are located at the south end of the Dam (Archaeological Consulting 1987b).

A vehicular bridge supported by two large concrete columns was added after the original construction of the bridge. The bridge deck is wooden and the railing on the edge of the bridge is wooden. An abandoned road stretches from the OCRD along the east side of the river to the SCD.

The OCRD is eligible for the NRHP as a contributing resource to the SCD Historic District, dating to the primary period of significance. It is also individually eligible for the NRHP under Criteria A and C. It is eligible under Criterion C as a good example of gravity load masonry dam constructed during the period when dams were transitioning to concrete arch dams. It is associated with the events that have made a significant contribution to the economic development of the Monterey Division thereby making it eligible for the NRHP under Criterion A. It is also eligible for the CRHR under Criteria 1 and 3.

DAM KEEPER'S COTTAGE 1 (HR-5)

The Dam Keeper's Cottage 1 was previously inventoried as part of the SCD Guest Ranch Complex in 1983 (Jacques 1983). Historical records indicate that numerous buildings were erected at the west end of the Dam during the original construction of the Dam beginning in 1919. According to the previous inventory record these additional buildings became part of the Del Monte Properties San Clemente Guest Ranch, which operated from 1930 to 1965. In 1981 most of the buildings were demolished.

The Dam Keeper's Cottage 1 was constructed circa 1920. The small wood-frame house has a low-pitched gable roof and horizontal wood siding. The front entrance is centered on the south elevation. Wooden stairs lead to a small porch centered on the front of the house and sheltered by a shed roof. A large picture window is located to the west of the porch and there are two more windows on either side of the front door. The windows throughout the house are wood and metal frame. At the northwest corner of the house, the north and west elevations have two side-by-side four-over-four double-hung sash windows on the north and west elevations. A small shed-roof addition is located at the east end of the north elevation. A detached garage is located to the east of the house. To the north and west of the house is a mortared cobblestone wall and fire pit dating from the historic period.

The Dam Keeper's Cottage 1 is eligible for the NRHP under Criterion A and CRHR under Criterion 1 as a contributing resource within the SCD Historic District and is from the primary period of significance.

CHEMICAL BUILDING NEAR RESERVOIR (HR-6)

The Chemical Building near the reservoir was added west of the SCD in 1946-47 at the same time as the CVFP, for use as a storage facility for chemicals used to treat the reservoir water. Today, the building is used for general storage and houses equipment used in tracking seismic activity (pers. comm. between David Norris, consultant to CAW and Marcia Montgomery (ENTRIX 2005b). The Chemical Building is a Quonset hut and has a rectangular plan, corrugated metal siding, and a concrete foundation/basement level. Unlike a typical Quonset hut roof the arched form of the roof ends at the top of the wall on the east elevation, which is flat. The front or north elevation has wooden stairs leading to a three panel industrial wooden door on the west end of the building. A four-light awning window is located at the east end of the elevation. West of the window is a gasoline storage rack mounted to the building and to the east of the window is an electrical panel. The east elevation is corrugated metal and wooden siding with a door at the south end of the elevation. Concrete stairs and a small landing lead to the door. Because the building is sited on a hill the basement area below the landing is exposed and includes a door to access the basement level. The south elevation has corrugated metal siding on the upper level and concrete on the daylight basement level. Two four-light metal frame awning windows. The lower level also has two windows and a door.

The Chemical Building is eligible for the NRHP under Criterion A and CRHR under Criterion 1, as a contributing resource to the SCD Historic District and dates to the secondary period of significance.

SAN CLEMENTE DAM AND ASSOCIATED FISH LADDER (HR-7)

Lars Jorgensen, a leader in constant angle arch dam designing, and engineer J.A. Wilcox designed the SCD in 1919 to bridge the Carmel River. It was the first constant angle arch dam in California. Arch dams transmit water loads to the sides, rather than to the bottom, unlike gravity dams. (Jones & Stokes 1998). They are well adapted to narrow gorges and produce substantial savings in costs compared to the gravity dam. The basic arch dam shapes are the constant radius, the constant angle, and the double curvature arch. The constant angle arch is a variable radius arch; the arch radius increases from base to angle. The design is based on a constant central opening angle. Jorgensen demonstrated that the Dam contained minimum material for an optimum opening angle of 133.6 degrees (James 2000).

The Dam was designed to allow the floodwater to overflow the crest of the Dam, to increase its height ten feet, and to allow ten feet of water to overflow the entire top at its ultimate height (Wilcox 1918). Chadwick and Sykes completed the Dam measuring 106 feet high and 300 feet long at the crest in two years (Jones & Stokes 1998).

The top of the Dam was 85 feet above the streambed. The contractor’s estimate included excavation, the reinforced concrete dam, a valve house, a water tower and control house, and a fish ladder on the downstream side of the Dam to assist steelhead traveling to upper waters (Chadwick and Sykes 1920). The fish ladder consists of twenty-four spillway gates and 23 pools that ascended 100 feet from the river at the base of the Dam to an opening in the west abutment of the Dam. The gates were timber, 13’6” x 6’4”, specified to be cut from Puget Sound or Oregon forests (Chadwick and Sykes 1920).

The SCD is eligible for the NRHP and CRHR as a contributing resource to the SCD Historic District dating to the primary period of significance. It is also eligible for the NRHP under Criterion C and for the CRHR under Criterion 3 as the first example of a constant angle concrete arch dam in California. The Dam was constructed during the period when dams were transitioning to concrete arch dams.

STONE CABIN (HR-8)

The site consists of a restored stone and adobe-mortar cabin with associated rock walls, historic debris and stone cairns. Edwards/Hickman/Breschini previously recorded it in 1974 as a deteriorated Stone Cabin. Its new owners, a group of 10 investors, restored it for recreational use in 1978 to 1979. Westec Services updated the site inventory record in 1983. Archaeological Consulting recorded the archaeological site in 1987a.

The rectangular side-gable cabin faces due west towards the Carmel River. Its low slope roof with wooden shingles was replaced during its restoration. It has exposed rafter tails and two skylights. The cabin is constructed of uncoursed dressed stone. Original recordation notes adobe mortar flush with the stones, and previous reconstruction of the top half of the north and south walls. Cement mortar was used in its reconstruction. On the south end of the façade is a door constructed of vertical planks. The window north of the door is shuttered with three vertical planks. A (rebuilt) stone chimney runs up the south wall. Reconstructed flooring and benches are found in the interior.

Several 1920s Pebble Beach Company survey maps indicate "Murphy's Stone Cabin." Murphy is believed to be an earlier homesteader in the area. Murphy's Flat is named after Mike J. Murphy. A 1908 survey map places a corral directly north of the cabin. (Jacques 1983). Employees of Del Monte Properties used the cabin in the summer months in the 1920s but not as a year round residence. This building is eligible for the NRHP Criterion C and CRHR Criterion 3.

SAN CLEMENTE DAM (SCD) HISTORIC DISTRICT (HR-9)

The SCD Historic District includes resources within the Carmel River Valley south of the river's confluence with the Tularcito's Creek approximately 2.5 miles to the SCD. Contributing resources within the historic district fall into either the primary (1882 to 1935) or secondary (1935 to 1955) period of significance. The primary period of significance represents the early period of historical use during which the coastal communities that used the water from the Carmel River were growing due to the improved railroad transportation that spurred the agricultural, ranching, and tourism industries. The secondary period represents a later era of more widespread growth and a time in which new innovations such as water filtration and treatment were introduced, requiring the addition of new facilities in association with the waterworks. Contributing resources within the district are eligible for the NRHP (under Criterion A) and CRHR (under Criterion 1) for their historical association with the development of the Monterey Division waterworks, which contributed to the growth, development and economic expansion of the Monterey Peninsula. The contributing resources to the SCD Historic District collectively have historical significance for their association with the Pacific Improvement Company's development of a water system that directly affected the growth, development and economics of the Monterey Peninsula. The OCRD and SCD also have engineering significance.

MONTEREY COUNTY BRIDGE 529 (HR-10)

The Cachagua Creek Bridge is located on Cachagua Road, 2.3 miles west of Tassajara Road. The bridge is a simple steel girder bridge with steel plate deck, constructed in 1945. The structure is assigned Monterey County Bridge 529 and Caltrans Local Agency Bridge number 44C0121. The bridge is listed in the Caltrans Historic Bridge Log with a status code of 5 (bridge not eligible for the NRHP). The bridge lacks any significant association with persons or events, lacks significant design or construction, and is not likely to yield information important to history. The bridge is recommended not eligible to the NRHP or CRHR.

2030 Baseline Conditions

The resources would continue to age through 2030, resulting in normal wear and tear on the resources. Regular maintenance of historic resources and replacement of in-kind historic materials, when necessary, would greatly lessen deterioration of the resources. Failure to maintain the resources in any form would result in more rapid degradation or deterioration of the resources. Archaeological resources, if undisturbed, would remain intact. Construction activities adjacent to or in the same area of the archaeological resources could damage or destroy the resources.

4.10.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

In accordance with CEQA, SHPO, and professional standards, a project impact would normally be significant if the project would:

- Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study;
- Cause a substantial, adverse change in the significance of a historical resource as defined in § 15064.5 of the CEQA Guidelines;
- Cause a substantial adverse change in the significance of an archeological resource pursuant to § 15064.5 of the CEQA Guidelines;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- Disturb any human remains, including those interred outside of formal cemeteries.

Impact Assessment Methodology

This assessment evaluates and identifies impacts over a range of temporal scales. The three temporal impact categories are:

- Temporary impacts that occur within the construction period, but do last throughout the period;
- Short-term impacts that occur within the construction period (concurrent with the number of construction seasons, which vary from one alternative to another);
- Long-term impacts that persist beyond the construction period.

Determination of Area of Potential Effect (APE)

Following federal criteria, the eligibility of resources that are at least 50 years of age and are located within the APE or the “geographic area within which (the) undertaking may cause changes in the character of or use of historic properties” were evaluated (36 CFR 8002(c)). Per the California OHP, the threshold for historic resources, buildings and structures that were at least 45 years of age were also recorded. The APE accommodates short and long-term effects to historic resources as well as all potential ground-disturbing impacts to any archaeological resources. Below is a discussion of the

APE for archaeological and historic resources, divided into three geographic areas within the project area. ~~Figure 4.10-1~~ **Figures 4.10-1a and 4.10-1b** show~~s~~ the APE in relation to the Project Area.

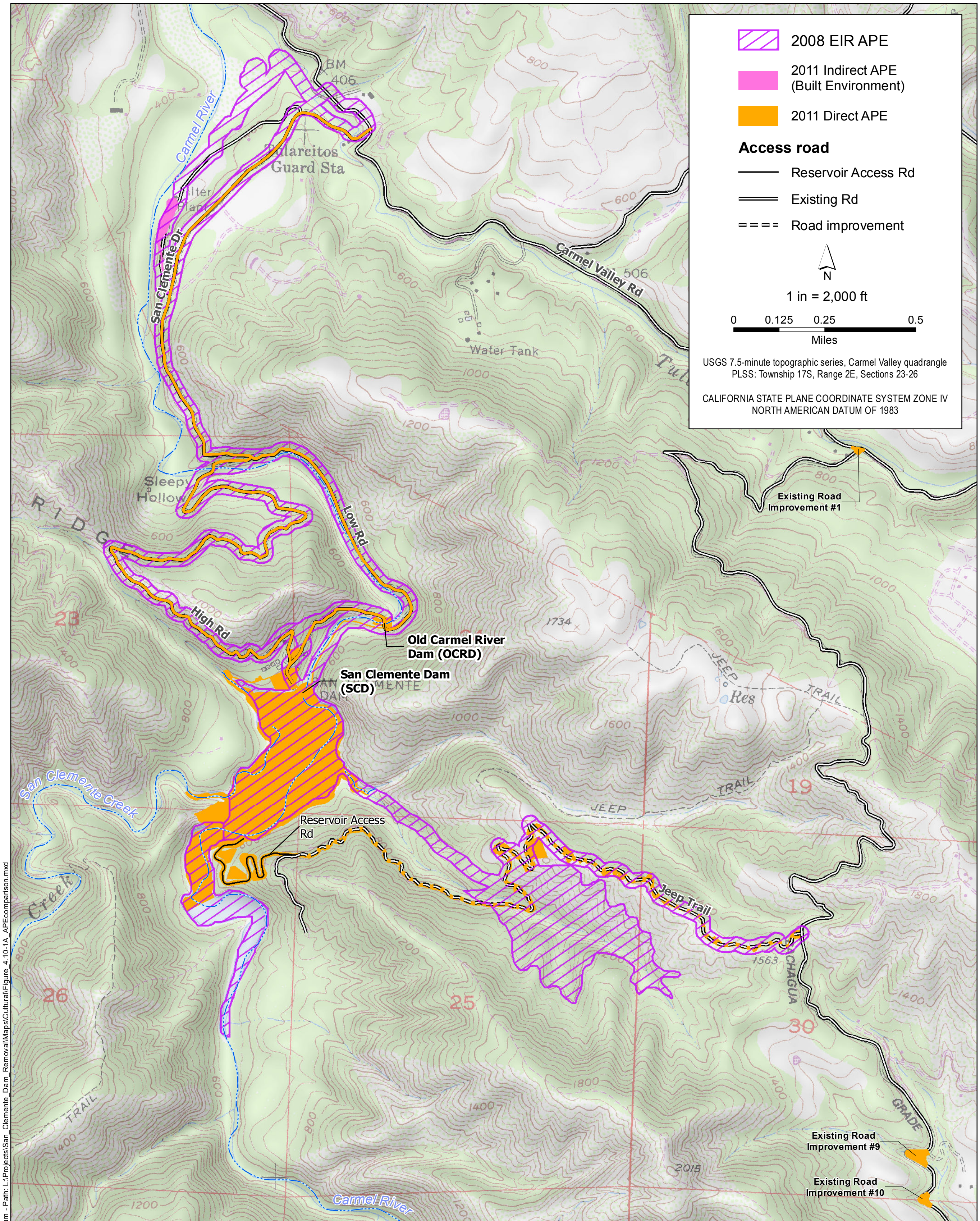
CACHAGUA-JEEP TRAIL, RESERVOIR ACCESS ROUTE/SITE 4R

The historic resource inventory includes an area of 100 feet in both directions from the edges of Cachagua Road, the Jeep Trail, and the conveyor route to the extent feasible depending on topography. In addition, the Site 4R was surveyed for 100 feet beyond the proposed boundaries.

The APE for archaeological inventory was limited to 100 feet from the centerline of the Jeep Trail**, Reservoir Access Road,** and the conveyor route. Due to the steep topography and dense brush only the accessible portions of the conveyor route were surveyed. The boundaries of Site 4R constituted the archaeological APE in this area.

~~Figure 4.10-1: Area of Potential Effect (APE)~~

(Replaced by 4.10-1a and 4.10-1b)

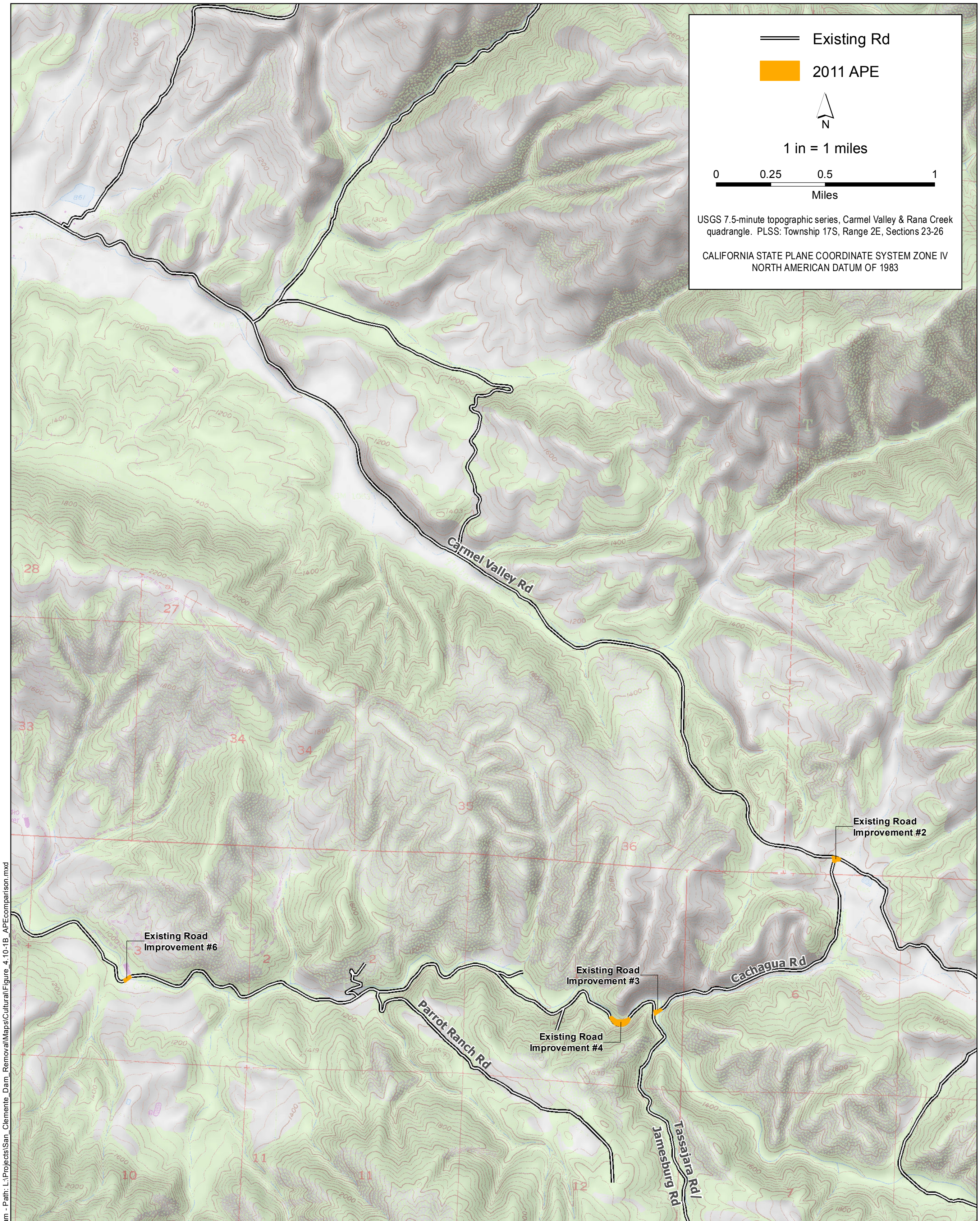


URS Oakland CA - C.Statham - Path: L:\Projects\San_Clemente_Dam_Removal\Maps\Cultural\Figure_4.10-1A_APEcomparison.mxd

CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 2/3/2011 DATE OF SUBMISSION: 2/16/2011 URS PROJECT NO. 26818107	FIGURE 4.10-1a APE COMPARISON MAP

FIGURE 4.10-1a

APE COMPARISON MAP



	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 2/3/2011 DATE OF SUBMISSION: 2/16/2011 URS PROJECT NO. 26818107	**FIGURE 4.10-1b** APE COMPARISON MAP

URS Oakland CA - C.Statham - Path: L:\Projects\San_Clemente_Dam_Removal\Maps\Cultural\Figure_4.10-1B_APEcomparison.mxd

SLEEPY HOLLOW AND SAN CLEMENTE DAM

The historic resource inventory included an area 100 feet in both directions from the edges of San Clemente Drive, including the loop and dam access roads to the extent feasible depending on topography. In addition, the SCD and associated facilities, the OCRD, and a water pipeline that parallels San Clemente Drive all are included within the APE. The shoreline of the original reservoir was surveyed.

The archaeological survey addressed three areas of the reservoir shoreline that would be affected by one or more alternatives. These include: the point where the conveyor route meets the shoreline, the access points for excavation equipment to be used for sediment removal, and the “saddle” between San Clemente Creek and the Carmel River that would be bisected to reroute the creek’s water under one alternative. The balance of the upper reservoir was silted in to the extent that the original shoreline of the reservoir is now some distance from the reservoir waters, across vegetated dry land. The archaeological survey in these areas focused on lower slope landforms with the potential to contain archaeological materials. In addition, the APE included 50 feet in both directions from the edges of San Clemente Drive to the extent feasible depending on topography to account for potential impacts to resources from the proposed upgrading of this road.

TULARCITOS

Most of the areas described for existing access would be used under the Tularcitos option and the same APE applies to those. In addition, the currently unimproved Tularcitos access road (Figure 4.10-1) would be rebuilt to access a proposed concrete batch plant and staging area for the Proponent’s Proposed Project. The historic resource inventory included an area 100 feet in both directions from the edges of this unimproved road, and in the area proposed for the batch plant and staging area.

The archaeological resources APE included all areas within 50 feet of the centerline of the unimproved road and 100 feet beyond the proposed boundaries of the batch plant and staging area location.

<u>**CACHAGUA/TASSAJARA ROAD IMPROVEMENTS**</u>

<u>**Cachagua and Tassajara roads would be used to transport heavy equipment to the Project site. Vegetation removal will be required in several areas for site-distance improvement. In addition, the area south of the intersection of Cachagua Road and the Jeep Trail on Cachagua Road, has five curves that will require widening to allow passage of larger construction equipment. This section of Cachagua Road also has a load-restricted one-lane bridge (Bridge 529) that would need improvements to handle construction equipment loads. A 100 foot buffer around the proposed road improvement areas is included in the APE.**</u>

Archaeology Fieldwork

Prior to fieldwork, archaeologists gathered previously prepared historic property inventory forms for resources within the APE of the Proponent's Proposed Project from the Northwest Information Center of the California Historical Resources Information System.

Between June 27 and July 23, 2005, ENTRIX archaeologists conducted a pedestrian survey of the Proponent's Proposed Project APE. The field inventory consisted of pedestrian survey using generally parallel, meandering transects no more than 10 meters wide. Due to the heavy brush, poison oak, and steep terrain encountered at certain points of the alignment, approximately eight percent of the entire alignment was not surveyed. Heavy brush and dense poison oak coverage prohibited a complete archaeological survey of the sediment disposal site and the proposed conveyor route. The omitted areas are characterized by greater than 10 percent slopes, (sometimes as high as 75 percent) and heavy brush. Therefore, the likelihood of encountering intact cultural material in these areas was determined to be low.

The survey was accomplished by walking parallel transects of 30 to 60 feet (10 to 20 meters). Ground visibility was good in the areas surveyed, with some obstruction from low-lying grasses and shrubs. All visible ground within the APE was inspected for cultural remains as well as any cut banks, bedrock outcrops, boulders, or exposed sediments.

A subsequent pedestrian survey was conducted by URS archaeologists in September 2011 to account for cultural resources located within the APE and, in particular, those portions of the revised APE for Alternative 3 that fell outside the APE studied in 2005 (see Figure 4.10-1a for a comparison). The pedestrian survey included recordation of any newly identified archaeological resources, as well as reidentification of those resources previously documented but not considered in the 2005 technical report. Surveys were conducted in 5 to 10-meter transects, with intermittent surface scrapes, using hoes, in areas of dense vegetation and poor ground visibility.

The SCD and surrounding area have undergone intensive archaeological reconnaissance over the past three decades. During the inventory for this Proponent's Proposed Project, previously recorded sites were revisited and site records updated as necessary including photographs, GPS mapping and plotting, and current condition. When previously recorded sites were relocated, either an addendum to the site form was prepared or a new site form was completed to reflect any changes since the previous recording; site updates used the California Department of Parks and Recreation (DPR) site continuation forms (DPR 523l). During the field inventory, archaeologists visited two previously inventoried historic archaeological resources (CA-MNT-811H and CA-MNT-812H) located at the south end of the reservoir along the Carmel River. The historic archaeological resources were photographed and notes on the present condition of the resources were collected.

Historic Structures Fieldwork

Prior to fieldwork, architectural historians gathered previously prepared historic property inventory forms for resources within the Proponent's Proposed Project APE from the Northwest Information Center of the California Historical Resources Information System. Information on specific resources in the APE was obtained from CAW Engineer Don Lingenfelter and CAW Consulting Engineer David Norris.

The SCD Historic District is one portion of the larger CAW Monterey Division public water system that serves the Monterey Peninsula. In June 2005, ENTRIX Architectural Historians conducted a reconnaissance level historic resources inventory of the Proponent's Proposed Project APE to identify historical resources that appeared to be potentially eligible for the NRHP or the CRHR. ENTRIX identified resources that retained integrity and that shared a thematic association with the development of the Monterey Division water system. Architectural historians recorded physical features of each resource on inventory forms, mapped its location using GPS, and photographed the resource with black and white film and a digital camera**. An inventory form was prepared for the SCD Historic District, which identifies seven historic period resources, including the OCRD and SCD, two dam keeper cottages, a historical filtration plant, and two chemical buildings. All but the filtration plant were determined to be contributing elements of the historic district. Additionally, a Stone Cabin previously recorded as site CA-MNT-812 was inventoried, but is outside of the historic district and APE. However, a separate inventory form was prepared for the Stone Cabin (HR-8) because that resource is contextually linked with recreational resources.**

A subsequent historic resources inventory was conducted by JRP Historical Consulting Architectural Historians, in September 2011. JRP Architectural Historians field checked all of the previously evaluated resources in the APE and inventoried and evaluated Monterey County Bridge 529, which was not included in the previous survey, and which was found to be ineligible to the NRHP and CRHR.

~~Figure 4.10-2~~ **Figure 4.10-2a and Figure 4.10-2b** illustrate~~s~~ the location of each inventoried historical resource.

4.10.3 IMPACTS AND MITIGATION

Impact Issues

The issues potentially affecting historic properties regarding changes to the Dam and its associated facilities include the following:

- CR-1: Ground Disturbance (disturbance to archaeological sites)
- CR-2: Damage to Historic Structures from Construction-related vibration (construction related vibration)

- CR-3: Introduction of Temporary Dirt/Unintended Damage (construction/demolition-related accumulation of dirt)
- CR-4: Demolition or Alteration to the Historic Properties (alterations to the OCRD and associated fish ladder and to SCD)
- CR-5: Alteration to the Setting of Surrounding Environment (alter character of setting for SCD Historic Resource District)
- CR-6: Introduction of Visual Obstructions (loss of visual integrity for SCD Historic Resource District)

Proponent's Proposed Project (Dam Thickening)

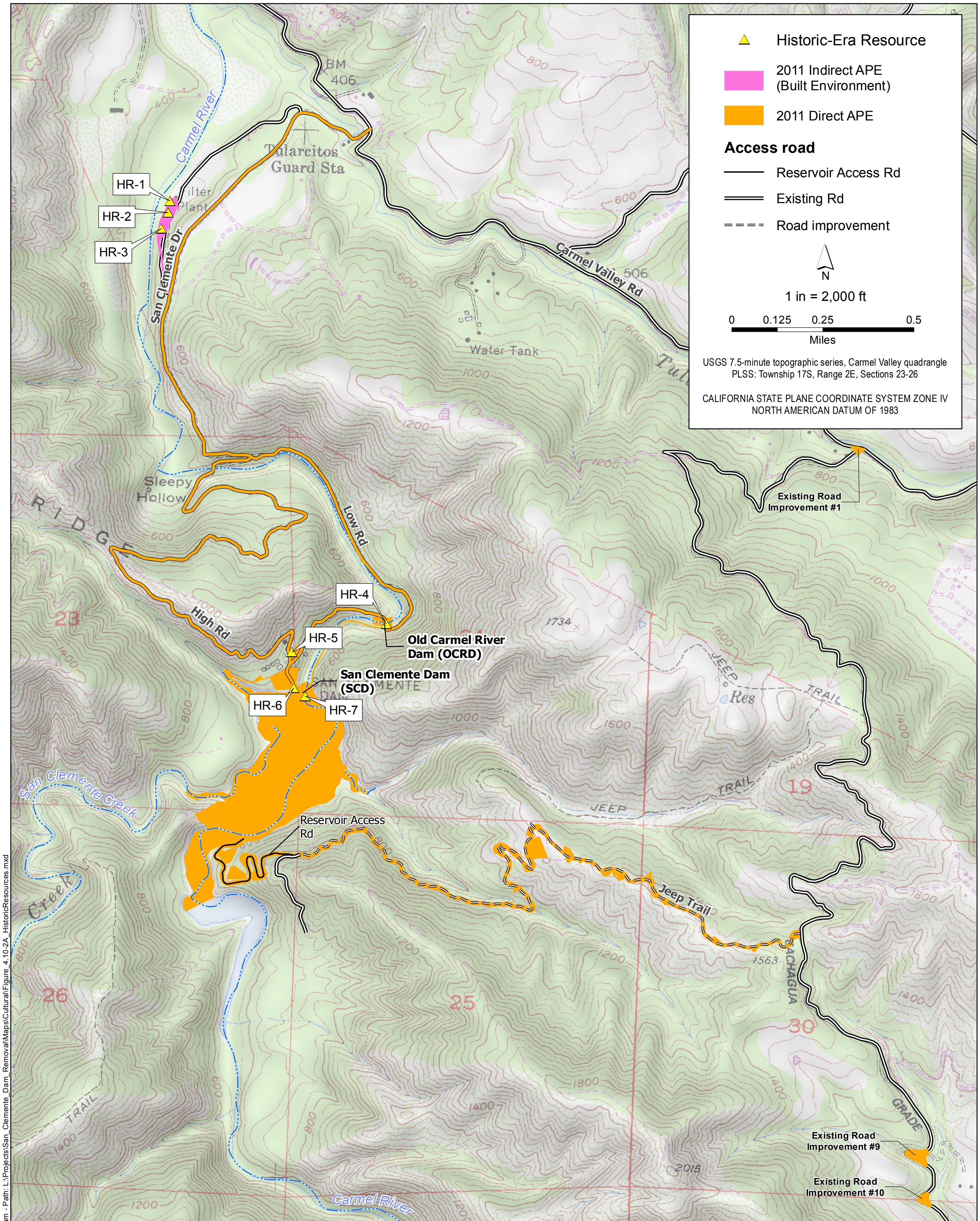
Issue CR-1: Ground Disturbance

Disturbance to archaeological sites
Determination: less than significant with mitigation, long-term

IMPACT
A large village site (AR-1) extends on both sides of the Tularcitos Access Route just north of the CVFP. Any improvement or increased use of the current access road near the CVFP would damage or destroy the archaeological resource. CA-MNT-33A and B have been recommended eligible for listing on the NRHP. As portions of these sites within the APE are still intact, monitoring of construction activities at these sites is recommended to protect those portions from inadvertent damage. Ground disturbance would occur in the short-term and could have long-term effects and a significant and unavoidable impact. ~~CA-MNT-1253 remains unevaluated.~~

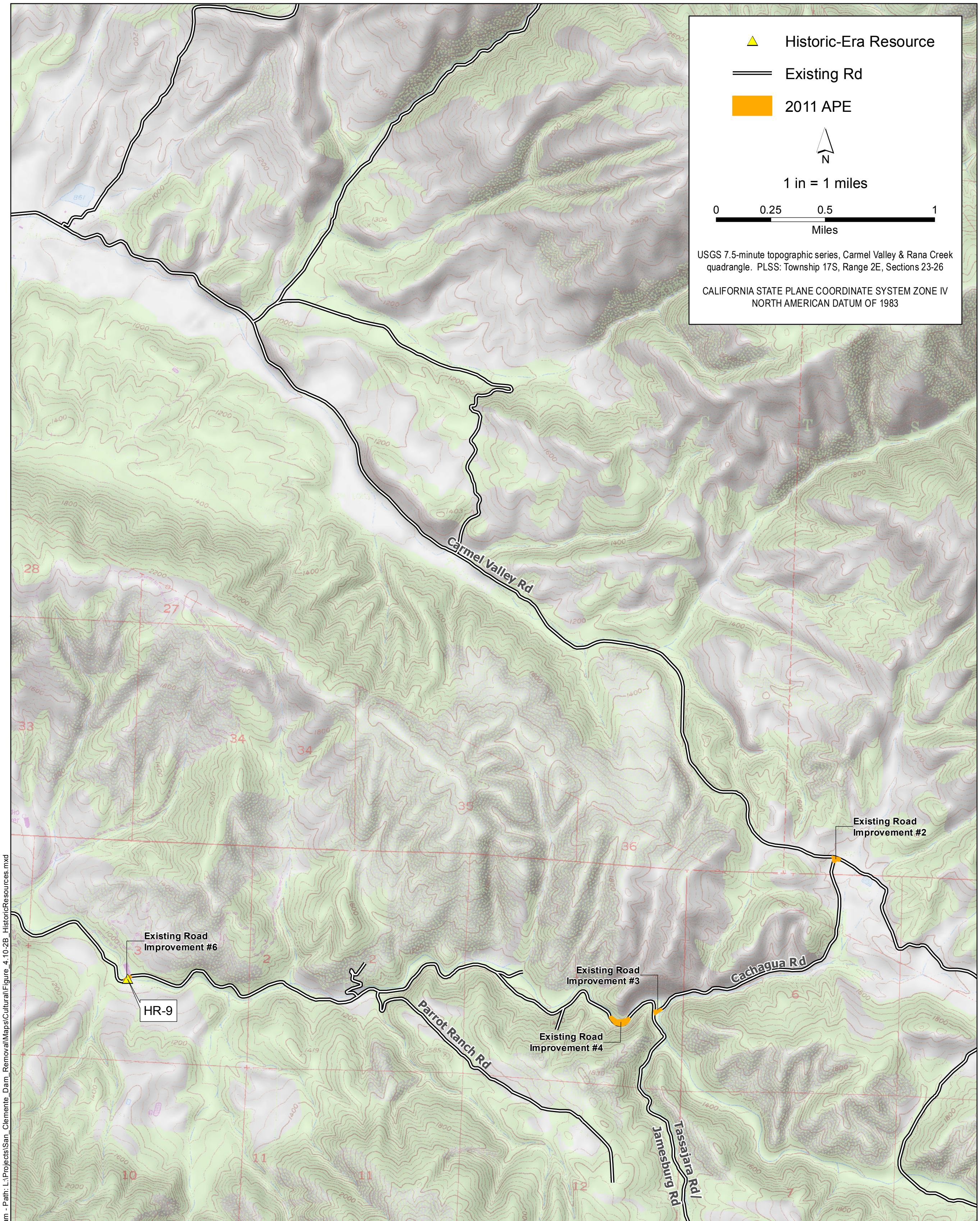
~~Figure 4.10-2: Inventoried Historic Resources~~

(Replaced by 4.10-2a and 4.10-2b)



URS Oakland CA - C.Statham - Path: L:\Projects\San_Clemente_Dam_Removal\Maps\Cultural\Figure_4.10-2A_HistoricResources.mxd

	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 2/3/2011 DATE OF SUBMISSION: 2/16/2011 URS PROJECT NO. 26818107	**FIGURE 4.10-2A** INVENTORIED HISTORIC RESOURCES



URS Oakland CA - C.Statham - Path: L:\Projects\San_Clemente_Dam_Removal\Maps\Cultural\Figure_4.10-2B_HistoricResources.mxd

	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 2/3/2011 DATE OF SUBMISSION: 2/16/2011 URS PROJECT NO. 26818107	**FIGURE 4.10-2b** INVENTORIED HISTORIC RESOURCES

Complete avoidance of the sites during construction and maintenance could mitigate the impact to a level less than significant.

Due to the extent of siltation behind the SCD within the APE, the likelihood of encountering surface evidence of archaeological deposits during field surveys was very low. Based on our understanding of the surrounding area and the presence of two archaeological sites within the APE along low benches above the San Clemente River, it is considered likely that archeological sites are present below the deposited sediment near the original river channel. However, since there would be no excavation of the overlying sediment behind the SCD under the Proponent's Proposed Project, there would be no potential for such excavation to impact previously undiscovered archaeological resources.

MITIGATION

As portions of these sites within the APE are still intact, monitoring of construction activities at these sites is recommended to protect those portions from inadvertent damage. One site, CA-MNT-33A and B (AR-1), has been recommended eligible for listing on the NRHP.~~ Site CA-MNT-1253 (AR-4) remains unevaluated~~. Under CEQA, complete avoidance of the sites during construction and maintenance could mitigate the impact to a level less than significant.

If avoidance is not possible at these sites, archaeological evaluation and/or historical documentation are recommended to achieve a less than significant level of impact.

Pursuant to 36 CFR 800.13, if historic properties are discovered or unanticipated effects on historic properties are found after completion of the Section 106 process, the agency official shall make reasonable efforts to avoid, minimize or mitigate adverse effects to such properties. If buried cultural resources are discovered during the course of project activities, construction operations would immediately stop in the vicinity of the find and the federal lead agency would be notified. At the discretion of the agency, the undertaking may proceed, provided reasonable efforts are implemented to minimize harm to the resource until a determination of significance can be made. Cultural resources include artifacts of stone, bone, wood, shell, or other materials, or features, such as hearths, structural remains, or dumps.

In order to complete the Section 106 process, the mitigation measures would need to be incorporated into a Memorandum of Agreement (MOA). The MOA would include details about when the work would be done and the responsible parties. The agencies involved in the development of the MOA include the USACE, the SHPO, the Tribe, and CAW. The mitigation measures that are assumed to be a part of the MOA include:

- A comprehensive monitoring program would be implemented to ensure protection of archaeological sites within and adjacent to the APE for the Proponent's Proposed Project. Construction activities would be monitored within 200 feet of site or as determined by a qualified professional archeologist. According to tribal interviews (pers. comm. Rudolph Rosales, Fred Nason July 20, 2005), the sediment disposal site may be an archaeologically sensitive area.

- For those areas not previously surveyed, particularly the sediment disposal site and the areas exposed by excavation behind the SCD, a monitoring program would be developed prior to construction as part of the MOA between SHPO and the consulting parties. Sediment removal would be monitored as excavation approaches intact native soils within 200 feet of the historic river channel.

- The archaeological monitoring program would include the following tasks:

  - Pre-construction assessment and construction training
  - Construction monitoring
  - Site recording and evaluation
  - Mitigation planning
  - Curation
  - Tribal discussion
  - Report of findings
  - Review and approve any erosion control and revegetation procedures in the vicinity of a known significant site prior to implementation of these procedures

Issue CR-2: Damage to Historic Structures from Construction-related Vibration

Construction-related vibration
Determination: less than significant with mitigation, short-term

IMPACT

Construction activities could create temporary vibrations such that the Chemical Building near the Reservoir (HR-6), Dam Keeper's House 2 (HR-2), OCRD and associated Fish Ladder (HR-4), and the SCD and Associated Fish Ladder (HR-7) could be damaged due to the loosening of paint or mortar, cracking of mortar, breakage of windows, weakening of structural elements, and/or crumbling masonry. This impact is short-term. No long-term impacts are anticipated.

MITIGATION

Mitigation measures for this short-term impact would include using rigid support of excavation structures to minimize the movement of the ground.

Issue CR-3: Introduction of Short-term Dirt/Unintended Damage

Construction/demolition-related accumulation of dirt
Determination: less than significant with mitigation, short-term

IMPACT

The accumulation of dirt on all contributing historic properties in the historic district, including the Chemical Building near Filtration Plant (HR-1), Dam Keeper's House 2 (HR-2), OCRD and associated Fish Ladder (HR-4), Dam Keeper's House 1 (HR-5), Chemical Building near Reservoir (HR-6), and the SCD and Associated Fish Ladder (HR-7), could result from construction activities and alteration/demolition of resources. This is a short-term impact. No long-term impacts are anticipated.

MITIGATION

Short-term dirt/unintended damage could occur to contributing historic properties within the historic district (Chemical Building HR-1, Dam Keeper's House 2 HR-2, Carmel River Dam HR-4, Dam Keeper's House 1 HR-5, Chemical Building HR-6, and SCD and Fish Ladder HR-7). Mitigation measures for this short-term impact would include reducing dust associated with construction activities by spraying water on the ground surface prior to ground disturbance. Section 4.7 Air Quality provides a more detailed discussion of dust reducing mitigation.

Issue CR-4: Demolition or Alteration to Historic Properties

Alterations to OCRD and associated fish ladder and to San Clemente Dam
Determination: significant, unavoidable, long-term

IMPACT

The OCRD and Associated Fish Ladder (HR-4) would undergo alteration of property due to proposed improvements to access roads to SCD. The Proponent's Proposed Project would require structural improvements to the existing bridge that is placed on top of the embankment dam. The Proponent's Proposed Project would replace existing piers with stronger and more deeply set piers, which would alter the OCRD. The thickening of the SCD would modify the SCD and Associated Fish Ladder (HR-7). The original engineering design of the bridge would be altered through the application of approximately 8 feet of concrete on the east end of the downstream side of the Dam. This would result in a change to the Dam and fish ladder due to the alteration of a historic property. This is a significant and unavoidable long-term impact.

MITIGATION

In order to complete the Section 106 process, the mitigation measures would need to be incorporated into a MOA. The mitigation measures that are assumed to be included in the MOA are as follows.

- Mitigation measures for long-term impacts would include recordation of the resources (OCRD and associated Fish Ladder (HR-4) and the SCD and associated

Fish Ladder (HR-7)). Recordation would be completed prior to any construction, in the form of an HABS/HAER level documentation, which follows NPS regulations.

- Additional mitigation could include interpretive displays, development of an educational program on the Dam and associated facilities, and professional publications on the historic resources.

While this mitigation is necessary to complete the Section 106 process, the mitigation measures would not reduce the impact to a less than significant level.

Issue CR-5: Alteration of Surrounding Environment

Alter character of setting for San Clemente Dam Historic Resource District
Determination: significant, unavoidable, long-term

IMPACT

The Proponent's Proposed Project impacts for Issue CR-5 affect specific contributing resources, such as the OCRD (HR-4) and the SCD (HR-7), as stated above, would result in alteration to the character of the setting of significant historic resources of the SCD Historic District (HR-9). This is a significant and unavoidable long-term impact.

MITIGATION

Mitigation measures for long-term impacts include preparation of a National Register of Historic Places Nomination Form for the SCD Historic District (HR-9) and the completion of a Historic Preservation Management Plan, included in a MOA. However, this mitigation could not reduce the impact to a less than significant level.

Issue CR-6: Introduction of Visual Obstructions

Loss of visual integrity for San Clemente Dam Historic Resource District
Determination: significant, unavoidable, long-term

IMPACT

Visual effects to the SCD Historic District (HR-9) and the alteration/demolition of individual historic resources within the district would adversely affect their visual integrity. This is a significant and unavoidable long-term effect.

MITIGATION

Mitigation measures for long-term impacts include photographic documentation of the historic resources prior to construction. Design, materials, and construction methods that are compatible with existing historic resources could be chosen to reduce visual impacts to the SCD Historic District (HR-9). However, this mitigation could not reduce the impact to a less than significant level.

Alternative 1 (Dam Notching)

The impacts and mitigation measures described for CR-2 (Damage to Historic Structures from Construction-Related Vibration), CR-3 (Introduction of Temporary

Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surrounding Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as the Proponent's Proposed Project.

Issue CR-1: Ground Disturbance

Disturbance to archaeological sites
Determination: less than significant with mitigation, long-term

IMPACT

Impacts and mitigation measures for Cultural Resources Issue would be the same as the Proponent's Proposed Project, with the addition of the potential for impacts arising from the effects to previously undiscovered archaeological resources from sediment excavation in the river channel and disposal at Site 4R.

The sediment disposal site 4R should be considered moderately sensitive for the presence of archaeological resources. Due to heavy brush and poison oak coverage, the area could not be effectively surveyed during the field season.

MITIGATION

As described for the Proponent's Proposed Project, the Applicant will complete the Section 106 process, prepare a MOA, and conduct archaeological monitoring during clearing and grubbing of the site and during any subsurface excavation prior to disposal activities.

Issue CR-4: Demolition or Alteration to Historic Properties

Alterations to OCRD and associated fish ladder and to San Clemente Dam
Determination: significant, unavoidable, long-term

IMPACT

The OCRD and Associated Fish Ladder (HR-4) would be altered, as described for Issue CR-4 under the Proponent's Proposed Project. Notching SCD would also alter the SCD and Associated Fish Ladder (HR-7). This would entail removing a portion of the existing spillway bay as well as the gates, piers and walkway at the top of the Dam. Those changes would result in a change to the Dam and associated fish ladder due to alteration of the property. This would be a significant and unavoidable long-term impact.

MITIGATION

Mitigation measures for long-term impacts would include recordation of the resources (OCRD and associated Fish Ladder (HR-4) and the SCD and associated Fish Ladder (HR-7)). Recordation would be completed prior to any construction, in the form of an HABS/HAER level documentation, which follows NPS regulations. Additional mitigation could include interpretive displays, development of an educational program on the Dam and associated facilities, and professional publications on the historic resources. All mitigation would be outlined in a MOA and approved by SHPO. However, this mitigation would not reduce the impact to a less than significant level.

Alternative 2 (Dam Removal)

The impacts and mitigation measures described for Issues CR-1 (Ground Disturbance would be the same as Alternative 1. The impacts and mitigation measures described for CR-2 (Damage to Historic Structures from Construction-Related Vibration, CR-3 (Introduction of Temporary Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surround Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as the Proponent's Proposed Project.

Issue CR-4: Demolition or Alteration to Historic Properties

Alterations to OCRD and associated fish ladder and to San Clemente Dam
Determination: ***significant, unavoidable, long-term***

IMPACT

The OCRD and Associated Fish Ladder (HR-4) could undergo alteration of property due to proposed improvements to access roads to SCD. Structural improvements would be made to the existing bridge that is placed on top of the embankment dam. Existing piers would be replaced with stronger and more deeply set piers, which could damage the OCRD. The *Chemical Building/Instrument Hut (HR-6) and* SCD and Associated Fish Ladder (HR-7) would be demolished under this alternative. This would be a significant and unavoidable long-term impact.

MITIGATION

Mitigation measures for long-term impacts would include recordation of the resources (OCRD and associated Fish Ladder (HR-4) and the SCD and associated Fish Ladder (HR-7)~~)~~ *and the Chemical Building/Instrument Hut (HR-6)*. Recordation would be completed prior to any construction, in the form of an HABS/HAER level documentation, which follows NPS regulations. Additional mitigation could include interpretive displays, development of an educational program on the Dam and associated facilities, and professional publications on the historic resources. All mitigation would be outlined in a MOA and approved by SHPO. However, this mitigation would not reduce the impact to a less than significant level.

Alternative 3 (Carmel River Reroute and Dam Removal)

The impacts and mitigation measures for Issues CR-2 (Damage to Historic Structures from Construction-Related Vibration, CR-3 (Introduction of Temporary Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surround Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as described for the Proponent's Proposed Project; ***except that the Chemical Building/Instrument Hut (HR-6) and the San Clemente Dam and Associated Fish Ladder (HR-7) would be removed.*** *The impacts and mitigation measures for Issue CR-4 (Demolition or Alteration to the Historic Properties) Obstructions would be the same as described for Alternative 2.*

Issue CR-1: Ground Disturbance

Disturbance to archaeological sites

Determination: less than significant with mitigation, long-term

IMPACT

~~Impacts and mitigation measures for Cultural Resources Issue would be the same as the Proponent's Proposed Project, except for the area described as the "saddle". Activities involving the "saddle" (the peninsula of land bordered to the east, north and west by the reservoir) could damage or destroy buried deposits in CA-MNT-1253 (BRM features) (AR-4), which has not been tested. A Testing Plan would need to be developed for this site prior to construction. Once the testing is completed, an NRHP determination of eligibility (DOE) would be completed. The outcome of the DOE will determine whether additional mitigation measures would be necessary.~~ **No known eligible archaeological resources are present within the APE for Alternative 3. A review of geologic, geomorphic, and soils data relevant to the APE concluded that there is a very low likelihood for buried archaeological resources, not evident on the surface during pedestrian surveys, to be present within the APE (URS 2011). However, as with any ground disturbing activity, there is the potential for disturbance of previously unrecorded archaeological resources.**

MITIGATION

~~As described for the Proponent's Proposed Project, the Applicant will complete the Section 106 process, prepare a MOA, and conduct archaeological monitoring during clearing and grubbing of the site and during any subsurface excavation prior to disposal activities.~~

~~Mitigation measures for impact issue CR-1 would be the same as the Proponent's Proposed Project, except for the area described as the "saddle". Activities involving the "saddle" (the peninsula of land bordered to the east, north and west by the reservoir) could damage or destroy buried deposits in CA-MNT-1253 (BRM features) (AR-4), which has not been tested. If the site is eligible for the NRHP, avoidance would be the best form of mitigation. If avoidance is not possible, data recovery of the site could be required.~~

Because no eligible archaeological resources were identified within the APE for Alternative 3, and no areas of sensitivity for buried archaeological resources were identified, no mitigation monitoring is recommended. Activities involving the "saddle" (the peninsula of land bordered to the east, north and west by the reservoir) could damage or destroy CA-MNT-1253 (BRM features) (AR-4).

However, although this resource appears ineligible for the NRHP and CRHR, avoidance has been determined feasible. Prior to construction activities, exclusion fencing will be erected with a 30 foot buffer around CA-MNT-1253, to ensure avoidance of this cultural resource.

To address the possibility that previously unidentified or unanticipated archaeological resources could be discovered during project construction, pre-

construction cultural resources training will be given to all construction personnel, prior to any ground disturbing activities.

Pursuant to 36 CFR 800.13, if historic properties are discovered or unanticipated effects on historic properties are found after completion of the Section 106 process, the agency official shall make reasonable efforts to avoid, minimize or mitigate adverse effects to such properties. If unanticipated buried cultural resources are discovered during the course of project activities, construction operations would immediately stop in the vicinity of the find and the federal lead agency would be notified. At the discretion of the agency, the undertaking may proceed, provided reasonable efforts are implemented to minimize harm to the resource until a determination of significance can be made. Cultural resources include artifacts of stone, bone, wood, shell, or other materials, or features, such as hearths, structural remains, or dumps.

Under Section 106, the USACE is currently reviewing the Section 106 technical documents. These documents include all of the previously identified, and recently identified cultural resources in the Project area. Once the USACE completes its review, it will submit the documents to the State Historic Preservation Officer for concurrence.

In order to complete the Section 106 process, mitigation measures, including those described below for Issues CR-4, will be incorporated into a Memorandum of Agreement (MOA). The MOA will include details about when the work would be done and the responsible parties. The agencies involved in the development of the MOA may include the USACE, the SHPO, CAW, and any tribes that may request to be involved in the MOA process. *As with other project permits, if the MOA includes mitigation measures beyond those identified in the SEIR, such measures would also become required project components. The 106 process is expected to be complete in the fall of 2012.*

Alternative 4 (No Project)

None of the impact issues *identified for the Proponent's Proposed Project and other action alternatives would apply to Alternative 4. No actions would occur that affect cultural resources in the Project Area.*

4.11 AESTHETICS

This section describes the visual quality effects of the Proponent's Proposed Project and its alternatives during construction and operations for the project site, maintenance areas and immediate surroundings. Additional information provided in the Final EIR/EIS clarifies and amplifies the information included in the Draft EIR/EIS. The visual analysis describes short- and long-term changes to the visual environment that would result from construction and operation of the Dam, reservoir, and associated infrastructure.

Revisions to the Aesthetics section were made to disclose and analyze potential impacts associated with night work conducted at the Dam and reservoir site, and to identify additional improvements to, and use of, the Cachagua Access Route and the Jeep Trail for heavy equipment and construction use.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.11.1 ENVIRONMENTAL SETTING

San Clemente Dam (SCD) and Vicinity

SCD is located in a steep-sided section of the Carmel River in the upper reaches of the Carmel River watershed. The existing reservoir created by the Dam occupies a portion of the Carmel River canyon and several side canyons formed by tributary streams. The north facing canyon slopes are covered with oaks while the south facing slopes are chaparral-covered. Presently, the most prominent visual features of the viewshed are the steep canyons and ridges, the existing SCD, and the reservoir that it forms. The reservoir is largely filled with sediment, which consists primarily of sandy gravel and sand. The finer-grained sediment is located nearest to the Dam in both arms of the reservoir (see Figure 4.11-1).

The SCD is a concrete arch dam that spans the canyon. the Dam is 106 feet high and 300 feet long. The reservoir surface elevation varies seasonally, revealing bare soil between the high water mark and water surface. the Dam is accessed by a gated, two-track dirt road. The road between the OCRB and the Dam traverses the canyon edges, with dense vegetation on either side of the road. A residence (former damkeeper's cottage) is located in close proximity to and northeast of the Dam.

Figure 4.11-1: Looking south towards reservoir from gated dam access road.
Photo credit: ENTRIX, Inc.

Tularcitos Access Route / Concrete Batch Plant Site

The area is vegetated with a mix of deciduous trees, pines, and low-lying shrubs (see Figure 4.11-2). The vegetation is most dense around the Carmel River and Tularcitos Creek. Steep hills are located to the east and west of the proposed access road, with residences on the hills to the northeast and south of the route (see Figure 4.11-3). The hills are covered with trees, with some areas of low-lying shrubs. The 1.7-acre concrete batch plant site is an open grassy area populated with deciduous and evergreen trees and low-lying vegetation. Electrical wires on wood poles traverse the site. A CAW-owned residence is located immediately north of the CVFP along the Tularcitos Route. The road is paved adjacent to the CVFP site and in front of the residence.

Figure 4.11-2: Concrete Batch Plant Site, looking SE. Photo credit: ENTRIX, Inc.

Figure 4.11-3: View of Concrete Batch Plant Site from Residences on Via Los Tulares, looking SW. Photo credit: ENTRIX, Inc.

Cachagua Access Route

The area is remote, accessible only by a locked, gated dirt access road (Jeep Trail) off of Cachagua Road. The Jeep Trail leads to the conveyor route and descends in gradual switchbacks into the canyon. The Jeep Trail leads to a historic Stone Cabin (referred to HR-8 in Section 4.10, Cultural Resources), located at the south end of the reservoir on the west bank of the Carmel River. Sediment has encroached on portions of the Carmel River in the vicinity of the Stone Cabin (see Figures 4.11-4 and 4.11-5). The Stone Cabin is owned by a group of private landowners. The vegetation at the sediment disposal site is dense with a mix of deciduous and evergreen trees and low-lying shrubs and vegetation (see Figure 4.11-6). Some residences are located along Cachagua Road; however, the concrete batch plant site is not visible to the residences due to the distances of the residences from the site and the topography.

Cachagua Road (from Carmel Valley Road) will also be used to bring construction personnel to the site and for highway-legal dump trucks and similarly sized vehicles that would haul aggregates and other construction materials to the site.

Larger construction traffic, primarily tractor-trailers mobilizing heavy construction equipment, would access the Jeep Trail from the southern portion of Cachagua Road that articulates with Tassajara Road (see Figure 3.2-2a). Cachagua Road from Tassajara Road has five curves that would require widening to allow passage of the larger construction equipment. There is one load-restricted one-lane bridge that would be permanently improved to handle heavy construction equipment loads.

An approximately 2.3-mile portion of the Jeep Trail would be improved for construction access. The sharper curves would be widened as necessary to allow passage of vehicles hauling construction materials and equipment. These activities would require removal of trees and other vegetation, as well as some ground disturbance. Drainage would be improved along the roadway by installing culverts along the alignment where required. The road would be surfaced with several inches of base rock, with isolated sections of asphalt pavement, as required by the slope and other conditions.

Figure 4.11-4: View of Carmel River by private landowner's cabin in the Project Area, looking NW. Photo credit: ENTRIX, Inc.

Figure 4.11-5: View of sediment adjacent to Carmel River, looking NW.
Photo credit: ENTRIX, Inc.

Figure 4.11-6: Jeep Trail off Cachagua Road, looking NW. Photo credit: ENTRIX, Inc.

Conveyor Route / Sediment Disposal Site

The conveyor route is densely vegetated and located at the base of the steep canyon below the Jeep Trail (see Figure 4.11-7). The sediment disposal site is located adjacent to the Jeep Trail and is populated with a mix of well-spaced tall trees filled in with lower-lying vegetation (see Figure 4.11-8). Dense vegetation surrounds the sediment disposal site on all sides.

Figure 4.11-7: From the Jeep Trail looking NW to conveyor route. Photo credit: ENTRIX, Inc.

Figure 4.11-8: Looking SE at sediment disposal site from Jeep Trail. Photo credit: ENTRIX, Inc.

San Clemente Drive

Access to the Dam is via San Clemente Drive, which ends at a locked CAW gate. San Clemente Drive is a gated, paved road with large-lot residences on either side (see Figures 4.11-9, 4.11-10, and 4.11-11. The access route from the CAW gate to the Dam is a two-track dirt road. There is relatively dense vegetation on either side of the dirt access road. Existing access routes are through the residential community of Sleepy Hollow, which is located north of the Dam along San Clemente Drive. The houses in the community are positioned far from the street on large lots. Residences are also located along the southwest facing slopes of the canyon above and east of Carmel Valley Road. In general, many of the natural features and patterns are attractive and interesting, but they are not visually distinctive or unusual within the region.

Figure 4.11-9: House along San Clemente Drive in Sleepy Hollow Subdivision, looking SE

Figure 4.11-10: View from Sleepy Hollow Subdivision looking toward the concrete batch plant location, looking NW. Photo credit: ENTRIX, Inc.

Figure 4.11-11: View from the concrete batch plant location looking towards Sleepy Hollow Subdivision, looking SE. Photo credit: ENTRIX, Inc.

2030 Baseline Conditions

Few to no changes are expected to the environmental setting through 2030.

4.11.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

Under CEQA, a project would normally have a significant effect on the environment if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings;
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

Impact Assessment Methodology

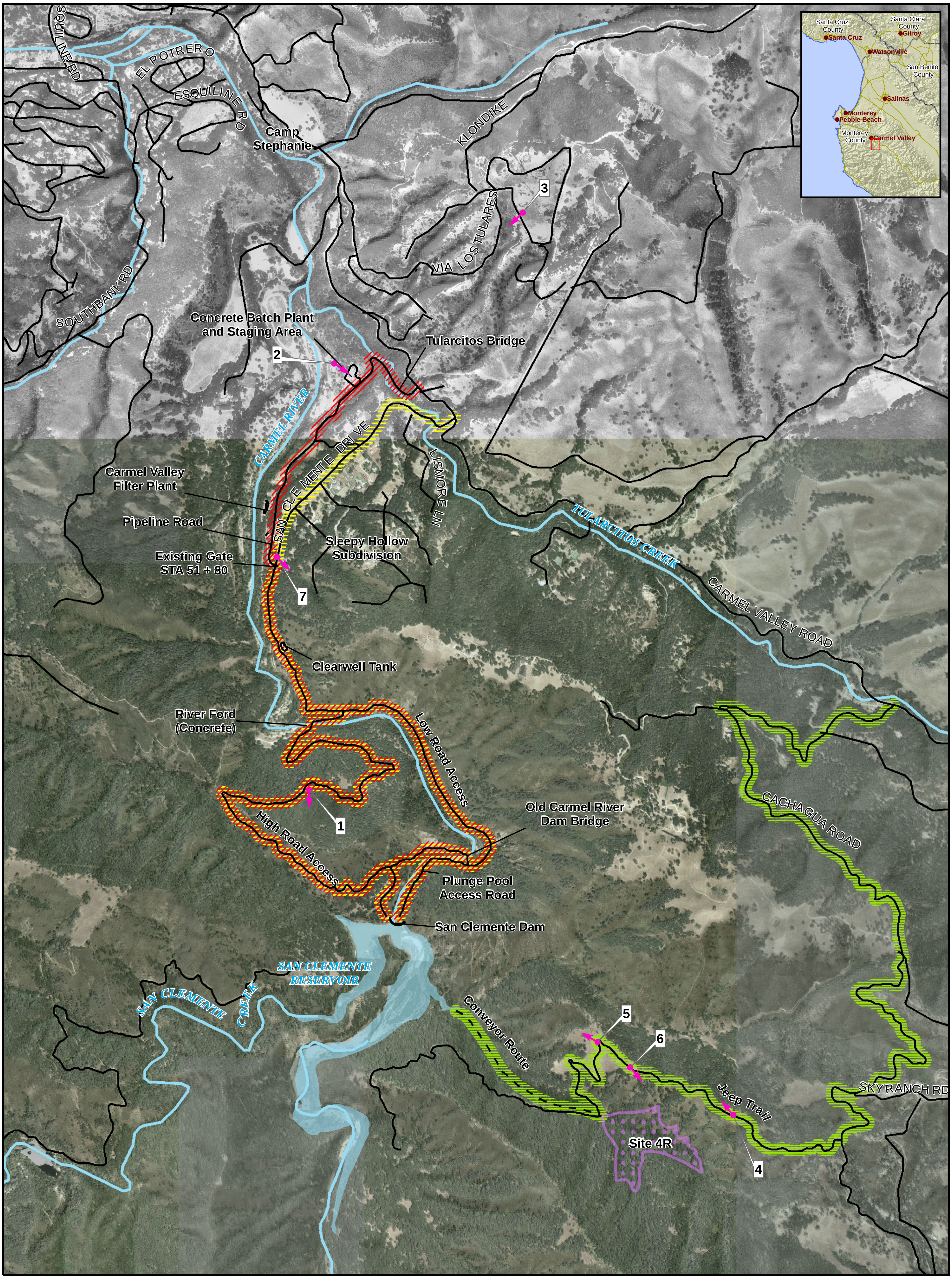
Access to the Project Area is currently available only to CAW staff and a group of private landowners of the Stone Cabin. Portions of the Project Area are either owned by the Monterey Peninsula Regional Park District (MPRPD) or conveyed under easement to the MPRPD (see Figure 4.11-12 for resource viewpoints). This land is currently closed to public access pending the development of a management plan. The plan would contain a public access plan of the MPRPD-owned land in the Project Area (pers. comm. Tim Jensen 2006). CAW will not restrict future public access to the riverfront on any Park-owned or privately-owned land in the Project Area. Since there is no current public access to the MPRPD-owned land in the Project Area, visual impacts were not assessed for park users and therefore photo simulations (pre- and post-project photographs) were not included with the visual assessment.

Effects on visual resources may be caused by the changes in the viewsheds to viewer user groups in proximity to the Project Area. The user groups identified with this project include: residents on the hills east and above Carmel Valley Road; residents in the houses in close proximity to the CVFP and SCD; residents in the Sleepy Hollow subdivision; and private landowners who have access to the historic Stone Cabin at the south end of the reservoir. The visual resources issues that are associated with changes to the Dam include:

- Residential views on hills east of Carmel Valley Road.
- Changes to the viewsheds from residences adjacent to the CVFP and the SCD.

- Changes to the viewsheds from residences in Sleepy Hollow subdivision.
- Changes to the Viewsheds from the Stone Cabin.
- Changes to the Viewshed from the Jeep Trail.

Photographs of key viewsheds in the Project Vicinity were taken to ascertain any changes in visual quality. The location and direction of these photographs is included in Figure 4.11-12. The photographs included in this section are numbered and correspond to the photo numbers on Figure 4.11-12. Viewer user groups not included in the visual analysis are the operations and management staff of CAW and public recreationists (due to no public access).



Legend

Access Routes

Cachugua / 4R

Sleepy Hollow

Tularcitos

Stream

Reservoir

Existing Road

Proposed Road

Sediment Disposal Site

Viewpoint/Direction

04/08/05
Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 4.11-12

Resources Viewpoints

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Miles

N

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ENTRIX planners conducted an additional visual resources field reconnaissance of the Sleepy Hollow subdivision on August 10, 2006. Visual impacts were assessed and photographs were taken from residential streets in the subdivision (see Figures 4.11-10 Figure 4.11-11). Planners did not have access to the interiors of Sleepy Hollow residences; therefore, no visual impacts were assessed from inside the residences.

ENTRIX planners also conducted a visual resources field reconnaissance to the Stone Cabin on August 10, 2006. They took photographs of the riverfront in the vicinity of the cabin, showing where sediment had encroached on portions of the river (see Figures 4.11-4 and 4.11-5).

4.11.3 IMPACTS AND MITIGATION

The following impact issues have been defined for visual quality:

- VQ-1: Residential Views on Hills East of Carmel Valley Road (operation of construction equipment within the viewshed)
- VQ-2: Changes to Viewsheds from Residences Adjacent to CVFP and SCD (construction activities within the viewshed)
- VQ-3: Residential Views from Sleepy Hollow (operation of construction equipment within the viewshed)
- VQ-4: Changes to Viewsheds from the Stone Cabin (construction activities within the viewshed of the Carmel River)
- VQ-5: Changes to Viewsheds from the Jeep Trail (construction activities within the viewshed)

VQ-5a: <u>Impact VQ-5a: Changes to Viewsheds near or on the Jeep Trail (construction activities and construction-related use within the viewshed near and on the Jeep Trail)</u>

- VQ-6: Light and Glare from Nighttime Construction Activities

<u>Proponent's Proposed Project (Dam Thickening)</u>

Issues VQ-4 and VQ-5 would not apply to the Proponent's Proposed Project.

Issue VQ-1: Residential Views on Hills East of Carmel Valley Road

Operation of construction equipment within the viewshed
Determination: ***less than significant, no mitigation required, short-term***

IMPACT

The viewsheds of the residences on the hills east of Carmel Valley Road (northeast and south of the proposed Tularcitos Access Route) would be disrupted during construction of the Tularcitos Access Route and subsequently by the use of heavy construction equipment at the concrete batch plant site during normal working hours. Short-term impacts would be less than significant because construction would occur at a long distance from the residences on the hills east of Carmel Valley Road and would occur during normal work hours. After construction, the viewshed would return to the condition it was in prior to the construction. Normal CAW operations and maintenance activities would occur following construction. Therefore, no long-term impacts are anticipated.

MITIGATION
Because the activities associated with the disruption of the viewsheds would be short-term and would only occur during regular working hours, no short-term mitigation measures would be necessary. Use of the access road after construction would be intermittent; therefore, no long-term mitigation measures would be necessary.

Issue VQ-2: Changes to the Viewsheds from Residences Adjacent to the CVFP and the San Clemente Dam

Construction activities within the viewshed
*Determination**: less than significant, no mitigation required, short-term***

IMPACT
The residences located adjacent to the CVFP and the Dam would have views of the construction activities during normal working hours. Short-term impacts would be less than significant because construction would occur during normal work hours. Due to the location of these residences, dam operations and maintenance activities are routine features of the landscape.

Normal operations and maintenance activities would occur following construction. After construction, the viewshed would return to the condition it was prior to the construction. Therefore, no long-term impacts are anticipated.

MITIGATION
Because the activities associated with the disruption of the viewsheds are short-term and would only occur during regular working hours, no short-term mitigation measures are necessary. Use of the access road after construction would be for normal dam operations and maintenance activities; therefore, no long-term mitigation measures are necessary.

Issue VQ-3: Residential Views from Sleepy Hollow

Operation of construction equipment and ancillary facilities within the viewshed
*Determination **significant, unavoidable, short-term***

IMPACT
The concrete batch plant location is not visible from the residential streets in the subdivision, due to the topography and dense vegetation (e.g., tall trees). Residents

have stated that it would be visible from two residences in the subdivision, but field reconnaissance did not confirm this.[44] The concrete batch plant would be a temporary structure that will be removed within one year of its construction. The distance of the concrete batch plant from the Sleepy Hollow Subdivision is approximately 2,500 feet. This distance, coupled with obstructions from vegetation, would lessen the concrete batch plant visual impacts to Sleepy Hollow. Visual impacts would be short-term and construction-related and no long-term visual effects would occur as a result of the batch plant to Sleepy Hollow homeowners. Although the batch plant would be some distance from the two residences and the impact would be short-term, it is difficult to say with certainty that the impacts would be less than significant.

MITIGATION

The batch plant requires a level area approximately five acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to generally near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around; therefore, it would not be not technically feasible to locate the batch plant closer to the Dam. In addition, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

There are no mitigation measures available. The batch plant would be removed after one year.

Alternative 1 (Dam Notching)

Visual Quality Issue VQ-1 (Residential Views on Hills East of Carmel Valley Road) does not apply to Alternative 1 (Tularcitos access is developed only for the Proponent's Proposed Project and the concrete batch plant applies only to the Proponent's Proposed Project). Impacts and mitigation measures for VQ-2 (Changes to Viewsheds from Residences Adjacent to CVFP and SCD) would be the same as the Proponent's Proposed Project.

Issue VQ-3: Residential Views from Sleepy Hollow

Operation of construction equipment and ancillary facilities within the viewshed
Determination: ***less than significant, no mitigation required, short-term***

IMPACT

The residences in the Sleepy Hollow Subdivision would have disrupted viewsheds during regular hours of construction from the heavy equipment using San Clemente Drive to get to the Dam access road. This would be a short-term impact. This alternative

[44] Field surveyors did not have access to residences to view the batch plant site from upper stories. Judging visibility from the street level and considering screening vegetation, the site would not be visible.

does not include the construction or operation of a batch plant. Normal operations and maintenance activities would occur following construction; therefore, no long-term impacts are anticipated. Under CEQA, this would be a less than significant impact.

MITIGATION

Because the activities associated with the disruption of the viewsheds would be temporary and would only occur during regular working hours, no short-term mitigation measures would be necessary. Use of the access road after construction would be intermittent and would include normal operations and maintenance activities; therefore, no long-term mitigation measures would be necessary.

Impact VQ-4: Changes to Viewsheds from the Stone Cabin

Construction activities within the viewshed of the Carmel River
Determination: ***less than significant, short-term; beneficial, long-term***

IMPACT

During construction, it is possible that restoration of the creek may lead to removal of sediment in the area near Stone Cabin. Construction would occur during daytime working hours. Construction vehicles would be removed from the Jeep Trail in the vicinity of the Stone Cabin during nonworking hours. Part or all of the Carmel River/San Clemente Creek in the reaches viewed by the Stone Cabin would be restored as a free-flowing stream, which would have a beneficial aesthetic effect in the long-term.

MITIGATION

Because the activities associated with the changes to the viewsheds would be short-term occurring only during the restoration construction and create a beneficial effect in the long-term, no mitigation measures would be required.

Impact VQ-5: Changes to Viewsheds from the Jeep Trail

Construction activities within the viewshed using the sediment disposal site
Determination: ***significant and unavoidable impact, short-term; less than significant with mitigation, long-term***

IMPACT

During construction, private landowners of the Stone Cabin would have views of the sediment disposal site adjacent to the Jeep Trail and the sediment conveyor overcrossing, which would be above the Jeep Trail. A relatively small segment of the sediment disposal site would be visible to the landowners traveling on the Jeep Trail for a short duration of travel time. The sediment conveyor overcrossing together with the sediment pile would substantially degrade the existing visual character or quality of the site and its surroundings during construction. This would be a short-term impact. Under CEQA, this would be a significant and unavoidable impact. After construction, the sediment disposal site would be vegetated, causing it to blend with the surroundings, and the sediment conveyor overcrossing would be removed. The access roads would be improved, but would still be dirt roads. Therefore, there would be no visual impact as a result of the road improvements. This would be a less than significant, long-term impact.

MITIGATION

Mitigation measures for short-term impacts would include screening the portion of the sediment disposal site adjacent to the Jeep Trail with vegetation during construction. Mitigation measures for long-term visual impacts would include vegetation of the sediment disposal site and the removal of the sediment conveyor overcrossing.

Alternative 2 (Dam Removal)

Visual Quality Issue VQ-1 (Residential Views on Hills East of Carmel Valley Road) would not apply, as Alternative 2 would have no impact on residential views on hills east of Carmel Valley Road. Impacts and mitigation for Issue VQ-2 (Changes to Viewsheds from Residences Adjacent to CVFP and SCD) would be the same as the Proponent's Proposed Project. Impacts and mitigation for Issues VQ-3 (Residential Views from Sleepy Hollow), VQ-4 (Changes to viewsheds from the Stone Cabin) and VQ-5 (Changes to viewsheds from the Jeep Trail) would be the same as Alternative 1.

Alternative 3 (Carmel River Reroute and Dam Removal)

Impacts and mitigation for Visual Quality Issue VQ-1 (Residential Views on Hills East of Carmel Valley Road) would not apply as Alternative 3 would have no impact on residential views on hills east of Carmel Valley Road. ~~Impacts and mitigation for Issue VQ-2 (Changes to Viewsheds from Residences Adjacent to CVFP and SCD would be the same as the Proponent's Proposed Project.~~ **Impacts and** Mitigation for impacts resulting from Issue VQ-3 (Residential Views from Sleepy Hollow) would be the same as Alternative 2. The impacts and mitigation for Issue VQ-4 (Changes to viewsheds from the Stone Cabin) would be the same as Alternative 1. ~~Issue VQ-5 (Changes to viewsheds from the Jeep Trail) would not apply as there would be no sediment disposal site adjacent to the Jeep Trail.~~

Issue VQ-2: Changes to the Viewsheds from Residences Adjacent to the CVFP and the San Clemente Dam

Construction activities within the viewshed
Determination: significant and unavoidable

IMPACT

The residences located adjacent to the CVFP would not be impacted because no improvements to the CVFP access road would be needed under Alternative 3. However, residents near the Dam would have views of the construction activities during normal working hours and at night.

Due to the location of the residences, construction activities at the dam would be in full view of the residence located adjacent to the SCD. Because of the close proximity of the residence to the dam site, and because construction activities occur could both day *and night, there is no feasible way to reduce the impacts to the viewshed at this location.*

After construction demobilization and implementation of all mitigation measures including grading and revegetation, the viewshed would return return to pre-project conditions except that the dam and fish ladder would be permanently removed, and dam operations and maintenance would no longer occur.

~~Due to the location of the residences, dam operations and maintenance activities are routine features of the landscape, however, short-term impacts are considered significant and unavoidable because construction activities would occur both during normal working hours and at night.~~

~~After construction, the viewshed would return to the condition it was prior to the construction. Therefore, no long-term impacts are anticipated, however the short-term viewshed impacts to residents cannot be minimized and would remain significant and unavoidable during project construction.~~

Impact VQ-5a: Changes to Viewsheds near or on the Jeep Trail

Construction activities and construction-related use within the viewshed near and on the Jeep Trail
Determination: significant and unavoidable short-term impact

IMPACT

Under Alternative 3, private landowners of the Stone Cabin would not have views of a sediment disposal site, however, during construction, private landowners of the Stone Cabin would have views of construction activities associated with the road improvements needed on the Jeep Trail for construction access, and would view construction equipment use, and other construction-related traffic, on the Jeep Trail. Construction use of the Jeep Trail would likely occur during both day and nighttime hours.

Approximately 2.3 miles of the Jeep Trail would be improved for construction access. The sharper curves would be widened as necessary to allow passage of vehicles hauling construction materials and equipment. These activities would require removal of trees and other vegetation, as well as some ground disturbance. Drainage would be improved along the Jeep Trail by installing culverts along the alignment where required. The improved portions of the road would be surfaced with several inches of base rock, with isolated sections of asphalt pavement, as required by the slope and other conditions.

The addition of construction-related activities and traffic during the course of project construction would substantially degrade the existing visual character or

quality of the site and its surroundings during construction. This would be a significant and unavoidable short-term impact.

MITIGATION

To minimize this impact, after construction, disturbed areas near the Jeep Trail would be revegetated as specified in the Botanical Resources Management Plan (Appendix U). *With revegetation there would ultimately be no long-term impact to the viewshed*. **However, even with implementation of this mitigation, the impact would remain significant and unavoidable during construction.**

Issue VQ-6: Light and Glare from Nighttime Construction Activities

Nighttime construction activities within the viewshed and surrounding areas
Determination: significant, unavoidable, short-term

IMPACT

Construction activities at the Dam and reservoir site would occur at night, requiring lighting of the work area. Residents at the Dam Keeper's cottage would be directly affected by the project lighting.

Even though there are no other residences in close proximity to the Dam and reservoir, it is possible that residents in the surrounding area, such as Sleepy Hollow, the Stone Cabin, or Camp Stephanie, could perceive some light in the nighttime sky. Any nighttime lighting visible from these residences would be a temporary impact and would occur only during the construction seasons, however the short-term impacts from nighttime lighting cannot be minimized and would remain significant and unavoidable during project construction.

MITIGATION

To minimize the impact, lighting would be directed down towards the work areas to the extent possible, and would be shielded to reduce sky glow and spillover. However, even with implementation of this mitigation, the impact will remain significant and unavoidable.

Alternative 4 (No Project)

The viewsheds from the residences east of Carmel Valley Road, the Sleepy Hollow Subdivision, those adjacent to the CVFP and the Dam, and the private landowners of the Stone Cabin would not be disrupted because large construction activities would not occur. Normal operations and maintenance activities would continue to occur. Therefore, there would be no visual impacts or mitigation required.

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4.12 RECREATION

The Draft EIR/EIS addressed recreation in a general chapter on "other environmental effects." In response to comments, the Recreation section has been created in the Final EIR/EIS to address potential recreation effects in more detail. This section describes the recreation effects of the Proponent's Proposed Project and its alternatives during construction and operations for the project site, maintenance areas and immediate surroundings. The recreation analysis describes short and long-term changes to the recreational facilities that would result from construction and operation of the Dam, reservoir, and associated infrastructure.

Revisions to the Recreation section were made to disclose and analyze potential recreational impacts associated with additional improvements to, and use of, the Cachagua Access Route and the Jeep Trail for heavy equipment and construction use, and to address impacts to recreational motorists traveling to Los Padres National Forest.

Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final EIR/EIS for this supplement can be recognized by ~~strikeout~~. Text that is the same as that in the Final EIR/EIS remains unchanged. *Text that has been incorporated into the Final SEIR based on the responses to comments appears as italics and double underline. Text that has been deleted from the Draft SEIR based on responses to comments appears as ~~italics and double strikethrough,~~ in the Final SEIR.*

4.12.1 ENVIRONMENTAL SETTING

Recreational use of the Project Area is currently limited to access by a group of private landowners who own a remote Stone Cabin at the south end of the reservoir, on the west bank of the Carmel River (see Figure 4.12-1).

Figure 4.12-1: Looking south towards Stone Cabin from Jeep Trail Access Road.
Photo credit: ENTRIX, Inc.

The historic Stone Cabin is referred to as HR-8 in section 4.10, Cultural Resources, of Chapter 4 and its location is marked in Figure 4.10-2 (Inventoried Historic Resources Map). Access to the cabin is via the Jeep Trail (i.e., 4WD road) and through a locked gate from Cachagua Road. The Carmel River channel is a short walking distance from the Stone Cabin (see Figure 4.12-2).

Figure 4.12-2: Looking east towards Carmel River channel in vicinity of Stone Cabin
Photo credit: ENTRIX, Inc.

Portions of the Project Area are owned by the MPRPD or conveyed under easement by the owners of the Stone Cabin to the MPRPD (letter dated June 27, 2006 from Larry Horan). The location of the MPRPD-owned land is shown in Figure 4.12-3, Land Ownership. Garland Ranch Regional Park, which is owned by the MPRPD, is located immediately east of the Project Area. There is currently no public access to the MPRPD-owned land in the Project Vicinity. However, the MPRPD's ten-year planning horizon includes developing a management plan for the Project Area, which would include a public access plan (pers. comm. T. Jensen 08/04/06 and 08/10/07).

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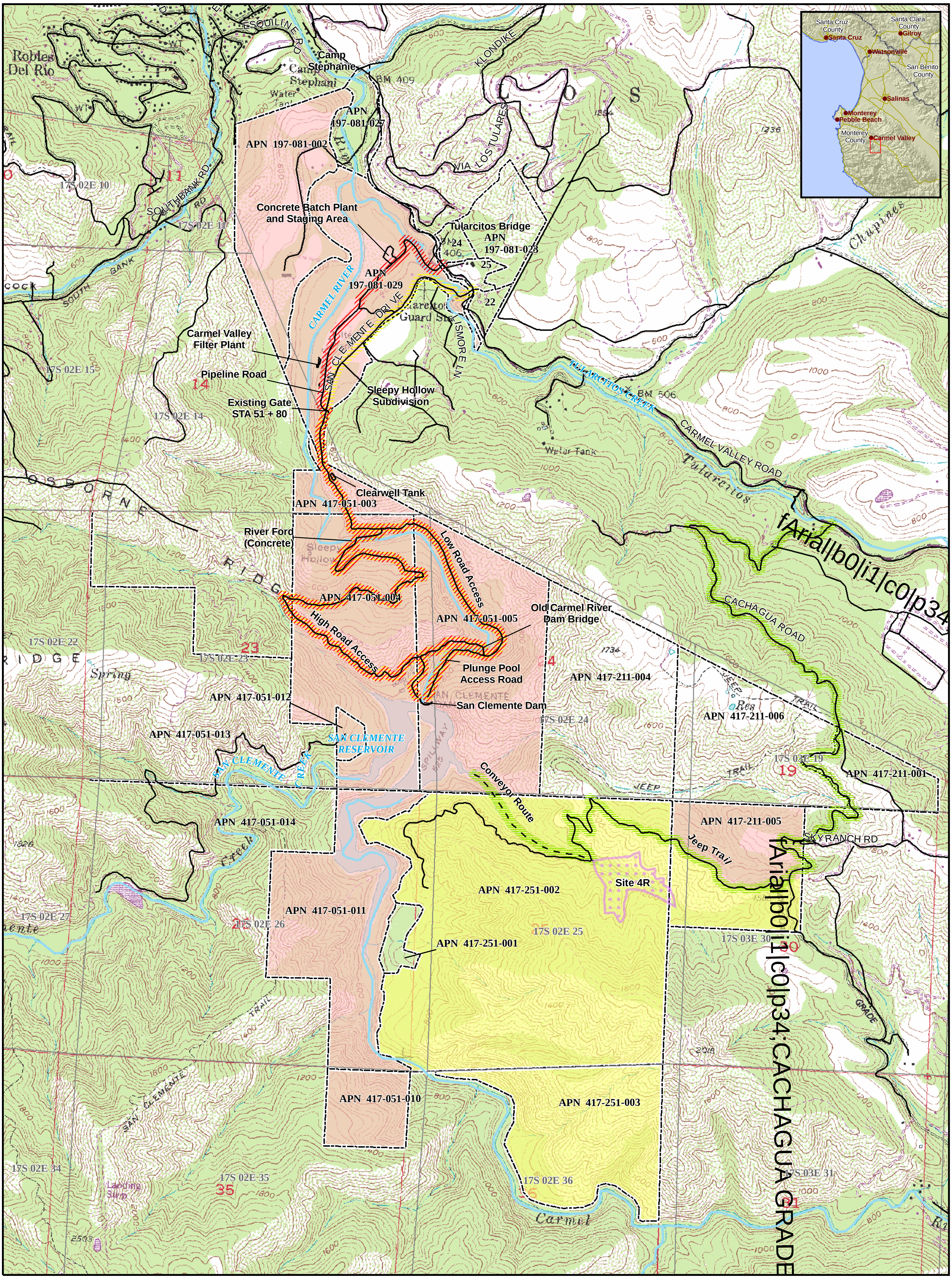

Legend

Access Routes

- Cachugua / 4R
- Sleepy Hollow
- Tularcitos
- Stream
- Existing Road
- Proposed Road
- Sediment Disposal Site
- Public Land Survey Section
- General Location of Property Boundaries

Land Owner

- CAW
- Monterey Peninsula Regional Park District

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure 4.12-3

Land Use

0 0.15 0.3 0.6
Miles

N

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2030 Baseline

The MPRPD intends to complete a management plan for the park district-owned land in the Project Area within the next ten years. Stewardship of the land and public access would be included in the management plan. The MPRPD intends to provide public access for passive recreational use (e.g., mountain biking, hiking, etc.) in the MPRPD-owned lands in the Project Area. Eventually, the MPRPD would like to provide a connection, or greenbelt, between the public park land on adjacent properties (in the vicinity of the Los Padres Dam) with the park land in the Project Area through easements or other avenues on privately-owned and CAW-owned land (pers. Comm. T. Jensen 08/17/06 and 08/10/07).

4.12.2 ENVIRONMENTAL RESOURCE IMPACT STANDARDS AND METHODS

Standards of Significance

Under CEQA, a project would normally have a significant effect on the environment if it will:

- Conflict with established recreational, educational, religious or scientific uses of the area.

Impact Assessment Methodology

The recreational user groups identified with this project include private landowners with access to the Stone Cabin at the south end of the reservoir. Access for this recreational user group is through a locked gate off Cachagua Road via the Jeep Trail. The MPRPD land in the Project Area is currently not accessible to the public; therefore, public park users were not included in the recreational user groups for this analysis. Impacts associated with access to the Carmel River for recreational purposes were not included because there is no public access to the river through the Project Area. The recreational issues that are associated with changes to the Dam include:

- Access to the Stone Cabin via the Jeep Trail (Alternatives 1 and 3)
- Deposition of sediment in Site 4R (Alternatives 1 and 2)
- Use of the Jeep Trail for construction purposes (Alternatives 1, 2, and 3)
- Rerouting and/or restoring the Carmel River channel (Alternatives 1, 2, and 3)

4.12.3 IMPACTS AND MITIGATION

The following impact issues have been defined for recreation:

- REC-1: Access to the Stone Cabin via the Jeep Trail (blocked by sediment disposal at Site 4R)

- REC-2: Disruption of Use of Jeep Trail to Stone Cabin (heavy equipment traversing Jeep Trail)
- REC-3: Rerouting or Restoring the Carmel River Channel (restore to the river to its original free-flowing state)
- REC-4: Deposition of Sediment on Site 4R (sediment disposal on parkland)
- *REC-5: Delays for Motorists Traveling to the Los Padres National Forest*

Proponent's Proposed Project (Dam Thickening)

Issues REC-1, REC-2, REC-3, and REC-4 would not apply to the Proponent's Proposed Project. Therefore, there would be no recreational impacts or mitigation measures required for the Proponent's Proposed Project.

Alternative 1 (Dam Notching)

Issue REC-1: Access to the Stone Cabin via the Jeep Trail

Sediment pile blocked access via the Jeep Trail under the design for Site 4R proposed in the Draft EIR/EIS
Determination: **less than significant, no mitigation required, short-term**

IMPACT
Issue REC-1 was raised in the comments to the Public Draft EIR/EIS. Under the design in the Public Draft EIR/EIS, access to the Stone Cabin would have been blocked by use of the sediment disposal site (Site 4R). For the Final EIR/EIS, this alternative has been redesigned to relocate the sediment disposal site so that access the Stone Cabin would not be blocked. See Section 3.3 for more discussion on the access road and the sediment disposal site.

MITIGATION
The revised design for Site 4R avoids the impact. No mitigation is required.

Issue REC-2: Disruption of Use of Jeep Trail to Stone Cabin

Heavy equipment traversing Jeep Trail
Determination: ***significant, unavoidable, short-term***

IMPACT
During construction season (all year round of CY 3 and March – October in following seasons), there would be daily worker access via the Jeep Trail. Heavy earth moving and other construction equipment would occur at the beginning and end of each construction season for three seasons, averaging 2-3 loads per day for the first and last month of each construction season. This would be a short-term impact that is significant and unavoidable. No long term impacts are anticipated.

MITIGATION

Operation of heavy earth moving and other construction equipment would occur during normal working hours. Refer to Sections 4.7.3, 4.8.3, and 4.9.3 for a discussion of mitigation to air quality, noise, and traffic effects.

Issue REC-3: Rerouting or Restoring the Carmel River Channel

Restore the river to its original free-flowing state
Determination: **beneficial impact, no mitigation required, long-term**

IMPACT

The river channel would be restored to a geomorphically stable condition (to its original free-flowing state in the reach from which sediment excavated). Therefore, this would provide a beneficial aesthetic and recreational effect.

MITIGATION

No mitigation measures are required because restoration of the river channel would create a beneficial impact.

Issue REC-4: Deposition of Sediment on Site 4R

Sediment disposal on parkland
Determination: **significant, unavoidable, short term; less than significant with mitigation, long-term**

IMPACT

Approximately 1.5 million cubic yards of accumulated sediment would be removed over two seasons from the Carmel River channel by excavation with heavy equipment and deposited on Site 4R, which occupies land currently owned by or conveyed under easement to the MPRPD. This would occur over two seasons. Impacts include adding sediment to open space parkland. Impacts would be significant and unavoidable. Long-term effects on recreation would be reduced to a less than significant level with implementation of mitigation.

MITIGATION

Following construction, the sediment disposal site located on MPRPD-owned land would be fully restored to close to its pre-project state, including restoring the site with riparian habitat. The site would return to use as open space parkland.

Alternative 2 (Dam Removal)

The impacts and mitigation for Recreational Issues REC-1 (Access to the Stone Cabin via the Jeep Trail), REC-2 (Disruption of use of Jeep Trail to Stone Cabin), REC-3 (Rerouting or restoring the Carmel River channel), and REC-4 (Deposition of Sediment in Site 4R) would be the same as described for Alternative 1.

Alternative 3 (Carmel River Reroute and Dam Removal)

Recreational Issue REC-1 (Access to the Stone Cabin via the Jeep Trail) does not apply, as Site 4R would not be used under Alternative 3. ~~The impacts and mitigation for REC-2 (Disruption of use of Jeep Trail to Stone Cabin) would be the same as described for Alternative 1.~~ REC-3 (Rerouting or restoring the Carmel River channel) would be the same as described for Alternative 1, but the beneficial effect would extend through a longer reach, including the diversion bypass and restored San Clemente Creek channel around the Carmel River. REC-4 (Deposition of Sediment in Site 4R) would not apply, as there would be no sediment disposal at Site 4R.

Issue REC-2: Disruption of Use of Jeep Trail to Stone Cabin

Heavy equipment traversing Jeep Trail
Determination: ***significant, unavoidable, short-term***

IMPACT

During construction season (all year round of CY 3 and March – October in following seasons), there would be daily worker access via the Jeep Trail. Heavy earth moving and other construction equipment would occur at the beginning and end of each construction season for three seasons, averaging ~~2-3~~ **2-6** loads per day ~~for the first and last month of~~ **during** each construction season. ~~This would be a short-term impact that is significant and unavoidable. No long term impacts are anticipated.~~

Under Alternative 3, during construction, use of the Jeep Trail would be disrupted for private landowners of the Stone Cabin due to activities associated with the road improvements needed on the Jeep Trail for construction access, construction equipment use, and other construction-related traffic, on the Jeep Trail. Operation of heavy equipment on the Jeep Tail would only occur during normal working hours, but construction-employee traffic on the Jeep Trail would likely occur during both day and nighttime hours, when night excavation work is needed.

Approximately 2.3 miles of the Jeep Trail would be improved for construction access. The sharper curves would be widened as necessary to allow passage of vehicles hauling construction materials and equipment. These activities would require removal of trees and other vegetation, as well as some ground disturbance. Drainage would be improved along the Jeep Trail by installing culverts along the alignment where required. The improved portions of the road would be surfaced with several inches of base rock, with isolated sections of asphalt pavement, as required by the slope and other conditions.

The addition of construction-related activities and traffic during the course of project construction would disrupt Jeep Trail use to the Stone Cabin. This would be a significant and unavoidable short-term impact.

MITIGATION

To minimize the impact, ~~O~~ **o**peration of heavy earth moving and other construction equipment would **only** occur during normal working hours~~.~~**, but the impact would remain significant and unavoidable.** Refer to Sections 4.7.3, 4.8.3, and 4.9.3 for a discussion of mitigation to air quality, noise, and traffic effects.

Issue REC-5: Delays for Motorists Traveling to the Los Padres National Forest

Heavy equipment traversing the Tassajara Road/Cachagua Road Access Route
Determination: significant, unavoidable, short-term

IMPACT

Heavy equipment and material transported by truck-trailers would access the Jeep Trail using Tassajara Road and the segment of Cachagua Road between the Jeep Trail and Tassajara Road. Motorists traveling along Tassajara Road and the southern portion of Cahagua Road to entrance of the Jeep Trail may experience delays when slow-moving trucks transporting construction equipment or materials are using the road. At those times, motorists would be escorted through the area with pilot vehicles.

An estimated 1-3 large trailer-truck roundtrips and up to 12 single-unit truck round trips would occur per day. Truck and other heavy equipment use on these roads would delay recreational, and other motorists, traveling to the Los Padres National Forest. These delays would be significant.

MITIGATION

To minimize the impact, mobilization of trailer-trucks and heavy equipment would be coordinated to avoid peak traffic~~,~~ ~~***but***~~ ***hours between 6:00 am to 8:30 am and from 3:30 pm to 6:00 pm (B. Villanueva, Department of Public Works County of Monterey,pers. comm.). The Project Applicant will prepare a Trip Reduction Plan, Traffic Coordination and Communication Plan, and a Traffic Safety Plan (see mitigation for Issue TC-1). These plans will be submitted to, and approved by Monterey County, prior to the start of construction. Requirements for avoiding peak traffic hours will be incorporated into the Traffic Coordination and Safety Plan, and into the MMRP for the Final SEIR. Even with these measures,*** **the impact would remain significant and unavoidable.**

Alternative 4 (No Project)

No construction is planned Alternative 4. Therefore, Impact Issues REC-1, REC-2, REC-3, and REC-4 would not apply. No recreational impacts or mitigation measures would be required for Alternative 4.

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4.15 OTHER ENVIRONMENTAL EFFECTS

Several environmental resource areas and issues were considered for evaluation and dismissed as not presenting the potential for significant effects. These included socio-economic effects (employment, population, and housing) and effects on public utilities. Each of these is discussed briefly below.

4.15.1 EMPLOYMENT

Construction for the Proponent's Proposed Project and alternatives is expected to occur during two phases. The Proponent's Proposed Project and alternatives would employ a range of 15 to 80 employees during the two phases of construction. The average number of employees would be approximately 45, but the number would vary during each construction year, depending on the tasks. The maximum number of workers (80) would be required for less than one year. According to the US Census, employment in Monterey County in ~~2000~~ **2010** for populations 16 and older was ~~299,915~~ **319,933**, with ~~184,789~~ **205,095** (~~62~~ **64** percent) in the labor force. Unemployment totaled ~~15,658~~ **36,473** (~~5.2~~ **11.4** percent) in 2000.

CAW anticipates hiring from within the County or in surrounding counties (driving distance to the project site). There is a sufficient supply of workers in the County. The Proponent's Proposed Project and alternatives would not create a need for additional workers; therefore, no impacts are anticipated to employment.

4.15.2 HOUSING

According to the US Census Bureau, the total number of housing units in Monterey County in ~~2000~~ **2010** was ~~131,708~~ **139,048**, with a vacancy rate of ~~8~~ **approximately 9** percent (~~10,472~~ **13,102** units). The homeowner vacancy rate was ~~1.4~~ **2.8** percent and the rental vacancy rate was ~~2.9~~ **1.9** percent.

The Proponent's Proposed Project and alternatives would not displace existing or proposed housing. There would be an adequate supply of housing/lodging for construction crews in Monterey County, as most of the workers would be hired locally and would not need housing. No impacts are anticipated to housing.

4.15.3 POPULATION

According to the US Census Bureau, the total population for Monterey County in ~~2000~~ **2010** was ~~401,762~~ **416,682**. The maximum number of workers anticipated for the Proponent's Proposed Project and alternatives is 80, for a limited time period, which represents less than a 0.01 percent change to the County's population. This percent change would only occur if all workers came from outside the area, which is not likely. CAW intends to hire workers locally, from Monterey County and/or surrounding counties.

There would be no direct or indirect increases in population as a result of project, nor would the project induce substantial growth in the area. The project would not cumulatively exceed official regional or local population projections. Therefore, no impacts are anticipated to population.

4.15.4 PUBLIC UTILITIES

There are no known public utilities in the Project Area (*Monterey County* *RMA-Planning* ~~*Public Works*~~ Department, pers. comm. 8/9/07). For any construction activity occurring in the Monterey County right-of-way, such as during road improvements on San Clemente Drive, Cachagua Road, or Carmel Valley Road, buried cables would be identified through the Monterey County *RMA-Planning* *Department* ~~*Public Works*~~ permitting process. It is not anticipated that public utilities would be impacted by the Proponent's Proposed Project or any of the alternatives.

5.0 CEQA and NEPA Considerations

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Appendix U Botanical Resources Management Plan

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REVISED APPENDIX U

BOTANICAL RESOURCES MANAGEMENT PLAN

EROSION CONTROL, REVEGETATION, OAK WOODLAND, ANDWETLAND RESTORATION PLAN

1.1 INTRODUCTION

Implementation of activities related to the San Clemente Dam Seismic Retrofit Project (Project) has the potential to affect botanical resources, wetlands, and Other Waters of the U.S (OWUS) within and near the Project Area. A Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS) identified potential issues related to vegetation communities and wetlands, and described mitigation measures to minimize and mitigate potential impacts (CITATION). This Botanical Resources Management Plan (Plan) has been prepared to address these issues. It identifies measures to be taken by the California-American Water Company (CAW) and its contractors (Contractor) for erosion control and to minimize and mitigate for Project-related effects to native oaks and riparian vegetation and wetlands/Other WOUS.

This plan contains the following components.

- Avoidance and minimization measures
- Erosion control measures and best management practices (BMPs)
- Revegetation plan for upland, riparian and wetland communities
- Post-construction monitoring for revegetation
- Wetland/OWUS restoration, mitigation, and monitoring

The Plan identifies best management practices (BMPs) to minimize project-related effects, such as loss of native vegetation and erosion/sedimentation during construction activities. It outlines a revegetation plan to mitigate for loss of native vegetation. It outlines a post-construction monitoring plan for revegetation. It outlines wetland restoration, mitigation, and monitoring. The Plan identifies measures to be taken by CAW and its contractors (Contractor) to ensure that measures contained in this Plan are carried out in accordance with federal, state, and local regulations.

This document shall be finalized with review and comments from agencies and organizations vested in management of oak woodland and riparian resources, the detection and control of invasive species, and wetland management. These agencies include the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), State Water Resources Control Board (State Water Board), and Monterey County.

ISSUES ADDRESSED IN THIS PLAN

Issues identified in the San Clemente Dam Seismic Retrofit Project Draft Environmental Impact Report/Environmental Impact Statement that are addressed in this Plan are summarized as follows.

Impacts to Vegetation Resources

This Plan addresses the following Vegetation issues identified in the DEIR/EIS.

Issue VE-2: Loss of Protected Oak Woodland

Construction activities could result in loss of oak woodlands protected by the Monterey County Oak Protection Ordinance (Monterey County Code 2005). Improvements to access routes may also result in oak losses. For the Proponent's Proposed Project, Alternative 1, and Alternative 2, most of the loss of oak woodland would occur at the sediment disposal site and the conveyor route to the site. For Alternative 3, most of the loss would occur at the access route to the construction site. No impact would occur under Alternative 4 (No Project). The estimated acreage of loss of oak woodlands for each of the project alternatives is summarized as follows.

- Proponent's Proposed Project: 1 acre. Construction of Tularcitos access route also would require removal of coast oak trees.
- Alternative 1 (Dam Notching): 19.4 acres
- Alternative 2 (Dam Removal): 26.3 acres in the area mapped in 2005.
- Alternative 3 (Carmel River Reroute and Dam Removal): ~~9.6~~ **17.9** acres

Issue VE-3: Loss of Other Native Vegetation

Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat. No impact would occur under Alternative 4 (No Project). The estimated total acreage of loss native vegetation, including several types of sensitive riparian habitat and oak woodland habitat is as follows:

- Proponent's Proposed Project: 3.4 acres. An unquantified amount of riparian vegetation could also be lost due to de-watering and diversion.
- Alternative 1 (Dam Notching): 48.2 acres.
- Alternative 2 (Dam Removal): 70.3 acres in the area mapped in 2005.
- Alternative 3 (Carmel River Reroute and Dam Removal): ~~53.3~~ **55.1** acres **(this does not include wetland acreage).**

Issue VE-4: Indirect Effects on Native Vegetation (effects caused by increased erosion and sedimentation)

Under the Proponent's Proposed Project and Alternatives 1 through 3, Project activities may result in indirect adverse impacts to vegetation, including increased erosion and sedimentation, damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species. Under Alternative 4 (No Project), indirect impacts to downstream vegetation may occur. Possible changes to this vegetation would vary by reach and may include increases in bank failure, sediment deposit, and habitat complexity.

Mitigation Requirements

Mitigation for vegetation issues includes measures to avoid or minimize loss of oak woodland and native vegetation, develop and implement best management practices (BMPs) prior to and during construction activities, implement revegetation, and construction and post-construction monitoring.

One component of mitigation for Issue VE-2: loss of protected oak woodland includes a revegetation plan to be completed and implemented immediately following construction with the following elements from the Monterey County Oak Protection Ordinance (Monterey County Code 2005):

- Replace up to half the oak trees removed by access road and right abutment wall construction at a 3:1 ratio by planting seedlings or potted trees in appropriate habitat under the supervision of a qualified botanist;
- Derive all plant material from Carmel Valley area populations;
- Monitor plantings for at least five years after planting;
- Replant seedlings as necessary to replace seedlings that do not survive;
- Take other remedial action as necessary, including irrigation or protection from browsing animals such as deer, to ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code;
- Provide or acquire a conservation easement sufficient to mitigate at least half the loss of oak trees, per Monterey County Code. The conservation easement shall consist of lands elsewhere in the Carmel River watershed that support undeveloped blue oak stands.

One component of mitigation for Issue VE-3: loss of other native vegetation is to include the following element in the revegetation plan.

- Revegetate riparian forest at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall.

Mitigation for Issue VE-4: indirect effects on native vegetation are addressed by the implementation of various minimization/avoidance measures and (BMPs).

Impacts to Wetlands and Other Waters of the U.S.

This Plan addresses the following Wetland issues identified in the DEIR/EIS. Wetlands Issues WET-1 and WET-3 do not apply to Alternative 4 (No Project).

WET-1: Permanent Loss of Wetlands and Other Waters of the U.S. (permanent loss of jurisdictional waters of the U.S.)

- Proponent's Proposed Project: 0.02 acres of jurisdictional OWUS at the plunge pool.
- Alternative 1 (Dam Notching): 0.12 acre of OWUS at the sediment disposal site.
- Alternative 2 (Dam Removal): 0.12 acre of OWUS at the sediment disposal site.
- Alternative 3 (Carmel River Reroute and Dam Removal): Similar to Proponent's Proposed Project, plus the permanent loss of **2.95 acres of wetlands and** about ~~10.0~~ **25.59** acres of OWUS at the diversion dam site.

WET-2: Temporary Disturbance of Wetlands and Other Waters of the U.S. (temporary filling of fringe wetlands)

The estimated acreage affected by temporary filling of wetlands for each alternative is as follows.

- Proponent's Proposed Project: 0.13 acre of fringe palustrine emergent wetlands and 7.1 acres of OWUS.
- Alternative 1 (Dam Notching): 0.74 acre of fringe wetlands and up to 8.3 acres of OWUS.
- Alternative 2 (Dam Removal): Similar to Alternative 1, but includes impacts to OWUS in the unnamed tributary at the sediment disposal site and impacts to wetlands and OWUS upstream of the disturbance limits of Alternative 1.
- Alternative 3 (Carmel River Reroute and Dam Removal): ~~0.3 acre of fringe wetlands and~~ **approximately 0.08** ~~.5~~ acre**s** of OWUS.
- Alternative 4 (No Project): loss of a small area of fringe wetlands and OWUS similar to or less than the area described for the Proponent' Proposed Project.

WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S. (indirect adverse impacts to vegetation, including increased erosion and sedimentation)

- Proponent's Proposed Project: Indirect impacts on wetlands and OWUS.
- Alternative 1 (Dam Notching): Indirect impacts on wetlands and OWUS.
- Alternative 2 (Dam Removal): Similar to Proposed Project but includes impacts to OWUS in the unnamed tributary at the sediment disposal site.
- Alternative 3 (Carmel River Reroute and Dam Removal): Similar to Proponent's Proposed Project

Mitigation Requirements

Mitigation for wetland issues WET-1 and WET-2 includes development and implementation of a restoration, mitigation, and monitoring plan for wetlands and OWUS affected by the project. Implementation of mitigation measures for Impact Issue VE-4 would address Issue WET-3.

Wetland restoration, mitigation and monitoring would be implemented for the Proponent's Proposed Project, Alternatives 1, 2, 3 and 4, and restoration or conservation acreages would be adjusted to suit the affected acreage. Additional measures, such as measures related to installation of cofferdams, would be implemented for some alternatives. Erosion control and sediment management measures would be implemented for construction activities under the Proponent's Proposed Project and all four alternatives.

1.2 PURPOSE

The purpose of this Plan is to

- Avoid or minimize construction impacts, disturbance to protected oak woodlands and native vegetation, such as erosion and sedimentation, and impacts to wetlands and OWUS.
- Mitigate for Project-related loss of oak woodlands and other native vegetation by revegetation with native plant material on Project construction sites and on mitigation sites.
- Mitigate for impacts to wetlands and OWUS.

Specific goals to minimize or avoid direct and indirect construction impacts include the following.

- Minimize disturbance to and loss of native vegetation;
- Minimize damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated

- Minimize erosion and sedimentation from construction activities;
- Minimize bank erosion from altered flows;
- Minimize dust impacts to roadside vegetation;
- Minimize alterations of the hydrologic regime that support the riparian forest habitat on the adjacent floodplain;
- Provide irrigation to alders around the reservoir fringe when the reservoir is dewatered and to riparian vegetation above the bypass outflow.

Specific goals to meet the revegetation component of this Plan include the following.

- Replace up to half the oak trees removed by access road and right abutment wall construction at a 3:1 ratio with plant material derived from Carmel Valley area populations;
- Revegetate riparian forest at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall;
- Ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code; and
- Provide or acquire a conservation easement sufficient to mitigate at least half the loss of oak trees, per Monterey County Code.
- Identify and implement baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies.

1.3 RESPONSIBILITIES AND COORDINATION

This Plan shall be implemented by CAW and the Contractor on the project. CAW and the Contractor have the responsibility for providing all necessary guidance on the project site to their respective employees, and for operating under the requirements of this Plan. Prior to construction, CAW shall contact the appropriate authorities to establish communications, obtain permits (as applicable), and/or fulfill other obligations as directed by regulatory agencies.

This Plan shall be consistent with any local or regional plans, policies, regulations protecting any riparian habitat or other sensitive natural community identified by the U.S. Fish and Wildlife Service (USFWS), Corps, State Water Board, or CDFG. It shall be consistent with any local policies or ordinances protecting biological resources, such as Monterey County's tree preservation policy (Monterey County Code 2005). It shall be modified, if needed, to be consistent with a future, adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Once the Project is permitted, further changes to this Plan may be implemented if an alternative measure:

- Provides equal or better environmental protection;
- is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
- is specifically required in writing by a Federal, state, or Monterey County land management agency for the portion of the project on its land or under its jurisdiction.

Components of this Plan related to riparian vegetation are subject to terms and conditions of Project permits issued by the Corps (Clean Water Act [CWA] section 404), CDFG (Lake or Streambed Alteration Agreement), and State Water Board (CWA section 401), and therefore require approval by these agencies. Protected oak revegetation components of this plan are subject to a Use Permit by the Monterey County Planning Commission, and therefore are subject to approval by the Monterey County Planning Commission. The CDFG is the regulatory authority responsible for oversight for the riparian revegetation component of this Plan.

IMPLEMENTATION OF PLAN COMPONENTS

Measures identified in this Plan apply to work within the project area defined as the construction area, access roads, all work and storage areas, and other areas used during construction of the project. Revegetation (upland, riparian and wetland) measures also apply to any mitigation sites that may be identified for revegetation.

Pre-construction and construction BMPs shall be implemented, as applicable, for all alternatives. Monitoring shall be conducted annually during the construction period by a qualified biologist of all revegetated areas and all areas identified as potential problem areas for erosion and sedimentation from access road construction.

The revegetation component of this Plan shall be implemented for the Proponent's Proposed Project and Alternatives 1 through 3. They shall not be implemented for Alternative 4 (No Action).

The revegetation component of the plan shall be implemented immediately following completion of Phase 1 Construction. A monitoring program shall be implemented immediately following planting. Monitoring shall be conducted during years 1, 2, 3, and 5 following planting. For areas in which trees, saplings, poles, wands, or acorns are planted, monitoring shall also be conducted in the year 10 following planting.

SUPERVISION AND INSPECTION

Environmental inspectors (EIS) shall be designated to implement supervision and inspection activities during construction and post-construction activities.

The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the size of the construction area and the number/significance of resources affected. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required.

The Environmental Inspector(s) shall be responsible for ensuring compliance with the requirements of this Plan, the environmental conditions of the applicable permits, the mitigation measures required by environmental permits, other environmental permits and approvals, and environmental requirements in landowner easement agreements.

This plan and a copy of the Notice of Intent shall be kept at all of the construction sites (if practical) or at the nearest contractor office or trailer. This plan shall be available to a responsible agency representative upon request.

All personnel involved in the project shall attend an environmental training program that shall include a discussion on general erosion and sediment control requirements, proper clearing and grading methods, and the importance of protecting sensitive vegetation resources on the project. Crews specializing in vegetation management tasks shall be given additional training on proper installation and maintenance of erosion and sediment control measures, and revegetation measures.

Additional Environmental Inspector's responsibilities are outlined in the Stormwater Pollution Prevention Plan (SWPPP).

Environmental Inspection and Modifications

The Environmental Inspector shall verify that the limits of authorized construction work areas and locations of access roads are properly marked before clearing; and verify the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area.

Throughout construction, the Contractor and the Environmental Inspector shall inspect temporary erosion control structures and temporary/permanent revegetated areas as follows:

- daily in areas of active construction or equipment operation;
- on a weekly basis in areas with no construction or equipment operation; and
- in all areas of the Project site within 24 hours of each 0.5-inch or greater rainfall event, soil and weather conditions permitting.

The Environmental Inspector shall document all inspections in an Environmental Daily Inspection Report. In the event of forecasted impending heavy precipitation, all temporary erosion control devices found needing repair or new installation shall be repaired immediately. During this period, the Contractor shall provide additional personnel, vehicles, and materials to repair erosion control structure damage where noted during the inspection.

Should structures clog, deteriorate, fail, be damaged, or require maintenance, the Contractor shall conduct repairs or replacements within 24 hours after problems have been identified, weather and soil conditions permitting. Additionally, changes to the Plan shall be made reflecting any corrective measures determined necessary during the inspection.

At sites that have been finally stabilized or where runoff is unlikely, inspections shall be conducted at least once every month until the project site is successfully revegetated. Inspections shall take place until construction is completed.

Based upon the results of the inspection, this Plan shall be revised as needed within seven calendar days to address issues identified and measures recommended. Any changes to this Plan shall be implemented before the next anticipated storm event or as soon as practicable following the inspection. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this Plan and actions taken resulting from observation made during the inspection shall be made and retained as part of the plan for at least 3 years following the date of the inspection.

1.4 PRECONSTRUCTION AND CONSTRUCTION MEASURES AND BMPS

To meet the Plan goals related to avoidance and minimization of construction impacts to native vegetation, wetland and OWUS, the following measures shall be implemented.

PRECONSTRUCTION PLANNING

CAW and Contractor(s) shall do the following before construction,

Construction Work Areas

- Identify all construction work areas (e.g., construction right-of-way, extra work space areas, storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction.

- CAW shall ensure that appropriate biological surveys have been conducted for botanical resources. Any required biological surveys shall be expanded, as needed in anticipation of the need for activities outside of certificated work areas.

Measures specific to wetlands and OWUS include the following.

- CAW shall file its wetland delineation report with the Corps before construction. This report shall identify:
  - the wetland type of each wetland (to correlate with the National Wetlands inventory [NWI] classification); and
  - the acreages of each wetland type.
- The area of permanent and temporary disturbance that shall occur in each wetland type shall be provided in the permit application.
- Construction areas shall be situated to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided, construction areas shall be situated in a manner that minimizes disturbance to wetlands.

Agency Coordination

CAW shall coordinate with the appropriate local, state, and federal agencies as outlined in this Plan.

- Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
- Consult with County-level Natural Resources Conservation Service authorities regarding seed and seedling stock source recommendations and erosion control methods.
- Consult with state and federal land offices for revegetation and erosion control recommendations for land that is owned or managed by those agencies, if any such lands are included in the project or mitigation areas.
- Coordinate with the Corps and CDFG to minimize and mitigate for permanent and temporary impacts to wetlands and OWUS.
- The erosion control measures in this plan are subject to approval by Monterey County Planning and Building Inspection Department.

CONSTRUCTION MEASURES

Avoidance and Minimization Measures

The following measures shall be implemented under the Proponent's Proposed Project and Alternatives 1 through 3**, as applicable**.

- Impacts to a stand of blue oak series shall be avoided by confining the "high road" access improvement activity in the vicinity of this stand to the north side of the existing road. Fencing shall be used to prevent construction activity from encroaching into the blue oak stand on the south side of the road.

- The proposed access road improvements, the batch plant and laydown areas, plunge pool access, and the abutment staging areas shall be designed to minimize loss of native vegetation. Unnecessary clearing of, or disturbance to, native vegetation outside the road right-of-way shall be avoided.

- Populations of CNPS List 4 species, such as virgate eriastrum, shall be avoided to the extent possible.

- Disturbed areas or areas of annual grassland habitat between the left abutment and the existing residence shall be used to the maximum extent available for the left abutment staging area.

- Fencing shall be used to prevent any encroachment of vehicles or project activity into undisturbed native habitat or within the dripline of native trees outside the designated batch plant and laydown site, the plunge pool area and the left and right abutment areas.

- Project outflows shall be designed to diffuse water rather than allow it to flow out in a concentrated stream. Outflows shall be placed so as to minimize bank erosion from altered flows. The temporary outflow below the plunge pool shall be designed to minimize alterations of the hydrologic regime that support the riparian forest habitat on the adjacent floodplain.

- Supplemental irrigation shall be provided to alders around the reservoir fringe when the reservoir is dewatered and to riparian vegetation above the bypass outflow.

The following measures shall be implemented for construction in wetlands and OWUS.

- Wetland boundaries and buffers shall be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

- Aboveground facilities shall not be located in any wetland, except where the location of such facilities in wetlands is necessary for completion of the project.

Construction Measures and Best Management Practices

The following measures shall be implemented during construction under the Proponent's Proposed Project and Alternatives 1 through 3.

- Standard erosion and sedimentation control measures (BMPs) shall be implemented for all grading, filling, clearing of vegetation, or excavating that occurs in site preparation. Road widening shall be designed to avoid placing fill above canyon walls.

- With the assistance of a qualified hydrologist, all road widening and improvements shall be designed to avoid or minimize alterations of existing drainage patterns that could lead to increased erosion and sedimentation. Appropriate erosion control technology (BMPs) shall be employed during all phases of access road construction. To the extent consistent with other regulatory conditions, construction work shall be scheduled to occur during the dry season.

- To minimize dust, unpaved access roads shall frequently be watered with raw water using a sprayer truck during periods when trucks and other construction vehicles are using the roads, except during periods when precipitation has dampened the soil enough to inhibit dust.

- Where blasting is conducted near the Carmel River or other sensitive habitats, a blasting mat shall be placed over the rock walls in order to capture and direct flying rock debris to fall onto the existing roadway. In addition, temporary wall structures made of wood and/or steel shall be erected adjacent to the existing access road to contain blasted rock on the road.

- Excavation and operation of construction vehicles off of the road right-of-way shall be prohibited within the dripline of oak and other tree species identified for avoidance.

- Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover shall be removed outside the roadway shall be revegetated with an appropriate seed mix or seedlings. The seed mix shall be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation.

- Monitoring shall be conducted by a qualified hydrologist and revegetation specialist of all revegetated areas and all areas identified as potential problem areas for erosion and sedimentation from access road construction. Remedial action shall be implemented if revegetation is not successful or if significant erosion and sedimentation problems are observed during monitoring.

When the construction activities encounter wetlands, CAW shall protect and minimize potential adverse impacts to wetlands by:

- Expediting construction in and around wetlands, and limiting the amount of equipment and mainline construction activities within wetlands to reduce disturbances of wetland soils;

- Restoring wetlands to their original configurations and contours, except where modification of the area is part of the project objectives;

- Permanently stabilizing upland areas near wetlands as soon as possible after completion of ground disturbing work; and

- Inspecting the project area periodically during and after construction and repairing any erosion control or restoration features until vegetation is successfully established on the upland portions of the project area.

Additional methods and procedures to control erosion and minimize impacts to vegetation are presented in the Storm Water Pollution Prevention Plan (CAW 2007).

Erosion and Sediment Control

GENERAL MEASURES

Temporary erosion and sediment control measures are designed to effectively reduce erosion and the transport of sediment, and to protect sensitive resources during construction. Temporary erosion control measures shall be installed where needed immediately following significant soil disturbance and shall be maintained throughout the course of construction. In general, temporary erosion control measures shall be removed during cleanup activities after permanent erosion control measures have been installed. Permanent erosion control measures are designed to minimize erosion and sedimentation after construction until revegetation efforts have effectively stabilized the construction area.

Standard erosion control methods and BMPs shall be implemented on both the upslope and downslope sides of all construction zones to minimize potential soil erosion. No fill shall be placed on steep canyon slopes directly above the river. Retaining walls shall be used where road widening occurs immediately upslope of the river on steep banks.

Erosion controls shall be adequately sized and appropriately located. BMPs shall be customized to address site-specific conditions encountered on the steep slopes that adjoin the river. Drainage facilities and slope protection methods shall function throughout the construction and revegetation period. Erosion controls that prevent soil or sediment from entering the river shall be monitored for effectiveness, and maintained throughout the construction operations.

Erosion control methods and procedures shall include, as a minimum, the following:

- Use of filter fabrics, berms, hay bales, and other means to control surface runoff and prevent erosion;

- Monitoring erosion control methods for effectiveness and maintenance of these methods throughout the duration of construction operations;

- Constructing fills and spoil areas by selective placement to eliminate surface silts or clays which may erode;

- Controlling surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation by holding the areas of bare soil exposed at one time to a minimum, and providing temporary control measures such as berms, dikes, and drains; and

- Inspecting cut slopes periodically to detect evidence of possible future slope failures, possible rock raveling which could be hazardous to personnel working in the excavation area below.

Temporary sediment control methods specific to wetlands and OWUS include:

- Installing sediment barriers immediately after initial disturbance of the wetland or adjacent upland,
- Properly maintaining sediment barriers throughout construction and reinstalling them as necessary, and
- Maintaining sediment barriers until they are replaced by permanent erosion controls or until the restoration of adjacent upland areas is complete.
- Installing sediment barriers across the entire construction area immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.
- Where wetlands are adjacent to the construction area and the construction area slopes toward the wetland, installing sediment barriers along the edge of the construction area as necessary to prevent sediment flow into the wetland.
- Installing sediment barriers along the edge of the construction area as necessary to contain spoil and sediment within the construction area through wetlands. These sediment barriers shall be removed during post-construction cleanup.

The following general environmental protection measures shall be implemented to minimize environmental impacts during construction and operation of the project:

- All personnel, vehicles, and equipment shall stay in the designated construction areas. Access roads outside of the construction area shall be designated by CAW. All staking, flagging, and exclusion fencing shall be respected.
- Construction, cleanup, and reclamation shall be managed to minimize the time between grading, excavation, backfilling, and final restoration/reclamation.
- Temporary erosion/sediment control devices shall be installed immediately after initial soil disturbance and shall be maintained throughout construction and restoration, as necessary, until replaced by permanent erosion control measures.
- Fabric barrier shall be placed on the ground surface of the active construction area to catch fine sediments, cement dust or other materials that are used or spilled during construction activities. All sand-size and finer construction fill and any angular crushed rock would be removed from the construction area and disposed of at an appropriate off-site location.

- Permanent erosion control measures and final cleanup shall be completed within 10 days of completion of the dam seismic retrofit. If this schedule cannot be met, these activities shall be completed as soon as possible. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season.

- A stockpile of erosion control materials, including straw bales, silt fence, and geotextile fabric, shall be stored at the contractor yard during the entire period that construction disturbance occurs. Materials shall be stored for planned use during construction, and sufficient additional quantities shall be stored for maintenance and emergency use.

- Environmental Inspector(s) shall verify compliance with the environmental requirements throughout construction.

The following temporary erosion and sediment control measures shall be installed, where necessary during construction of the project.

SEDIMENT BARRIERS

Temporary sediment barriers (e.g., straw bales, silt fence) are designed to reduce the velocity of water flow and intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to limit sediment transport out of the construction area. Temporary sediment barriers shall be installed at the following locations immediately after initial ground disturbance:

- adjacent to paved roadways, drainages, wetlands (dry or wet), springs (dry or wet), impoundments (dry or wet), and other sensitive resources where the topography shall direct sediment into these resource areas;

- around soil or spoil piles, where necessary (e.g., adjacent to flowing drainages); and

- where requested by the Environmental Inspector to prevent significant sediment transport into adjacent resource areas.

General Requirements

Straw bale or silt fence sediment barriers shall be placed at the bottom of slopes and shall be located at least 6 feet from the toe of the slope, where possible, in order to increase ponding volume. The ends of the sediment barrier shall be turned upslope to capture sediment.

Sediment barriers shall be placed so as not to hinder construction activities and above the ordinary high water mark of active stream channels. If silt fences or straw bale sediment barriers are placed across the construction area, provisions shall be made for traffic flow. A gap approximately 15-feet-wide, shall be provided along the silt fence or straw bale row, with the ends of the sediment barrier turned slightly upslope. Across the gap, a drivable earth berm shall be installed and maintained immediately upslope of the sediment barrier (upturned ends of the sediment barrier shall tie into the drivable earth berm).

If sediment builds up to greater than 40 percent of barrier capacity, the sediment shall be removed or spread on the sediment disposal site. Damaged or undermined sediment control barriers shall be repaired or replaced as described in this plan.

Straw Bales

Straw bale sediment barriers consist of a row of tightly abutted straw bales placed perpendicular to the runoff direction with the ends turned upslope. The barriers are typically one bale high, placed on the fiber-cut edge (ties not in contact with the ground) in a 4-inch-deep trench, and anchored securely with two wooden stakes driven through each bale. Soil shall be placed and compacted along the toe of the uphill side of the straw bale barrier. If a dugout area cannot be excavated due to the presence of rocky material, the Contractor shall install the straw bale so that the bale shall not be undermined.

The Contractor shall acquire weed-free straw and provide CAW with the appropriate documentation.

Silt Fences

Silt fence composed of commercial filter fabrics with sufficient strength to prevent failure shall be provided and installed by the Contractor. The height of the silt fence shall not exceed 36 inches above the ground. The fabric shall be cut from a continuous roll of fabric with splices only at the support posts. When splicing sections, at least a 6-inch overlap of fabric shall be secured and wrapped to the post(s). Support posts shall be a maximum of 10 feet apart.

The bottom edge of the silt fence shall be installed in a trench excavated approximately 4 inches wide by 6 inches deep and refilled with compacted soil, unless on-site constraints dictate otherwise (e.g., rock). If a trench cannot be excavated, the Contractor shall secure the bottom edge of the silt fence so that it shall not be undermined. Silt fences shall be attached to supporting posts by staples or wire. A typical construction drawing has been included in Attachment B. As determined by the Environmental Inspector, a wire fence may be used instead of wooden support posts to provide additional strength on hillsides.

Sandbags

Sandbags may be used as dikes or sediment barriers to control sediment in drainage swales. Sandbags can be strategically placed to control runoff, dissipate runoff energy, and catch sediment (i.e. as a “J” hook at the end of a waterbar).

Waterbars

Waterbars are utilized in various forms (e.g., rolling dips on access roads, drivable berms across travel ways, waterbars on slopes, etc.) during project construction and after final grade restoration. Waterbars are intended to intercept water traveling down a disturbed slope and divert water off disturbed soil into stable, well-vegetated, or adjacent rocky areas.

Waterbars shall be installed near the base of slopes adjacent to wetlands and drainages, except at those specific sites (e.g., terrain slopes away from a canal) where, in the judgment of the Environmental Inspector, waterbars are not necessary to prevent discharge of sediment into sensitive resources. The general spacing for temporary and permanent waterbars is as follows:

- 300 feet for slopes of 5 to 15 percent
- 200 feet for slopes of 15 to 30 percent
- 100 feet for slopes greater than 30 percent

The Environmental Inspector can modify the final spacing of waterbars in the field. Waterbar spacing is based on a site-specific evaluation of the project site and standard construction protective measures. This spacing takes into account the soils, timing of construction, and area of disturbance anticipated for construction of the project. Except for site-specific situations as determined by the Environmental Inspector (e.g., extremely long slopes with highly erodable soils), waterbars shall not be constructed on slopes with less than a 5 percent gradient.

Earthen waterbars shall be constructed of existing suitable material and compacted to increase durability. Alternatives to waterbars may include a series of tightly abutted straw bales (constructed as per Section *Straw Bales*), excelsior logs, or abutted burlap bags filled with native sand/soil. The installation angle shall be 2 to 8 percent down slope (as measured by a hand-held clinometer or level) and shall extend to, or slightly beyond, the edge of the disturbed construction area, but within the boundaries of the project area.

Where possible, waterbars shall discharge into stable, non-erosive (vegetated or rocky) receiving areas. In isolated instances where waterbars discharge into unstable or highly erosive areas without rock or vegetation, flow energy dissipaters or “J-hook” shaped sediment barriers may be positioned at the waterbar outlet. Additionally, in highly erodable soils, the spacing between waterbars may be decreased to further slow the velocity of water. Whenever feasible, waterbars shall be sited so that they do not outlet directly into sensitive resource areas (e.g., cultural sites, rare plant sites, drainages, waterbodies, wetlands, etc.).

The Contractor shall regularly inspect and repair waterbars during construction to maintain their effectiveness. Waterbars worn down by heavy construction traffic or filled with sediments shall be repaired, as needed, and the sediment shall be spread on the disturbed area uphill of the waterbar.

Check Dams

Where determined necessary by the Environmental Inspector, the Contractor shall install check dams in bar ditches or other intermittent drainages to minimize the transport of sediment from the construction zone. Check dams shall be constructed of staked straw bales or stacked sand bags just inside the drainage area edge. The center of the structure shall be lower than the ends to channel water and create a sediment dump immediately upstream of the structure. The structure, and any deposited sediment, shall be removed following final restoration of the site.

Surface Roughening

Surface roughening involves tracking of the ground surface with heavy machinery creating a series of willow depressions running parallel to the ground surface contours. Surface roughening assists in controlling erosion by reducing the speed of storm water runoff, increasing infiltration, and trapping sediment.

Topsoil Segregation

- In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil shall be segregated. In soils with less than 12 inches of topsoil every effort shall be made to segregate the entire topsoil layer.

- Where topsoil segregation is required, separation of salvaged topsoil and subsoil shall be maintained throughout all construction activities.

Mulch

Mulch, consisting of weed-free straw, wood fiber, or an approved equivalent, may be applied to disturbed soils to minimize the effects of wind or rain on exposed soils. During rainy conditions, mulch reduces the impact of rainfall in initiating erosion and slows the down slope velocity of surface flow.

An acceptable application of straw mulch shall include the following:

- Straw mulch shall be required in the following areas:
  - within 100 feet of flowing streams;
  - slopes of 30 to 40 percent with less than 70 percent surface cover; and
  - slopes of 0 to 30 percent with highly wind erodable soils and less than 70 percent surface cover, as directed by the Environmental Inspector or other qualified personnel.

- Straw mulch shall be applied at a rate of 2,000 to 4,000 pounds (3,000 average) per acre, as directed by the Environmental Inspector. Mulch rates may be reduced or eliminated by the Environmental Inspector, where necessary.

- Straw fiber length shall be at least 8 inches long to facilitate crimping in place after application.

- Equipment specifically designed to crimp straw shall be used to crimp straw fibers to a depth of 2 to 3 inches. Steep slopes inaccessible with a crimper shall be crimped by tracking with tracked equipment running perpendicular to the slope. Farm discs shall not be allowed for crimping. Acceptable straw mulch crimpers include:

  – mechanical crimper;

  – backhoe with crimper forks;

  – tracked equipment tracking up and down slopes (restricted to areas where other methods shall not work); or

  – equivalent, as approved by the Environmental Inspector.

- If a straw mulch blower is used, strands of the mulching material shall be at least 8 inches long to allow anchoring. Alternatively, organic liquid mulch binders may be used in accordance with the manufacturer’s recommendations and with CAW’s approval.

If reclamation and seeding is deferred more than 10 days after final grade restoration, all disturbed slopes above waterbodies and wetlands shall be temporarily stabilized by applying 3 tons of dry straw mulch per acre for a minimum distance of 100 feet above the edge of the waterbody or wetland.

After final restoration and seeding, mulch shall be applied to all dry sandy sites, slopes greater than 8 percent, and all slopes within 100 feet of waterbodies to control erosion. Mulch shall be spread over the area to a visible coverage of at least 75 percent of the ground surface and at a rate of 2 tons of dry straw (or functional equivalent) per acre.

Matting / Netting

Where determined necessary by the Environmental Inspector and/or Construction Inspector, erosion control matting shall be installed along the stream banks of flowing streams and steep slopes (greater than 33 percent) after final grade restoration to reduce rain impacts on soils, to control erosion, and to stabilize steep slopes and waterbody banks.

The Contractor shall use matting supplied in continuous rolls of 30 feet or greater with a minimum width of 4 feet. Staples shall be made of wire, 0.09 inch in diameter or greater, and have a “U” shape with legs 8 inches in length and a 2-inch crown. Wire staples shall be driven into the ground for the full length of the staple legs. Alternatively, wood pegs (0.5-inch-diameter) may be used to secure the erosion control fabric. In areas of active livestock grazing, protection measures other than fabric must be used.

Matting shall be anchored, as it is unrolled to prevent stretching of the material and incomplete ground contact. For stream bank installations, mats shall be laid parallel (upper mat overlapping lower mat in a shingle pattern) to the waterbody to a point above the top of the bank. Native materials (e.g., rocks, logs, etc.) may be used in conjunction with the matting to aid in bank stabilization.

During regular erosion control monitoring, erosion control matting shall be inspected for washouts, adequate staking, and loss of matting. Damaged or undermined matting shall be repaired or replaced, as necessary.

Dewatering Wetlands and Other Waters of the U.S.

Dewatering shall be conducted in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any wetland. Dewatering structures shall be removed as soon as possible after the completion of dewatering activities.

Cofferdams shall be constructed of clean river-run gravel. Cofferdams shall be installed no earlier than May and removed in October. If existing flows are less than the 50 cfs bypass capacity, the cofferdams could be installed as early as April 15th or removed as late as November 30th.

Under the Proponent's Proposed Project and Alternatives 1, 2, and 3, temporary fill shall be placed in the plunge pool and at the upper end of the plunge pool access road. The following measures shall be implemented for this activity.

- The plunge pool staging area shall be filled with spawning-sized gravel and topped with a visqueen liner and a layer of crushed rock and/or sand to create a working surface.
- When construction is complete, the surface layer and liner shall be removed off-site and the gravels used to augment spawning habitat in the plunge pool tailwater and downstream.
- The plunge pool access road shall be upgraded to a one lane, two-way road with pullouts to minimize road widening and loss of wetlands and riparian vegetation.

Wetlands

When the construction activities encounter wetlands, CAW shall protect and minimize potential adverse impacts to wetlands by:

- Expediting construction in and around wetlands, and limiting the amount of equipment and mainline construction activities within wetlands to reduce disturbances of wetland soils;

- Restoring wetlands to their original configurations and contours**, except on the stabilized sediment slope and in the area on the upstream side of the diversion dike where wetlands restoration could destabilize the sediment slopes (see Figure 3.5-3a and Figure 3.5-5a);**
- Permanently stabilizing upland areas near wetlands as soon as possible after completion of ground disturbing work; and
- Inspecting the project area periodically during and after construction and repairing any erosion control or restoration features until vegetation is successfully established on the upland portions of the project area.

Waterbodies

CAW shall protect and minimize potential adverse impacts to perennial waterbodies by the following protective measures:

- Expediting construction and limiting the amount of equipment and activities in waterbodies;
- Reducing clearing, leaving in place as many trees as possible on stream banks;
- Removing all temporary construction material and temporary structures from the waterbody after construction;
- Restoring stream channels and bottoms to their original configurations and contour except where modification is part of the project;
- Permanently stabilizing stream banks and adjacent upland areas after construction; and
- Inspecting the project area periodically during and after construction and repairing any erosion controls and/or performing restoration, as needed, in a timely manner.

Restoration

Cleanup

After final construction on the dam, all disturbed portions of the construction area, including the access roads, and staging areas, shall be returned to preconstruction grades and contours. Construction debris shall be removed from the project sites and these sites shall be graded where appropriate and decompacted so that the soil is left in the proper condition for planting. Any necessary permanent water bars (constructed in the same manner as temporary waterbars) shall be constructed after final grading and prior to seeding.

Temporary sediment barriers shall be removed when replaced by permanent erosion control measures or when revegetation is successful. Every effort shall be made to complete final cleanup and installation of permanent erosion control measures within 10 days after final activities at each site are complete. If this schedule cannot be met, final cleanup shall be completed as soon as possible. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season. Sediment barriers left in place after construction shall be limited to earthen berms, waterbars, and diversion swales, although silt fence may be left in place in specific locations at the direction of the Environmental Inspector.

CAW shall file with appropriate permitting agencies for the review and written approval, a winterization plan if construction shall continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

Reclamation, including alleviating soil compaction, final seedbed preparation, and revegetation, shall occur immediately after final cleanup. Seeding may be postponed until conditions allow (e.g., time of year, soil moisture, or weather conditions). In no case shall seeding be postponed past the next seeding season.

Reclamation and revegetation of the project site incorporates permanent erosion and sediment control measures. However, if final restoration cannot occur in a timely manner due to weather or soil conditions, temporary erosion and sediment control measures shall be employed until the weather is suitable for final cleanup and revegetation. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season. If final reclamation or reseeding is delayed more than 30 days before the perennial vegetation seeding season, areas adjacent to waterbodies shall be mulched with 3 tons/acre of straw, or its equivalent, for a minimum of 100 feet on either side of the waterbody.

Revegetation of Disturbed Areas

Disturbed areas shall be immediately revegetated upon completion of road improvements using permanent revegetation to replace trees, shrubs, and grasses. Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover shall be removed outside the roadway shall be revegetated with an appropriate seed mix or seedlings. Additional detail regarding permanent revegetation is provided in *Section ~~5~~ **1.6** Revegetation* of this Plan.

If there is insufficient time prior to the runoff season to permanently revegetate impacted areas, temporary erosion control and revegetation actions shall be implemented for any winter season prior to completion of the project. Temporary over-winter erosion control and revegetation actions may include such methods as the use of geofabrics and hydroseeding to provide an annual ground cover until the spring growing season when more permanent revegetation methods shall be implemented. Installation of any geotextile or mechanical over-wintering protection shall be properly installed to prevent undermining or washout during winter rains.

The project site shall be seeded within 6 working days of final grading in accordance with recommended seeding dates, weather and soil conditions permitting. Slopes steeper than 3:1 shall be seeded immediately after final grading in accordance with recommended seeding dates, weather permitting.

For temporary or permanent seeding following construction, the following measures shall be implemented.

Seeding Requirements

Seed mixes shall be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and shall contain native species that are indigenous to the project area. If more than one type of seed mix is needed, the seed mixes shall be assigned to project construction and mitigation areas with the assistance of the qualified revegetation specialist. If enough native seed is not available and non-natives must be included in the seed mix, these would be species known not to be invasive or persistent. The seed mix shall contain native species known to compete well against invasive non-native species.

The project site shall be seeded within 6 working days of final grading in accordance with recommended seeding dates, weather and soil conditions permitting. Slopes steeper than 3:1 shall be seeded immediately after final grading in accordance with recommended seeding dates, weather permitting.

Seeding of permanent vegetation shall be performed within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed above and perform seeding of permanent vegetation at the beginning of the next recommended seeding season.

Prior to application of the seed, the seedbed shall be prepared to depth of 3 to 4 inches using appropriate equipment to provide a firm, smooth seedbed that is free of debris. For broadcast and hydro-seeding, the seedbed shall be scarified to ensure sites for seeds to lodge and germinate. The seed shall be applied and covered uniformly per local soil conservation authorities' recommendations for the seed mixture being applied. A range drill shall be used on many of the disturbed sites; however, broadcast or hydro-seeding may also be used at double the recommended seeding rates. Where broadcast seeding is used, the area shall be lightly raked or dragged with appropriate equipment after seeding to lightly cover the seeds.

Seed shall be purchased in accordance with the Pure Live Seed specifications for seed mixes and used within 12 months of testing. Legume seed shall be treated with a species-specific inoculate per manufacturer's specifications.

Reporting

CAW shall maintain records that identify:

- method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
- acreage treated;
- dates of backfilling and seeding; and
- any problem areas and how they were addressed.

CAW shall file with the Corps, USFWS, State Water Board, and CDFG quarterly activity reports documenting problems and corrective actions taken for at least 2 years following Phase 1 Construction. Activity reports documenting post-construction problems shall be filed only during quarters where problems have been identified. This shall alleviate the time, expense, effort, and paperwork associated with reporting non-events.

1.5 RESTORATION AND MITIGATION FOR WETLANDS AND OTHER WATERS OF THE U.S.

Mitigation for permanent loss of wetlands and OWUS includes restoration, mitigation and monitoring for wetlands and Other Waters affected by the project. Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 3:1 **ratio for the Proponent's Proposed Project and Alternatives 1 and 2. Under Alternative 3, riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 1:1 ratio. Specifically, the wetlands that would be mitigated at a 1:1 ratio constitute approximately 2.95 acres of jurisdictional lacustrine, littoral, unconsolidated bottom wetlands and riverine, unconsolidated bottom wetlands currently located in San Clemente Creek and Carmel River arms of the reservoir, just upstream of the dam. The USACE has agreed that 1:1 mitigation for these wetlands would still achieve the goal of no net loss for these 2.95 acres of jurisdictional wetlands (H. Costa, pers. comm.). Other agencies which have authority over wetlands habitats have been informed of this proposal and have informally indicated that their permits will likely reflect 1:1 mitigation for this 2.95 acres of wetlands. However, none of these agencies have made a final determination of the mitigation required. The project will incorporate any and all required measures, which may exceed 1:1 mitigation. Regardless of mitigation measures proposed by these agencies, the project will achieve at least 1:1 mitigation for wetlands impacts.** Revegetation and monitoring programs are outlined in Section **1.**6, *Revegetation Plan*.

For impacts to Other Waters, mitigation may consist of stream channel improvements either along the Carmel River upstream from the Project Area or along other streams in the watershed. The Project Proponent may either conduct the work or provide funding to other property managers for projects that restore natural channel conditions. Restoration sites may be located in lands along the Carmel River owned by the Project

Proponent or on streams elsewhere in the watershed. Restoration sites shall be conserved in perpetuity.

The following measures shall be implemented for Project-affected wetlands or OWUS under the Proponent's Proposed Project and Alternatives 1 through 4.

RESTORATION IN WETLANDS OR OTHER WATERS OF THE U.S.

- Construction areas shall be reconstructed as necessary to maintain the original wetland hydrology**, except on the stabilized sediment slope and in the area on the upstream side of the diversion dike and where wetlands restoration could destabilize the sediment slopes (see Figure 3.5-3a and Figure 3.5-5a);**

- A conceptual restoration plan **will be developed prior to the start of construction activities** that includes ~~should include~~ measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species, and monitoring the success of the revegetation and weed control efforts is provided**.** ~~in Section 6.~~ Permitting agencies shall be consulted prior to finalizing the details of this plan.

- Restoration of all disturbed areas in wetland habitat shall meet performance criteria for revegetation with wetland herbaceous and/or woody plant species, as specified in the final plan.

- Temporary sediment barriers located at the boundary between wetland and adjacent upland areas shall be removed after upland revegetation and stabilization of adjacent upland areas are judged to be successful.

POST-CONSTRUCTION MAINTENANCE

- Vegetation maintenance shall not be conducted over access roads in wetlands. However, to facilitate dam inspection and maintenance surveys, a corridor up to 10 feet wide may be maintained in a herbaceous state.

- Herbicides or pesticides shall not be used in or within 100 feet of a wetland, except as allowed by the appropriate land management agency or state agency.

- The success of wetland revegetation shall be monitored and recorded annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, a report shall be filed with the Corps identifying the status of the wetland revegetation efforts. The report shall include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). If the performance criteria are not met at the end of the first 3 years after construction, a report shall be filed annually until wetland performance criteria are met.

- Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 50 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, a remedial revegetation plan to actively revegetate the wetland shall be developed and implemented (in consultation with a professional wetland ecologist). Revegetation efforts shall be continued until wetland revegetation performance criteria are met.

1.6 REVEGETATION PLAN

To meet the goals of the revegetation component of this Plan the following measures shall be implemented immediately following completion of construction. All work shall be conducted under the supervision of a qualified botanist.

OAK TREES

A conservation easement shall be provided or acquired that is sufficient to mitigate at least half the loss of oak trees, per Monterey County Code (2005). The conservation easement shall consist of lands elsewhere in the Carmel River watershed that support undeveloped blue oak stands.

If insufficient space is available in areas where protected oaks are lost, additional mitigation sites for shall be identified within the Carmel River watershed, as feasible.

Up to half of the oak trees removed by access road and right abutment wall construction shall be replaced at a 3:1 ratio by planting seedlings or potted trees in appropriate habitat. All plant material shall be derived from Carmel Valley area populations.

Fertilizers may promote the growth of exotic weeds, to the detriment of native species. Fertilizers and soil pH modifiers shall be used only in accordance with written recommendations obtained from a qualified revegetation specialist. Any recommended soil pH modifier and fertilizer shall be incorporated into the top 2 inches of soil as soon as possible after application.

RIPARIAN VEGETATION

Lost riparian vegetation shall be revegetated at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall.

Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage shall be created or restored at a 3:1 **ratio for the Proponent's Proposed Project and Alternatives 1 and 2. Under Alternative 3, riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 1:1 ratio. Specifically, the wetlands that would be mitigated at a 1:1 ratio constitute approximately 2.95 acres of jurisdictional lacustrine, littoral, unconsolidated bottom wetlands and riverine, unconsolidated bottom wetlands currently located in San Clemente Creek and Carmel River arms of the reservoir, just upstream of the dam. The USACE has**

agreed that 1:1 mitigation for these wetlands would still achieve the goal of no net loss for these 2.95 acres of jurisdictional wetlands (H. Costa, pers. comm.). Other agencies which have authority over wetlands habitats have been informed of this proposal and have informally indicated that their permits will likely reflect 1:1 mitigation for this 2.95 acres of wetlands. However, none of these agencies have made a final determination of the mitigation required. The project will incorporate any and all required measures, which may exceed 1:1 mitigation. Regardless of mitigation measures proposed by these agencies, the project will achieve at least 1:1 mitigation for wetlands impacts. ~~, g~~ **G**rading as necessary and placing cuttings or seedlings in appropriate habitat **will be conducted** under the supervision of a qualified botanist. Seedlings shall be from Carmel Valley area populations.

If insufficient space is available in areas where riparian vegetation is lost, additional mitigation sites for riparian revegetation shall be identified, **either along the Carmel River upstream from the Project Area or along other streams in the watershed. The Project Proponent may either conduct the work or provide funding to other property managers for projects that restore natural channel conditions. Restoration sites may be located in lands along the Carmel River owned by the Project Proponent or on streams elsewhere in the watershed. Restoration sites shall be conserved in perpetuity (see** ~~. as outlined in~~ Section **1.**5 of this Plan**)**.

MONITORING AND MAINTENANCE

A monitoring and maintenance program shall be implemented following revegetation in riparian and upland areas.

Upland Vegetation

Plantings shall be monitored during years one, two, three, five and ten after planting. Annual follow-up inspections of all revegetated areas shall be conducted after the growing season to determine the success of revegetation. Monitoring during year ten shall be conducted to assess long-term survival of plantings, particularly trees.

The functions and values of the revegetated areas are expected to match or exceed the functions and values of surrounding areas during and beyond the monitoring period. A variety of environmental parameters shall be monitored in the revegetated areas. These parameters shall be used to assess the success of the revegetation relative to established performance criteria. Performance criteria are based on existing conditions currently present in oak woodland and riparian habitats in or near the Project Area. Monitoring data shall include 1) a list of plant species; 2) the frequency of occurrence by plant species; 3) relative percent cover by species; and 4) survival of replanted trees. Revegetation efforts shall continue for at least five years and/or until revegetation is successful.

Revegetation shall be considered successful if 1) within ten years of planting, the survival rate of the planted **potted** oaks and riparian tree species is 75 percent **of the**

<u>those originally planted.</u> and 2) **<u>75 percent of the</u>** planted seedlings survive for a period of at least 10 years.

If the revegetation does not meet the performance criteria, remediation shall be implemented. Remedial actions shall be taken, as necessary, including but not limited to irrigation or protection from browsing animals such as deer, to ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code. Drainage and irrigation systems shall be monitored and problems corrected until restoration is successful.

Additional seedlings shall be planted to replace seedlings that do not survive. If at any time during the monitoring program the survival rate of the planted trees falls below the target 75 percent survival rate, additional trees shall be planted.

Other remedial mitigation measures may be implemented within the 10-year monitoring period to ensure success criteria are met. For example, additional tree planting may be implemented to compensate for excess mortality of the initial tree planting. If exotic vegetation is causing failure of the native vegetation cover to meet targets, control methods shall be increased to counter this effect.

<u>Riparian Vegetation</u>

Replacement plantings shall be monitored annually for at least five years. Seedlings shall be replanted as necessary to ensure long-term survival.

Restoration sites shall be monitored for five years. Performance criteria shall be agreed upon with the Corps and CDFG, but shall include cover criteria for native vegetation (ranging from 50 to 75 percent) and survival criteria for woody vegetation that is planted. All disturbed areas shall meet performance criteria for revegetation with wetland herbaceous and/or woody plant species.

<u>Wetland Vegetation</u>

The success of wetland revegetation shall be monitored and recorded annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, a report shall be filed with the Corps identifying the status of the wetland revegetation efforts. Included in the report shall the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). A report shall continue to be filed annually until wetland performance criteria are met.

Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 50 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, a remedial vegetation plan shall be developed and implemented (in consultation with a professional wetland ecologist) to actively revegetate the wetland. Revegetation efforts shall continue until wetland revegetation is successful.

Reporting

CAW shall file annual reports with appropriate county, state and federal permitting agencies, including the Corps, USFWS, CDFG, and Monterey County following within six months of the conclusion of each annual monitoring period. A summary report shall be issued after year ten, the final year of monitoring.

1.7 REFERENCES

Monterey County Code. 2005. Title 16 Environment, Chapter 16.60 Preservation of oak and other protected trees.

California American Water Company (CAW). 2007. Storm Water Pollution Prevention Plan.

Appendix V Protection Measures for Special Status Species

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San Clemente Dam Seismic Retrofit Project

Revised *Protection Measures for Special Status Species*

TABLE OF CONTENTS

REVISED PROTECTION MEASURES FOR SPECIAL STATUS SPECIES DURING CONSTRUCTION

1. INTRODUCTION

Implementation of activities related to the San Clemente Dam Seismic Retrofit Project (Project) has the potential to affect special-status species within and near the Project area. The Protection Measures for Special Status Species Plan (Plan) identifies measures to be taken by the California-American Water Company (CAW), (otherwise referred to as "applicant" on future actions relating to this project) and its contractors (Contractor) to ensure that avoidance and minimization measures are implemented during Project construction activities to protect special-status species in accordance with federal, state, and local regulations. Measures identified in this Plan apply to work within the Project Area defined as the construction area, access roads, all work and storage areas, and other areas used during construction of the project. This Plan also identifies mitigation measures.

This document identifies which measures will be implemented for the Proponent's Proposed Project or an alternative action. The project alternatives include the following.

- Proponent's Proposed Project – Dam Thickening
- Alternative 1 – Dam Notching
- Alternative 2 – Dam Removal
- Alternative 3 – Carmel River Reroute and Dam removal
- Alternative 4 – No Project (No Action)

This Preliminary Draft Plan shall be finalized with review and comments from agencies and organizations with regulatory authority in the management of special-status wildlife and aquatic species. These agencies include the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG). Review and comments also will be sought from the U.S. Army Corps of Engineers (Corps), lead agency for consultation on the Project.

This Plan will be consistent with any local or regional plans, policies, and regulations protecting any special status species and their habitat identified by the USFWS, NMFS, or CDFG. These measures will be implemented by CAW as "applicant" and its contractors unless superseded by specific written requirements or recommendations from the USFWS or NMFS as a result of Section 7 consultation under the Endangered Species Act. It will be modified, if needed, to be consistent with a future, adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan.

1.1. SPECIAL-STATUS SPECIES WITHIN THE PROJECT VICINITY

Special-status species include plant and wildlife species listed by the U.S. Fish and Wildlife Service (USFWS) and by the National Marine Fisheries Service (NMFS) as Threatened or Endangered under provisions of the Federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et. seq., as amended), as well as Proposed and Candidate species for listing. Special-status species also include species listed as threatened or endangered by the California Department of Fish and Game (CDFG) under provisions of the 1984 California Endangered Species Act (CESA) (CDFG 1994, 1997), and plant species listed as Rare, Threatened, or endangered by CDFG under provisions of CESA and the 1977 Native Plant Protection Act (NPPA) (CDFG 1996). Wildlife species listed by CDFG as Species of Special Concern (CDFG 1994) also are special-status species.

Special-status species include plant species included on List 1A (Plants Presumed Extinct in California), List 1B (plants rare, threatened, or endangered in California and elsewhere), or List 2 (plants rare, threatened, or endangered in California, but more common elsewhere) of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). These species are subject to State regulatory authority under the California Environmental Quality Act (CEQA). Plant species included on Lists 3 and 4 of the CNPS Inventory could be also considered special-status species. These species are considered to be of lower sensitivity. They generally do not fall under specific State or Federal regulatory authority, and specific mitigation considerations are generally not required for these species.

The potential for special-status plant species to occur in the Project vicinity was determined based on a review of literature and special-status species databases, as well as botanical surveys conducted in 1997 and 2005 (Yadon 2005). Only two special-status plant species, virgate eriastrum (*Eriastrum virgatum*) and Lewis's clarkia (*Clarkia lewisii*) were found in the project vicinity. One small population of virgate eriastrum (an annual species), consisting of 20 to 30 plants in 1997, was found at the eastern edge of the floodplain of the Carmel River in the northern portion of the project vicinity (Ecosystems West 1997). Virgate eriastrum is on List 4 of the California Native Plant Society (CNPS) Inventory, and does not fall under specific State or Federal regulatory authority. Lewis's clarkia was found along the jeep trail that is a proposed access route for Alternatives 1, 2, and 3, as well as the proposed sediment disposal site for Alternatives 1 and 2, and the diversion dike area for Alternative 3. This species is also a CNPS List 4 taxon.

Several special-status terrestrial wildlife species are known to occur or may occur in the Project vicinity (MPWMD 1984). A list of special-status wildlife species with potential to occur in the Project area was developed based on a review of literature and data sources that span over 90 years, including general wildlife references (Ingles 1965, Call 1978, Stebbins 2003, Small 1994); CDFG reports on special-status wildlife (Remsen 1978, Williams 1986, Jennings and Hayes 1994); California Wildlife Habitat Relationships (CWHR) species-habitat models (Zeiner et. al. 1988, 1990a, 1990b), records from the California Natural Diversity Database (CNDDB 2005), the catalogue records of the major northern California vertebrate museum collections (California Academy of Sciences 2005, Museum of Vertebrate Zoology 2005). Records of known occurrences of special-status wildlife species and habitats in the region, previous wildlife studies conducted in the area, and consultant staff biologist's experience with the target species from the 2000 RDEIR were also used.

Biotic resources surveys of the project study vicinity were conducted by Ecosystems West in from April to August, 1997, with follow-up surveys during July 1998. Dr. Richard Arnold conducted a survey for Smith's blue butterfly in June 1997. ENTRIX, Inc. conducted additional field surveys from April to August 2005, including vegetation and special-status plant surveys. Special-status plant species surveys were conducted in May and July 2005. Surveys were conducted throughout the project area, including along the Tularcitos access road and existing access roads requiring improvements, at the concrete batch plant site, at the dam itself (including the fish ladder), at the sediment disposal site, along the conveyor route to the sediment disposal site, and in those areas where sediment will be excavated.

Special-status wildlife species documented as occurring in the study area include: California red-legged frog (*Rana aurora draytonii*), foothill yellow yellow-legged frog (*Rana boylii*), western pond turtle (*Actinemys* [=*Clemmys*] *marmorata*), two striped garter snake (*Thamnophis hammondii*), Monterey dusky-footed wood rat (*Neotoma fuscipes luciana*), Cooper's hawk (*Accipiter cooperi*), osprey (*Pandion haliaetus*), and yellow warbler (*Dendroica petechia brewster*). A single, nonbreeding willow flycatcher (*Empidonax traillii*) was reported in May 1997 in riparian habitat considered suboptimal for the species. No other Federal or State listed threatened or endangered bird species was found in the Project Area. Numerous California red-legged frogs have been documented upstream and downstream of San Clemente Dam. The available habitat for foothill yellow-legged frog is marginal, but one specimen was observed in 2005 in San Clement Creek, within one mile of the dam. Western pond turtles have been observed downstream from San Clemente Dam and potential habitat occurs on the site.

Potentially suitable habitat for other special-status wildlife species also exists in or near the Project Area, including: California tiger salamander (*Ambystoma californiense*), Coast Range newt (*Taricha torosa torosa*), coast horned lizard (*Phrynosoma coronatum*), Townsend's big-eared bat (*Plecotus townsendii townsendii*), California mastiff bat (*Eumops perotis californicus*), pallid bat (*Antrozous pallidus*), double-crested cormorant (*Phalacrocorax auritus*), sharp-shinned hawk (*Accipiter striatu*s), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), and yellow-breasted chat (*Icteria virens*). No Smith's blue butterflies (*Euphilotes enoptes smithi*), suitable habitat or preferred host plants were detected during the surveys.

Federally-listed Steelhead is the most important management species of the fish species present in the Carmel River watershed. It is a Fish Species of Special Concern in California (CDFG 1995).

Special status species with the potential to occur within the Project Area are summarized in Table 1.

Table 1: Special Status Species with Potential to Occur in Vicinity of the Project Area			
Species	**Scientific Name**	**Federal Status**	**State Status**
Plant species			
Virgate eriastrum	*Eriastrum virgatum*	None	List 4 of the CNPS[1]
Lewis's clarkia	*Clarkia lewisii*	None	List 4 of the CNPS[1]
Fish species			
Steelhead	*Oncorhynchus mykiss*	ESA - Threatened	California Species of Special Concern
Wildlife species - documented in Project Area			
California red-legged frog	*Rana aurora draytonii*	ESA - Threatened	California Species of Special Concern
Foothill yellow-legged frog	*Rana boylii*	None	California Species of Special Concern
Western pond turtle	*Actinemys* [=*Clemmys*] *marmorata*	None	California Species of Special Concern
Two striped garter snake	*Thamnophis hammondii*	None	California Species of Special Concern
Monterey dusky-footed wood rat	*Neotoma fuscipes luciana*	None	California Species of Special Concern
Cooper's hawk	*Accipiter cooperi*	None	California Species of Special Concern
Osprey	*Pandion haliaetus*	None	California Species of Special Concern
Yellow warbler	*Dendroica petechia brewster*	None	California Species of Special Concern
Willow flycatcher	*Empidonax traillii*	None	CESA Endangered, 1991 (includes all subspecies)
Wildlife species – suitable habitat occurs, individuals not documented			
California tiger salamander	*Ambystoma californiense*	ESA - Threatened	California – **Threatened** ~~Species of Special Concern~~
Coast Range newt	*Taricha torosa torosa*	None	California Species of Concern
Coast horned lizard	*Phrynosoma coronatum*	None	California Species of Special Concern
Townsend's big-eared bat	*Plecotus townsendii townsendii*	None	California Species of Special Concern
California mastiff bat	*Eumops perotis californium*	None	California Species of Special Concern
Pallid bat	*Anatropous pallid us*	None	California Species of Special Concern

Table 1: Special Status Species with Potential to Occur in Vicinity of the Project Area			
Species	**Scientific Name**	**Federal Status**	**State Status**
Plant species			
Double-crested cormorant	*Phalacrocorax auritus*	None	California Species of Special Concern
Sharp-shinned hawk	*Accipiter striatus*	None	California Species of Special Concern
Bald eagle	*Haliaeetus leucocephalus*	ESA – Threatened, delisted June 2007[2]	California **Fully Protected** ~~Endangered~~ Species
Golden eagle	*Aquila chrysaetos*	None	California **Fully Protected** Species ~~of Special Concern~~
Yellow-breasted chat	*Icteria virens*	None	California Species of Special Concern

[1] California Native Plant Society (CNPS) Inventory, List 4 species generally do not fall under specific State or Federal regulatory authority, and specific mitigation considerations are generally not required for these species.
[2] USFWS Ruling on delisting June 29, 2007.

2. Purpose

The purpose of this plan is to establish standards and measures to avoid or minimize potential adverse effects to federal and state listed wildlife and plants that inhabit areas that may be affected by Project construction activities, and to benefit California Species of Special Concern.

3. Responsibilities and Coordination

This Plan will be implemented by CAW and the Contractor on the project site. CAW and the Contractor have the responsibility for providing all necessary guidance on the project site to their respective employees, and operating under the requirements of this Plan. Prior to construction, the “applicant” will contact the appropriate authorities to establish communications, obtain permits (as applicable), and/or fulfill other obligations as directed by regulatory agencies.

3.1. Supervision, Inspection and Monitoring

Environmental Inspectors will be designated to implement supervision and inspection activities during construction and post-construction activities. The Environmental Inspector will be responsible for ensuring compliance with the requirements of this Plan, the environmental conditions of the applicable permits, the mitigation measures required by environmental permits, other environmental permits and approvals, and environmental requirements in landowner easement agreements.

The Environmental Inspector will verify that the limits of authorized construction work areas and locations of access roads are properly marked before construction begins; and verify the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, or areas with special requirements along the construction work area.

The “applicant” will designate a field contact representative (FCR) who will be responsible for overseeing compliance with protective stipulations for listed species. The FCR must be on site during all Project activities. The FCR shall have authority to halt all activities that are in violation of the stipulations. The FCR shall have a copy of all stipulations when work is being conducted on the site. The FCR may be a project manager, CAW representative, or a contract biologist.

The FCR will have the authority to halt all non-emergency Project activity should danger to a listed species arise. Work shall proceed only after hazards to the listed species are removed, the species is no longer at risk, or the individual has been moved from harm’s way by the authorized biologist.

All listed species surveys and monitoring work within areas where pre-construction surveys have demonstrated the potential to affect one or more listed species will be accomplished by a qualified biologist. The biologist will be responsible for assisting crews in compliance with protection measures, performing surveys prior to implementation of construction activities, as needed, to locate and avoid sensitive species, and monitoring compliance.

CAW as “applicant” will ensure that activities are confined to the authorized work areas by means of project assessments. The assessments may be conducted by the authorized biologist. Should the assessment find that maintenance activities extended beyond the approved work areas, the Corps, USFWS, and CDFG shall ensure that the “applicant” and its contractors use appropriate measures to restore the disturbed areas.

This Plan and a copy of the Notice of Intent will be kept at all of the construction sites (if practical) or at the nearest contractor office or trailer. This Plan will be available to a responsible agency representative upon request.

3.2. Education Program

All “applicant” employees and Contractors involved with construction activities will be required to attend a special-status species education program. Aspects of the program addressing special-status species subject to regulatory authority of the USFWS, NMFS and CDFG will be approved by those agencies. All construction and monitoring employees will participate in the education program prior to initiation of activities. New employees will receive formal, approved training prior to working on-site. At a minimum, the program will cover the distribution of listed species, general behavior and ecology of these species, sensitivity to human activities, legal protection, penalties for violation of state and federal laws, reporting requirements, and Project avoidance, minimization and mitigation measures.

3.3. Reporting

Encounters with a listed species shall be reported to an authorized or qualified biologist. These biologists will maintain records of all listed species encountered during Project construction activities. This information will include for each individual: the location (narrative, vegetation type, and maps) and date of observation; general conditions and health; any apparent injuries and state of healing, and; if moved, the location from which it was captured and the location in which it was released.

Within 60 days of completion of construction activities, the FCR and authorized biologist shall prepare a report for the Corps, USFWS, NMFS, and CDFG documenting the effectiveness and practicality of the measures in this Plan. The report also will make recommendations for modifying the measures in this Plan to enhance species protection or improve the utility of the permit. The report will provide information on the actual acreage disturbed by various aspects of the operation.

4. Protection Measures - General Measures

4.1. Preconstruction Surveys

Pre-construction surveys for listed plant and wildlife species will be conducted according to USFWS and CDFG protocols. Alternatively, surveys for potential habitat of special-status species will be conducted in the area of construction locations. Surveys and habitat assessments previously conducted for San Clemente draw-down operations will be used to help focus surveys in areas where species occurrence and/or presence of suitable habitat for special-status species have been documented.

A pre-construction survey of the Project Area will be conducted by a qualified biologist(s) no more than 14 days prior to the onset of activities. Burrows or nests of special-status species outside of, but near, the construction area will be prominently flagged at that time so that they may be avoided during work activities. Construction actions will avoid disturbing such sites to the extent possible. In the event an occupied habitat is found within the proposed construction site, a qualified biologist will be on-site during construction.

4.2. Construction Measures

All surface-disturbing activities within the range of any listed species will be conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Impacts to habitat will also be minimized to the maximum possible extent.

The area of disturbance will be confined to the smallest area practicable, considering topography, placement of facilities, location of potential special-status species habitat, nesting sites or dens, public health and safety, and other limiting factors. As needed, work area boundaries will be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying. Special habitat features identified by the qualified biologist, will be avoided to the extent possible. To the extent possible, previously disturbed areas within the Project sites will be used for the stockpiling of excavated materials, storage of equipment, locations of trailers, parking of vehicles, and any other surface-disturbing activity. The qualified biologist, in consultation with the “applicant”, will ensure compliance with these measures.

- All activities will be restricted to pre-determined areas. If unforeseen circumstances require expansion of these areas, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures will be implemented within the expanded work areas based on the judgment of the regulatory agencies and CAW’s biological consultant. Work outside of the original work area will proceed only after receiving written approval from the Corps, USFWS, NMFS and/or CDFG, depending on regulatory authority, describing the exact location of the expansion.

- Established routes of travel to and from the construction and inspection sites will be used. Cross-country use of vehicles and equipment will be strictly prohibited. During project activities, vehicle parking and material stockpiles will be located in existing disturbed areas to the extent practicable.
- Employees will exercise caution when commuting to the Project area and while traveling the Project Area during construction activities. To minimize the likelihood for vehicle strikes of listed species, speed limits when commuting to project areas on project roads will not exceed 20 miles per hour.
- All construction pipes, culverts, or similar structures that are stored at a construction site for one or more nights will be inspected before the pipe is used or moved. If wildlife species are present, they will be allowed to exit on their own or an authorized biologist will move them out of harm’s way.
- Trash and food items will be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
- Employees will not bring pets to the Project site.
- Firearms will be prohibited from the activity sites.
- Upon completion of each activity on a Project site, all unused material and equipment will be removed from the site.

Spill control measures will be implemented to minimize the risk of contamination of the Carmel River downstream of the project area. CAW will implement a Spill Prevention, Containment, and Countermeasure (SPCC) Plan during construction of improvements to the San Clemente Dam Seismic Retrofit Project (CAW 2007a). This SPCC Plan outlines specific preventive measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and to expedite cleanup of any release that may occur during construction activities. For emergency situations involving a leak or spill or any other immediate safety hazard, the “applicant” will notify the appropriate regulatory field office, as outlined in the SPCC. As a part of this emergency response, the USFWS, NMFS, and CDFG may require specific measures to protect listed species. During cleanup and repair, the agencies also may require measures to recover damaged habitats.

Sediment erosion control measures will be implemented, as described in the Stormwater Pollution Prevention Plan (CAW 2007a) and the Botanical Resources Management Plan (CAW 2007b). Disturbed areas will be revegetated, as described in the Botanical Resources Management Plan.

Upon locating an individual of a dead or injured special-status species, the “applicant” will make initial notification to USFWS, NMFS and/or CDFG, consistent with regulatory authority, within 3 working days of its finding. The notification for special status wild-life species must be made by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766). Notification for steelhead must be made to NMFS and CDFG. The report shall include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Animals injured through “applicant” activities shall be transported to a qualified veterinarian for treatment at the expense of the “applicant”. If an injured animal recovers, the CDFG will be contacted for final disposition of the animal.

The “applicant” will endeavor to place the remains of intact special-status species with educational or research institutions holding the appropriate state and federal permits per their instructions. If such institutions are not available or the animal’s remains are in poor condition, the information noted above shall be obtained and the carcass left in place. Arrangements regarding proper disposition of potential museum specimens shall be made with the institution by the Corps, USFWS, NMFS, and/or CDFG through a biologist prior to implementation of the action. Animals injured by project activities should be transported to a qualified veterinarian. Should any treated animals survive, the appropriate agency field offices should be contacted regarding the final disposition of the animals.

Where necessary, CAW will restore disturbed areas in a manner that will assist in the re-establishment of biological values within the disturbed area. Methods of such restoration will include the reduction of erosion, re-spreading of topsoil, and planting with appropriate native shrubs, depending upon the appropriateness or effectiveness in a given area. Restoration activities will be consistent with measures provided in the Botanical Resources Management Plan (CAW 2007b).

4.3. Construction Measures for Specific Activities (and Associated Wildlife and Fish Impacts)

Channel Dewatering

Under the Proponent’s Proposed Project, Alternative 1, 2 or 3, the plunge pool and up to about 400 feet of Carmel River channel downstream the San Clemente Dam will be dewatered during construction. Under the Proponent’s Proposed Project, the Carmel River will not be dewatered to upgrade the piers and bridge deck at the Old Carmel River Dam (OCRD). Under the Proponent’s Proposed Project, approximately 100 feet of Tularcitos Creek channel will be dewatered for access road construction activities.

Two downstream cofferdams will be installed to isolate the plunge pool from the Carmel River. A pump will lower the water level in the pool and the pool will be filled with crushed rock to support the base of a tower crane. The fill material will be removed once construction activities are complete and the pool will be restored to pre-disturbance condition.

Streamflow from reaches that will be dewatered will be directed into flex pipes that are appropriately sized for each location and the river or stream will be diverted around the construction site. Preconstruction surveys will be conducted for wildlife. Species-specific rescue and relocation programs will be implemented for aquatic species, including amphibians, reptiles, and fish. Additional details for these programs are described in *Section 5 Species-Specific Measures.*

Vegetation Removal and Construction-Related Disturbance (Alternative 3) (WI-8):

Potential impacts to special-status birds (including those listed as fully protected, endangered, threatened, species of special concern, or those protected under the Migratory

Bird Treaty Act) could occur during vegetation removal and other construction activities. Potential impacts include disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Impacts could entail direct loss of eggs or nestlings; indirect displacement from increased noise and human presence in the vicinity of the construction activity; and a reduction in foraging habitat. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity.

Vegetation removal would be accomplished outside of the nesting season between September 15 and February 1. If any vegetation removal must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. If active nests are found, CDFG, and the USFWS will be contacted. Nests will be protected by a one-half mile no disturbance buffer and the nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.

If California fully protected species are detected, CDFG will be consulted. The project would not proceed until mitigation and monitoring measures recommended to avoid the take of such species had been incorporated into the project. If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the eggs the nestlings are fledged and no longer dependent on parental care for survival.

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)

Under the Proponent's Proposed Project, construction of the new Tularcitos access route could affect Monterey dusky-footed wood rat, coast horned lizard, pallid bat, California red-legged frog, western pond turtle, two-striped garter snake, yellow warbler and other special-status wildlife species. This activity will not occur under Alternatives 1, 2, 3, and 4.

For the Proponent's Proposed Project, the following measures will be implemented. preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation based on the results of surveys. Erosion controls, including erosion control fencing, will be implemented to minimize loss of construction material along existing roads that are cut into the slope of the Carmel River canyon, as well as along the plunge pool access road as specified, to reduce impacts from falling debris. These barriers also will keep California horned lizards and western pond turtles out of the construction and traffic corridor. Such barriers will be buried at least 3 to 6 inches in the ground.

Cachagua Access Road Improvements (Alternatives 1, 2, or 3) (WI-9)

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, or 3 (not the Proponent's Proposed Project or Alternative 4). Widening and improving existing access roads could potentially result in minor indirect impacts to Monterey dusky-footed wood rat, pallid bat, and other special-status wildlife species or their habitat. Preconstruction surveys will be implemented and avoidance measures implemented, where practicable. To minimize the potential impact, the left abutment staging area, which already has been disturbed, will be used. To avoid or minimize impacts from falling debris to aquatic species such as California red-legged frogs, foothill yellow-legged frogs, western pond turtles, two-striped garter snakes and fish along the Carmel River, erosion control Best Management Practices (BMP's) will be implemented to protect the Carmel River channels (CAW 2007a,b).

Pre-Existing access Road Improvements (Alternative 3) (WI-9)

The majority of the access road improvements on pre-existing roads would be the same as for Alternative 1. However, in addition to the impacts described for Alternative 1, there would be potential impacts to special-status species due to bridge improvements at Bridge 529 at Cachagua Creek and at four other locations along Tassajarra Road/ Cachagua Road that would be improved to provide heavy equipment access.

Three concrete bridge footings will be placed in Cachagua Creek in order to support construction traffic on Bridge 529, located on Cachagua Road between Tassajara Road and the Jeep Trail. During construction, the creek will be dewatered a portion at a time, and aquatic species relocation may be required. This could result in a short-term disturbance to special-status species such as CRLF, steelhead, western pond turtle, two-striped garter snake. In addition, the work will result in the permanent loss of a approximately 0.001 acres of habitat where the bridge footings are placed, and there would be a short-term loss of the riparian habitat that currently shades Cachagua Creek when vegetation is cleared for equipment access.

Other improvements to the Jeep Trail and Cachagua Road would have impacts similar to those described for Alternative 1, and could potentially result in minor indirect impacts to Monterey dusky-footed wood rat, pallid bat, and special-status bird species. Jeep Trail improvements potentially could impact CTS especially in areas designated as potential CTS aestivation habitat (see Figure 4.5-2). Impacts to CTS associated with the increased traffic on Cachagua Road and the Jeep Trail through migratory habitat are described in WI-14.

Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Impacts to Monterey dusky-footed wood rat would be mitigated by using global positioning software (GPS) to indicate the location of the existing Monterey dusky-footed wood rat nest relative to the proposed route on project construction maps. A survey would be conducted to identify other active Monterey dusky footed wood rat nests along the proposed route. Any nests found would be mapped and flagged in the field, and construction routes and

activities would be planned to avoid the nests. Tree removal would be restricted to the minimum number of trees necessary to allow access by construction vehicles.

Pre-construction surveys of rock outcrops and other formations along the access route would be conducted to provide a basis for mitigating impacts to pallid bat roosts, if any are present. Surveys would be conducted by a biologist with expertise in bat biology who would use visual survey techniques and acoustic monitoring equipment to determine whether pallid bats are likely to use any of these structures. If evidence of pallid bat use is discovered, roost sites would be mapped by GPS and flagged in the field. Construction would be routed to avoid roost sites.

Impacts to CRLFs, foothill yellow-legged frogs, western pond turtles, and two-striped garter snakes along the Carmel River would be mitigated by erosion Best Management Practices (BMPs) to protect the Carmel River channels (see Section 4.3 Water Quality) and the SWPPP in Appendix K).

In addition, a USFWS/NMFS approved biologist will conduct pre-construction surveys of the area prior to the start of work at Bridge 529 on Cachagua to assess the site for potentially impacted wildlife species. Any identified CRLF will be moved to a suitable location outside of the construction area. Fish will also be relocated from the dewatered area to suitable habitat outside of the construction area (see FI-2). Rescue and relocation will be conducted in accordance with pre-approved agency protocols.

The following measures would be implemented to mitigate potential impacts to CTS:

- A qualified biologist will conduct training for all construction and monitoring personnel concerning CTS, including identification of the species and habitat, and the implementation protection measures.
- Protocol-level surveys will be conducted to demonstrate a negative finding concerning the presence of CTS in the areas where access road improvements will be made.
- If surveys are not conducted, then CDFG would assume presence of CTS,
- 50-foot no disturbance zones will be established around all potential small animal burrows that could serve as CTS refugia/aestivation habitat.
- If burrow avoidance is not possible, then aquistion of an Incidental Take Permit may be warranted before initiating ground disturbing activities.
- During rainy or wet conditions, all project-related vehicle travel will occur during daylight hours; if construction-related travel must occur at night, a qualified biological monitor will conduct surveys to ensure no migrating CTS are on the route. The monitor will escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions.
- A qualified environmental inspector will be on-site each construction season to ensure compliance with all environmental BMPs, permits, and other conditions.

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-4)

The Carmel River and San Clemente Creek will be diverted around San Clemente Reservoir and the San Clemente Dam site. A sheet pile cutoff wall will collect and divert water from the river and creek into pipes designed to carry up to 50 cfs for the Carmel River and up to 10 cfs for San Clement Creek. The water will be diverted through pipes along both creeks to a location approximately 500 feet downstream of San Clemente Dam, where flow will be returned to the Carmel River.

Upstream of the reservoir, approximately 1,200 feet of the Carmel River and 800 feet of San Clemente Creek will be affected under the Proponent's Proposed Action. Under Alternative 1 or 2, approximately 6,000 feet of the Carmel River and approximately 1,350 feet in San Clemente Creek will be affected. Under Alternative 3, approximately 4,752 feet of the river upstream of the dam and about 1,350 feet in San Clemente Creek will be affected. Under the Proponent's Proposed Action, this activity is scheduled for the construction season of year 2, under Alternative 1 during years 2 and 3, under Alternative 2 for three construction years, and under Alternative 3 for two years. Therefore protection measures will be implemented during those years.

The intakes of both pipes will be screened consistent with CDFG and NMFS criteria to prevent the entrainment of fish, frogs, and other aquatic organisms. Preconstruction surveys will be conducted for wildlife. Species-specific rescue and relocation programs will be implemented for listed aquatic species, including amphibians, reptiles, and fish. Additional details for these programs are described in *Section 5 Species-Specific Measures.*

Reservoir Sediment Removal (Alternatives 1, 2, or 3) (WI-11)

Under Alternatives 1, 2 or 3 (not the Proponent's Proposed Project or Alternative 4), the reservoir will be drawn down and sediment will be removed from San Clemente Reservoir.

California red-legged frogs and tadpoles, Coast Range newt larvae, and western pond turtle juveniles and hatchlings will be removed from the sediment bed before commencing vegetation removal or sediment excavation, or if individuals are missed in the rescue operation. Prior to any sediment excavation and before California red-legged frogs have been cleared completely from the reservoir bed, vegetation on the sediment bed will be removed with chainsaws and other handheld cutting devices (except "weedwhackers"). After hand clearing of vegetation is completed, the monitoring biologist will resurvey the reservoir bed to determine if any California red-legged frogs or tadpoles remain within the reservoir sediment bed. After ten days pass in which no further California red-legged frogs or tadpoles, Coast Range newt larvae, or western pond turtle juveniles or hatchlings are found in aquatic habitat in the reservoir bed, machine operations including mechanical vegetation removal and sediment excavation will be allowed to commence in the reservoir bed. Additional measures are described in *Section 5 Species-Specific Measures.*

Sediment Transport and Disposal (Alternatives 1 or 2) (WI-12)

Under Alternatives 1 or 2 (not the Proponent's Proposed Project or Alternatives 3 and 4), the proposed sediment disposal site (4R) and conveyor route from the Carmel River canyon to Site 4R may contain habitat for some of the special-status wildlife species. Species most likely to be affected include coast horned lizard, Monterey dusky footed wood rat, and perhaps California tiger salamander or Coast Range newt. Pre-construction surveys of Site 4R and the conveyor route will be conducted by qualified wildlife biologists for these species or their habitat, to assess the likely presence or habitat use by any special-status wildlife species. If listed species habitat or individuals could be harmed, Best Management Plans will be developed to avoid or mitigate damage to special-status wildlife species habitat or individuals.

Bypass Channel Excavation (Alternative 3) (WI-13)

Under Alternative 3, a bypass channel will be constructed. Brushland and riparian habitat clearing and channel excavation will remove some habitat for aquatic species including the California red-legged frog, Coast Range newt and the western pond turtle. These activities may also affect other special-status terrestrial wildlife species, particularly the Monterey dusky-footed wood rat. Impacts on terrestrial species will be assessed by preconstruction surveys. Special-status species habitat will be flagged.

A California red-legged frog adult and tadpole and western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction. Additional measures are outlined in *Section 2 Species-specific Measures* of this Plan.

Increased Traffic on Cachagua/Jeep Trail (Alternative 3) (WI-14)

Vehicle traffic along Cachagua Road would increase. Increased traffic could lead to increased mortality of species, such as CTS. CTS migration typically occurs at night in the rainy season, primarily October-April.

Nighttime construction-related vehicle traffic would be avoided from October-April along the portion of Cachagua Road located closest to potential suitable habitat for CTS (see Figure 4.5-2). If construction-related travel must occur at night during rainy or wet conditions, a qualified biological monitor will conduct surveys to ensure no migrating CTS are on the route. The monitor would escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions.

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project.

Nighttime Work and Associated Lighting (Alternative 3) (WI-15)

Sediment excavation in San Clemente Creek and work in the sediment stockpile area could occur at night[1], requiring lighting of the work area. Night work would occur in the area from SCD, upstream to the Diversion Dike and Bypass Channel areas. It is possible that nighttime lighting of the work area may illuminate adjacent habitat and nesting sites used by wildlife.

Nocturnal and crepuscular species may be less able to forage in lit areas. Special-status species that this could affect include the fully-protected ringtail cat and state species of special concern including the Monterey dusky-footed woodrat, the American badger, and the Monterey vagrant shrew. In addition, nocturnal birds protected under the Migratory Bird Treaty Act, such as owls, could also be temporarily impacted in habitats near the work area.

The area in which night work would occur is bordered by the Garland Regional Park to the west, and the San Clemente Open Space to the east. The Los Padres National Forest is located approximately two miles south of the project area and encompasses 1.75 million acres of protected open space. Species unable to forage in the immediate area of the dam site due to construction activities would be able to find suitable foraging habitat near the project area.

Night would be conducted outside of the nesting season between September 15 and February 1, if possible. However, if night work must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. If active nests are found, CDFG, and the USFWS will be contacted. Nests of California fully protected species, such as bald eagle, golden eagle, or white-tailed kite will be protected by a one-half mile no disturbance buffer and nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.

If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the nestlings are fledged and are no longer dependent on parental care for survival.

In addition, lighting will be directed downward and shielded to reduce light spillover onto adjacent wildlife habitats.

[1] Circumstances such as a longer than expected wet season delaying the start of construction might require nighttime work bring the project back on schedule.

5. Species-specific Measures

Only personnel authorized by the USFWS or NMFS shall handle federally listed species.

5.1. Plants

Under the Proponent's Proposed Project and Alternatives 1, 2, and 3, (not Alternative 4), populations of virgate eriastrum and/or Lewis's clarkia potentially may be affected. Both virgate eriastrum and Lewis's clarkia are on List 4 of the CNPS Inventory, and do not fall under specific state or federal regulatory authority. However, to the extent possible, populations of CNPS List 4 species will be avoided during construction activities.

Populations of one special-status species are found near the Tularcitos access route (Proponent's Proposed Project and Alternative 2). Some direct loss of the virgate eriastrum population could occur near the edge of the batch plant footprint. Populations of Lewis's clarkia were found along the existing access road from Cachagua Road and at the sediment disposal site (Alternatives 1 and 2). Alternative 3 may affect populations of Lewis's clarkia along the existing access road from Cachagua Road and at the sediment disposal site. Improvements made to this road for construction access could result in additional impacts to this species.

5.2. CALIFORNIA RED-LEGGED FROG

5.2.1. Survey and Relocation Program

Prior to initiating construction activities, surveys will be conducted for California red-legged frogs in Project-affected areas known to have, or with the potential to have, California red-legged frog. Other special-status aquatic amphibian and reptile species will be surveyed concurrently. Preconstruction and construction surveys will be consistent with the most recent USFWS survey guidance (USFWS 2005).

When California red-legged frogs are observed in the area, the USFWS will be notified, and California red-legged frogs will be captured and relocated by a USFWS-approved biologist to nearby suitable habitat. Suitable river habitats will be identified as potential release sites prior to start of project activities. The survey and relocation program will be modified, if necessary, to be consistent with a mitigation plan to be developed in cooperation with the USFWS and consistent with any terms and conditions required in the Biological Opinion (BO) to be developed as part of during the ESA Section 7 consultation. Any additional terms and conditions that may be part of the USFWS BO for California red-legged frog will be implemented to minimize "incidental take" to the fullest extent practicable.

If bullfrogs are observed, attempts will be made to capture and kill them. This will be done only by a biologist who has extensive experience in differentiating all life stages of bullfrogs from all life stages of native frogs and toads, and who is approved by the USFWS for this purpose.

USFWS-authorized biologists will be present during construction to assist in the implementation of on-site mitigation measures for California red-legged frog and to monitor compliance.

5.2.2. Measures for Specific Activities

<u>Cofferdam Construction and Plunge Pool Dewatering (Proponent's Proposed Project or Alternatives 1, 2, or 3) (WI-3)</u>

The construction of a cofferdam and subsequent draining of the plunge pool could affect any California red-legged frogs that may be present. Under the Proponent's Proposed Project and Alternatives 1, 2, and 3 (not Alternative 4) the following measures will be implemented.

Prior to the construction of the cofferdam and subsequent draining of the plunge pool, a preconstruction survey will be conducted at the plunge pool and downstream to the point at which the bypass pipeline will discharge water into the river. California red-legged frogs observed in the area will be captured and relocated, as described above. Construction fencing will be installed to prevent relocated frogs from returning to the area during the construction period.

A biological monitor will monitor the construction site for the duration of the cofferdam construction and the draining of the plunge pool. The biological monitor for amphibians and reptiles will coordinate with the fisheries biologist so that both are present during fish rescue operations to facilitate the safe removal and relocation of any remaining California red-legged frogs. To reduce the risk for predation on juvenile California red-legged frogs as the plunge pool water levels recede, garter snakes will be captured by a biologist who has a MOU from CDFG to handle special-status reptiles (two-striped garter snake) and released up to one-quarter mile downstream in the Carmel River.

If bullfrogs are observed, attempts will be made to capture and kill them.

<u>Notching Old Carmel River Dam (Proponent’s Proposed Project or Alternative 1, 2, 3 or 4) (WI-4)</u>

Under the Proponent’s Proposed Project or any of the alternatives, the Old Carmel River Dam will be notched. Prior to dam notching operations, the protocol survey and relocation program described above will be implemented for California red-legged frogs along the Carmel River up to one-half mile downstream of Old Carmel River Dam. Other special-status aquatic amphibian and reptile species will be surveyed concurrently. California red-legged frog populations are known to occur in this reach. If work on the dam is interrupted for more than two weeks, surveys and relocation activities will be repeated if the initial surveys indicated the presence of special-status species habitat or populations.

If other listed species are found, the USFWS will be consulted to institute a take avoidance program.

<u>Concrete Batch Plant Construction and Operation (Proponent’s Proposed Project) (WI-5)</u>

Under the Proponent’s Proposed Project, a concrete batch plant will be constructed and operated. A preconstruction survey and relocation program for California red-legged frog, as described above, will be implemented in the Carmel River immediately adjacent to the site for the concrete batch plant. The presence of other special-status species will be noted. Erosion control fencing or a similar barrier will minimize movement of frogs back into work areas. A biological monitor will accompany the crew during excavation and installation of the fence to prevent harm to frogs that may be active along the fence route.

<u>Reservoir Drawdown or Elimination without Sediment Removal (Proponent’s Proposed Project or Alternative 4) (WI-7) Not Alt 1, Alt 2, Alt 3</u>

Under the Proponent’s Proposed Project and Alternative 4 (No Project), the permanent lowering of the San Clemente Reservoir maximum pool will result in a permanent reservoir footprint matching the pool present during existing operations when the flashboard gates are down.

Under these two alternatives, during fish rescue operations, a USFWS-approved biologist will be present to relocate any California red-legged frogs, including subadults and tadpoles. Frogs captured will be removed and either released or relocated according to a predetermined relocation plan. All other native frogs and toads will be released. Any bullfrogs, including tadpoles, encountered during the fish rescue operations will be killed.

A California red-legged frog population monitoring and bullfrog eradication program will be developed and implemented as part of the mitigation plan, in consultation with the USFWS and CDFG as part of the Project permitting process. A program will be undertaken to assess and monitor the relative abundance of bullfrogs and California red-legged frogs in the reservoir and its upper reaches. The program will include a bullfrog eradication program that removes adults, subadults, and egg masses from the reservoir and its upper reaches. This program will be implemented to give the native frog species a “head start” within Project-affected reaches and upstream enhancement/mitigation sites. The bullfrog eradication program will be implemented during the construction and/or drawdown period between July and August. All methods and techniques will be lawful and in accordance with the California Fish and Game Code. Only USFWS-approved biologists will be delegated to identify and destroy egg masses and larval forms of bullfrogs. The program also will include an assessment of bullfrog diet in order to determine the future need for any bullfrog control in the project area and nearby. Concurrent control and monitoring of other non-native predators (e.g., crayfish [*Pacifasticus leniusculus*] and centrarchid fishes) may be included in the program in order to minimize adverse impacts of the Project on California red-legged frogs and other aquatic species. The monitoring and bullfrog eradication program will be implemented for two to three years during Project construction, beginning after USFWS approval of the program and following issuance of a USFWS BO.

Monitoring of California red-legged frog and bullfrog populations will be continued for two years following completion of the Project. If monitoring conducted during and after construction activities indicate that bullfrog populations in enhancement and mitigation sites are increasing and California red-legged frog populations are decreasing, the bullfrog eradication program may be continued for an additional two years. Annual reports will be submitted to the appropriate regulatory agencies, including but not limited to, USFWS, the Corps, and CDFG.

During several years of past drawdown operations, monitoring of, and adjustments to, enhancement sites has been implemented. As part of the mitigation program, additional California red-legged frog habitat mitigation sites will be restored and monitored. Potential sites will be identified within the Carmel River and potentially in off-stream sites suitable for breeding. Qualified personnel will conduct periodic inspections of California red-legged frog enhancement and mitigation sites to assure that habitat objectives for each site are sufficiently met, i.e., that physical conditions (e.g., basin sediment deposit and overhead vegetation) and bullfrog populations are conducive to California red-legged frog reproduction. Mitigation monitoring will be conducted during two to three years that Project activities are implemented and for an additional two years after, for a total period of at least five years. Implementation and reporting will be concurrent with population monitoring and bullfrog eradication program described above.

As part of the existing Settlement Agreement with USFWS, CAW may be a major party in the preparation of a Habitat Conservation Plan (HCP). This HCP may include population monitoring and bullfrog study and potential control programs. Any future frog population monitoring and bullfrog control programs developed as part of this HCP may supercede the aforementioned frog monitoring and bullfrog eradication program.

Reservoir Drawdown or Elimination and Sediment Removal (Alternatives 1, 2, or 3) (WI-10, WI-11)

Under Alternatives 1, 2 or 3 (not the Proponent’s Proposed Project or Alternative 4), reservoir drawdown activities will be implemented and sediment from San Clemente Reservoir will be removed. The following protection measures will be implemented.

A biologist permitted and approved by the USFWS to relocate California red-legged frogs will monitor and oversee all terrestrial wildlife-related activities associated with the drawdown and subsequent activities in the reservoir bed. As the drawdown commences and the reservoir water level declines, the USFWS-approved biologist and crew will rescue California red-legged frogs and tadpoles from the inlet streams and pools in the sediment bed, and relocate them to appropriate aquatic habitat at previously selected secure sites within one mile of San Clemente reservoir. The relocation program will use techniques and procedures specified in the USFWS BO for this project.

This program will commence after April 15, to allow all California red-legged frog eggs to hatch and the tadpoles to grow large enough to be easily identified and differentiated from bullfrog tadpoles. Bullfrogs and bullfrog tadpoles taken during this operation will be killed, and adult bullfrog stomach contents examined to determine if a need exists for bullfrog control at San Clemente Reservoir. Other native wildlife taken incidentally during these operations will be transported to secure habitat (that may be the same sites selected for relocation of California red-legged frogs and tadpoles). This operation will continue throughout the reservoir drawdown, vegetation clearing, and sediment excavation operations; hand vegetation clearing will commence immediately after the drawdown begins.

Prior to any sediment excavation and before California red-legged frogs have been cleared completely from the reservoir bed, vegetation on the sediment bed will be removed with chainsaws and other handheld cutting devices (except “weedwhackers”). Vegetation removed with hand tools will be limited to no lower than 12 inches above grade, to protect California red-legged frogs. Cleared vegetation will be removed from the reservoir bed immediately and taken to an off-site location. After hand clearing is completed, the monitoring biologist will resurvey the reservoir bed to determine if any California red-legged frogs or tadpoles remain within the reservoir sediment bed. After ten days pass in which no further California red-legged frogs or tadpoles, Coast Range newt larvae, or western pond turtle juveniles or hatchlings are found in aquatic habitat in the reservoir bed, machine operations, including mechanical vegetation removal and sediment excavation, will be allowed to commence in the reservoir bed. Grubbing and mechanical stump removal will be performed only after hand clearance is completed and after the monitoring biologist has confirmed that the reservoir sediment bed is free of California red-legged frogs and tadpoles.

After all vegetation is removed, the monitoring biologist will re-survey the reservoir sediment bed a final time to ascertain that California red-legged frog, Coast Range newt larvae, and western pond turtle juveniles and hatchlings are absent from the site. Sediment excavation to the desired level, including all removal, grading and reshaping of the sediment bed, will then commence. If sediment excavation is not accomplished within one season, these procedures will be repeated at the initiation of each construction season to relocate sensitive species that may have re-colonized the reservoir bed.

Bypass Channel Excavation (Alternative 3) (WI-13)

Under Alternative 3, a bypass channel will be constructed. A California red-legged frog adult and tadpole and western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction.

5.3. CALIFORNIA TIGER SALAMANDER

Pre-Existing access Road Improvements (Alternative 3) (WI-9)

Under Alternative 3, the majority of the access road improvements on pre-existing roads would be the same as for Alternative 1. However, in addition to the impacts described for Alternative 1, there would be potential impacts to special-status species due to bridge improvements at Bridge 529 at Cachagua Creek and at four other locations along Tassajarra Road/ Cachagua Road that would be improved to provide heavy equipment access. Jeep Trail improvements potentially could impact CTS especially in areas designated as potential CTS aestivation habitat (see Figure 4.5-2).

The following measures would be implemented to mitigate potential impacts to CTS:

- **A qualified biologist will conduct training for all construction and monitoring personnel concerning CTS, including identification of the species and habitat, and the implementation protection measures.**
- **Protocol-level surveys will be conducted to demonstrate a negative finding concerning the presence of CTS in the areas where access road improvements will be made.**
- **If surveys are not conducted, then CDFG would assume presence of CTS,**
- **50-foot no disturbance zones will be established around all potential small animal burrows that could serve as CTS refugia/aestivation habitat.**
- **If burrow avoidance is not possible, then aquistion of an Incidental Take Permit may be warranted before initiating ground disturbing activities.**
- **During rainy or wet conditions, all project-related vehicle travel will occur during daylight hours; if construction-related travel must occur at night, a qualified biological monitor will conduct surveys to ensure no migrating CTS are on the route. The monitor will escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions.**
- **A qualified environmental inspector will be on-site each construction season to ensure compliance with all environmental BMPs, permits, and other conditions.**

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Increased Traffic on Cachagua/Jeep Trail (Alternative 3) (WI-14)

During construction, vehicle traffic along Cachagua Road would increase. Increased traffic could lead to increased mortality of species, such as CTS. CTS migration typically occurs at night in the rainy season, primarily October-April.

Nighttime construction-related vehicle traffic would be avoided from October-April along the portion of Cachagua Road located closest to potential suitable habitat for CTS (see Figure 4.5-2). If construction-related travel must occur at night during rainy or wet conditions, a qualified biological monitor would conduct surveys to ensure no migrating CTS are on the route. The monitor would escort all project-related traffic travelling through potential CTS migration corridors after dark during wet or rainy conditions.

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

5.4. Aquatic Reptiles

Cofferdam Construction and Plunge Pool Dewatering (Proponent's Proposed Project, Alternatives 1, 2, or 3) (WI-3)

Under the Proponent's Proposed Project or Alternatives 1, 2, or 3, a cofferdam will be constructed the plunge pool drained. This has the potential to affect any western pond turtles and other special-status species that may be present. Prior to the construction of the cofferdam and subsequent draining of the plunge pool, a preconstruction survey will be conducted for western pond turtle, concurrently with amphibian surveys, at the plunge pool and downstream to the point at which the bypass pipeline will discharge water into the river. If western pond turtles are observed in the area, attempts will be made by a qualified biologist to capture them (trap/net) and relocated them, as directed by CDFG under the MOU for the mitigation plan. Western pond turtles will be relocated to a nearby downstream pond or a pool reach of a stream. Construction fencing will be installed to prevent relocated turtles from returning to the area during the construction period.

A biological monitor will be placed at the construction site for the duration of the cofferdam construction and the draining of the plunge pool. The biological monitor for amphibians and reptiles will coordinate with the fisheries biologist so that both are present during fish rescue operations to facilitate the safe removal and relocation of any remaining turtles.

Two-striped garter snakes and common garter snakes (*Thamnophis sirtalis*) may congregate around the plunge pool as it recedes. These snakes will will be captured by a biologist who has a

MOU from CDFG to handle special-status reptiles (two-striped garter snake) and released up to one-quarter mile downstream in the Carmel River.

Reservoir Drawdown or Elimination with Sediment Removal (Alternatives 1, 2, or 3) (WI-10)

Under Alternatives 1, 2 or 3 (not the Proponent's Proposed Project or Alternative 4), reservoir drawdown activities will be implemented. The drawdown has the potential to isolate western pond turtles and impact juveniles.

As the drawdown commences and the reservoir water level declines, qualified biologists will rescue western pond turtle juveniles and hatchlings from the inlet streams and pools in the sediment bed, and relocate them to appropriate aquatic habitat at previously selected secure sites within one mile of San Clemente reservoir. Other native wildlife taken incidentally during these operations will be transported to secure habitat (that may be the same sites selected for relocation of California red-legged frogs and tadpoles and western pond turtle juveniles and hatchlings). This operation will continue throughout the reservoir drawdown, vegetation clearing, and sediment excavation operations; hand vegetation clearing will commence immediately after the drawdown begins.

Bypass Channel Excavation (Alternative 3) (WI-13)

Under Alternative 3, a bypass channel will be constructed. A western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction.

5.5. California Horned Lizard

Concrete Batch Plant Construction and Operation (Proponent's Proposed Project) (WI-5)

Under the Proponent's Proposed Project (not other alternatives), construction of the batch plant and associated facilities may temporarily impact available habitat for California horned lizard. Although lizards were not observed during field surveys, suitable open habitat for these lizards may occur along the Carmel River, and MPWMD staff have reported seeing lizards on existing roads in the vicinity of the proposed batch plant.

A preconstruction survey will be conducted for California horned lizards and results will be reported to CDFG. If horned lizards are found, protection measures will be implemented, including relocating horned lizards to a safe area outside of the area and installing erosion control fencing or a similar barrier to minimize movement of horned lizards back into work areas. The barrier will be buried at least 3 to 6 inches in the ground. Mesh size will not exceed one-half inch and material will be heavy gauge polybutylene or equivalent. A qualified biological monitor will accompany the crew during excavation and installation of the fence to prevent harm to horned lizards that may be active along the fence route.

Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)

Under the Proponent's Proposed Project, Tularcitos access road improvements will be implemented. Damage to coast horned lizards could occur from grading operations. Protection measures for coast horned lizards or other special-status wildlife found in the area will include preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation, based on the results of preconstruction surveys. Erosion control fencing will be installed, which will keep California horned lizards out of the construction and traffic corridor.

5.6. BATS

In locations within the Project area where potential nesting or roosting habitat for special-status bat species (pallid bat, California mastiff bat, and/or Townsend's big-eared bat) occurs, a preconstruction survey will be conducted. Surveys will be conducted by a biologist with expertise in bat biology. Visual survey techniques and acoustic monitoring equipment will be used to determine whether bats are likely to use any of these structures. If evidence of bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites.

If special-status bat species are observed, CDFG will be notified and mitigation measures previously agreed upon with the agency may be implemented. Additional measures will be implemented at any roost site that cannot be avoided. Such measures may include establishment of buffer zones or installation of exclusion barriers under the supervision of a qualified bat biologist.

<u>Dam Strengthening (Proponent's Proposed Project) (WI-1)</u>

Under the Proponent's Proposed Project, dam strengthening activities have the potential to disrupt bat nesting habitat. Potential nesting or roosting habitat for bats occurs in rock crevices on the slope where the new right abutment wall will be constructed. A preconstruction survey will be conducted for bat roosts in rock crevices in the right embankment area. If bats are observed nesting or roosting in the area, CDFG will be notified and mitigation measures will be implemented, such as establishment of buffer zones or installation of exclusion barriers.

<u>Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)</u>

Under the Proponent's Proposed Project, Tularcitos access road improvement activities have the potential to affect pallid bats. Damage to potential pallid bat roosting habitat may result from the destruction of rock outcrops and other formations. Pre-construction surveys of rock outcrops and other formations along the Tularcitos route will implemented to see if pallid bat roosts are present. If evidence of pallid bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites. Additional measures will be implemented at any roost site that cannot be avoided, such as establishment of buffer zones or installation of exclusion barriers.

<u>Removal of Ancillary Facilities (Alternatives 1, 2, or 3) (WI-2) Not PP, Alt 4</u>

Under Alternatives 1, 2 or 3 (not Proponent's Proposed Project or Alternative 4), removing the valve house from atop San Clemente Dam and removing other anthropogenic structures from near the dam may displace special-status bat species from traditional roosts. Unidentified species of bats use the valve house and other nearby buildings as day roosts. Removing those structures could displace roosting bats and may increase mortality if the structures are removed when newborn or very young bats are present in the roosting colonies.

Surveys will be conducted to determine whether bats are likely to use any of these structures. If evidence of bat use is discovered, roost sites will be mapped by GPS and flagged. Construction will be routed to avoid roost sites. Additional measures will be implemented at any roost site that cannot be avoided, such as establishment of buffer zones or installation of exclusion barriers. If possible, structure removal will be scheduled after juvenile bats are weaned and capable of flight, as determined by a biologist with expertise in bat biology.

Cachagua Access Road Improvements (Alternatives 1, 2, or 3) (WI-9)

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, and 3, but not under the Proponent's Proposed Project or Alternative 4. Widening and improving existing access roads could potentially result in minor indirect impacts to pallid bat and other special-status wildlife species. So long as the low pipeline access road will not be used, rock crevices and cavities that may provide day and/or night roost sites for pallid bats will not be affected. Pre-construction surveys of rock outcrops and other formations along the access route will be conducted. If evidence of pallid bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites.

5.7. BIRDS

Under the Proponent's Proposed Project, or Alternatives 1, 2, or 3 (not Alternative 4), vegetation removal and other construction-related disturbance have the potential to affect nesting birds. Under the Proponent's Proposed Project, Tularcitos access road improvement activities also have the potential to affect nesting birds.

Potential impacts to special-status birds from vegetation removal and other construction activities include potential disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity.

Tree removal will be restricted to the minimum number of trees necessary to allow access by construction vehicles. To the extent possible with other construction constraints, vegetation removal will be accomplished between August 1 and March 1. If any vegetation removal must be conducted between March 1 and August 1, pre-construction surveys for breeding birds (either special-status or others protected by the Migratory Bird Treaty Act and the California Migratory Bird Act) will be conducted in these areas. If any active nests are found, they will be isolated by a species-specific buffer area (from 50 to 500 feet) and avoided until the eggs are hatched and the nestlings fledged.

Concrete Batch Plant Construction and Operation (Proponent's Proposed Project) (WI-5)

Under the Proponent's Proposed Project, a concrete batch plant will be operated and constructed. The proposed batch plant is more than 2,000 feet from a known, active, Cooper's hawk nest and yellow warbler nesting area. However, increased construction vehicle traffic from the batch plant to the dam site could cause increased noise and dust.

A preconstruction survey will be conducted to determine if the documented Cooper's hawk nest is active at the onset of construction. If the nest is active, this will be reported to CDFG and a noise abatement program will be implemented for passing vehicles. The program will include standard mitigation measures, such as prohibiting the use of air horns or jake (engine) brakes. Construction vehicles will be prohibited from parking near the CVFP and traffic will be directed as far away from the nest as practical. Gravel or crushed rock will be placed to buffer noise and minimize dust generation in vicinity of nest (see Botanical Resources Management Plan for dust abatement measures). Existing native vegetation will be maintained between the nest and the existing road corridor, including the large valley oak tree west of Settling Pond Number 1.

Vegetation Removal and Construction-Related Disturbance (Alternative 3) (WI-8):

Potential impacts to special-status birds (including those listed as fully protected, endangered, threatened, species of special concern, or those protected under the Migratory Bird Treaty Act) could occur during vegetation removal and other construction activities. Potential impacts include disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites.

Vegetation removal would be accomplished outside of the nesting season. If any vegetation removal must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. If active nests are found, CDFG, and the USFWS will be contacted. Nests will be protected by a one-half mile no disturbance buffer and the nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.

If California fully protected species are detected, CDFG will be consulted. The project would not proceed until mitigation and monitoring measures recommended to avoid the take of such species had been incorporated into the project. If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the eggs the nestlings are fledged and no longer dependent on parental care for survival.

Additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species.

Nighttime Work and Associated Lighting (Alternative 3) (WI-15)

Night work would occur in the area from SCD, upstream to the Diversion Dike and Bypass Channel areas, and could illuminate adjacent habitat and nesting sites used by wildlife. Nocturnal birds protected under the Migratory Bird Treaty Act, such as owls, could also be temporarily impacted in habitats near the work area.

Night would be conducted outside of the nesting season between September 15 and February 1, if possible. If night work must be conducted during the nesting season, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist. If active nests are found, CDFG, and the USFWS will be

contacted. Nests of California fully protected will be protected by a one-half mile no disturbance buffer and nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.

If nests of other protected bird species are found, no-disturbance buffers will be coordinated with CDFG and USFWS until the nestlings are fledged and are no longer dependent on parental care for survival.

5.8. Monterey Dusky-footed Wood Rat

Tularcitos Access Road Improvements (WI-6, WI-9)

Under the Proponent's Proposed Project, construction of the new Tularcitos access route has the potential to damage or destroy a known Monterey dusky-footed wood rat nest located near Tularcitos Creek.

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, and 3 (not under the Proponent's Proposed Project or Alternative 4). Widening and improving existing access roads could potentially result in minor indirect impacts to Monterey dusky-footed wood rat. Use of the Center Court Drive access road will reduce impacts affecting known Monterey dusky-footed wood rat nest located near Tularcitos Creek, but may indirectly impact a nest observed above the road in July 1998. Widening of the existing access roads may disturb trees that provide nesting structures for Monterey dusky-footed wood rats.

GPS data will be used to indicate the location of the existing Monterey dusky-footed wood rat nest(s) relative to the proposed route on project construction maps. A preconstruction survey will be conducted for Monterey dusky-footed wood rats and their nests in areas of any proposed route or proposed access road widening or improvement. If wood rat nests are found, they will be reported to CDFG and flagged for avoidance, and construction routes and activities will be planned to avoid the nests. Stakes, flags or plastic tape will be used to enforce avoidance. If any wood rat nests are found that cannot be avoided, trapping and relocation of the wood rat(s) upstream or to a suitable adjacent stream nearby will be implemented according to CDFG requirements.

Tree removal will be restricted to the minimum number of trees necessary to allow access by construction vehicles (also see Botanical Resources Management Plan).

5.9. Steelhead

Water Quality Protection Measures (Proponent's Proposed Project, Alternatives 1, 2, 3, or 4) (F-6)

Construction activities on stream crossings, bridges, and adjacent roads have the potential to result in sedimentation and turbidity in streams. Reservoir drawdown and river diversion activities have the potential to affect turbidity, temperature and dissolved oxygen levels in the Carmel River downstream of San Clemente Dam.

Activities in Streams and on Roads
Erosion control measures will be implemented to protect water quality in any Project-affected waterways during construction as described in the SWPPP (CAW 2007a) and Botanical Resources Plan (CAW 2007b). An erosion control and road drainage plan (Section 4.1 of EIR) will be implemented. Stream margins will be revegetated when construction work is completed (see Botanical Resources Management Plan (CAW 2007b).

Activities in the Reservoir
During reservoir drawdown, all inflow will be allowed to flow through the reservoir and turbidity control will be managed by moderating the rate of drawdown. The rate of drawdown will be limited to 0.05 foot per day, consistent with the NMFS BO for drawdown activities. During construction drawdown, all or most of the inflow to the reservoir from the Carmel River and San Clemente Creek will be piped around the reservoir. This will provide an option to regulate water releases from the reservoir into the river, if needed. If the last few acre-feet of water become highly turbid, the reservoir may be lowered by the use of well points. This will avoid releasing turbid, warm, surface water directly into the river.

Sediment dewatering will occur after the reservoir has been emptied. Water from well points in the reservoir will be treated to reduce turbidity and temperature, and increase dissolved oxygen levels prior to release downstream. The water will be aerated and cooled prior to release into the river.

Reservoir drawdown will be timed to occur when water temperature loading is not critical. Reservoir drawdown and pumping of water from the plunge pool at the base of San Clemente Dam will be occur early in the year, prior to the warmest summer period when high temperatures occur in the area. As the water level is lowered and surface water temperatures rise during the day, drawdown will switch from a surface release to release through well points. Surface releases will be restricted to night or early morning periods.

Diversion pipes around the reservoir will be sited in locations that favor shade, or pipes will be buried beneath a shallow layer of sand. Where the pipe is exposed to full sun and it is not possible to bury it, the pipe will be painted white to reflect light.

Water quality will be monitored in the reservoir during drawdown, as required in the NMFS BO for drawdown activities. The dissolved oxygen criteria will be consistent with the BO, at 5.0 mg/L. Water will be aerated either as it leaves the diversion pipes or with a mechanical aerator prior to release in the river. Low dissolved oxygen in reservoir water is quickly moderated when water falls over the dam.

Dewatering the Plunge Pool
Turbidity due to dewatering the plunge pool at the base of San Clemente Dam will be regulated by the rate at which the plunge pool is pumped down. If needed, the water will be treated prior to release into the river, similar to treatment of water from the reservoir.

Dewatering the plunge pool will occur after reservoir dewatering.

5.9.1. Fish Rescue and Relocation Program

Portions of the Carmel River and its tributaries will be dewatered for construction activities. A fish rescue and relocation program will be implemented for fish in affected reaches, including Steelhead.

A fish rescue will be implemented prior to the complete diversion of water from any stream channel. NMFS-approved biologists will conduct rescue and relocation efforts for steelhead. The stream channel to be dewatered will be isolated with nets. Any fish in the area will be captured, removed, and relocated to other suitable areas of the Carmel River. Fish will be rescued using block nets, seines, dip nets, and backpack electrofishing. Electrofishing will follow guidelines established by NMFS (2000).

5.9.2. Measures for Specific Activities

<u>Channel Dewatering (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-1, FI-2)</u>

The plunge pool and up to about 400 feet of Carmel River channel downstream the San Clemente Dam will be dewatered. Under the Proponent's Proposed Project, the Carmel River will not be dewatered to upgrade the piers and bridge deck at the OCRD.

A fish rescue and relocation program will be will be implemented prior to the complete diversion of water from these stream channels and the plunge pool, as described above.

<u>Access Route Improvements (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-1)</u>

Road improvements along the Carmel River between the Sleepy Hollow Ford and OCRD have the potential to result in sedimentation and increased turbidity along about a mile of the Carmel River from OCRD downstream to the Sleepy Hollow Ford during the construction season. Erosion control measures will be implemented to protect water quality in Project-affected waterways during construction as described in the SWPPP (CAW 2007a) and Botanical Resources Plan (CAW 2007b). An erosion control and road drainage plan (Section 4.1 of EIR) will be implemented. Stream margins will be revegetated when construction work is completed (see Botanical Resources Management Plan (CAW 2007b).

During construction of the road from OCRD to San Clemente Dam, tree removal will be minimized to the extent practical. Tree removal will be limited to only those limbs or trees that require cutting to provide clear access along the Carmel River between Sleepy Hollow Ford and the OCRD.

Road fill will be needed to raise the access road above frequent flood elevations. The fill will be placed on a fabric or rubber liner on the floodplain. Riprap or boulders that are too large for the river to move during floods will be used to face the road fill. The boulder covering, road-fill and fabric of the rubber liner will be removed after access to the base of the dam is no longer needed.

<u>Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir (FI-4) and Reservoir Drawdown (Proponent's Proposed Project, Alternative 1 2 or 3) (FI-5)</u>

The Carmel River and San Clemente Creek will be diverted around San Clemente Reservoir and the San Clemente Dam site. Water will be diverted through pipes along both creeks to a location approximately 500 feet downstream of San Clemente Dam. The intakes of both pipes will be screened according to CDFG and NMFS criteria to prevent the entrainment of fish, frogs, and other aquatic organisms.

Fish traps will be installed upstream of diversion points to capture downstream migrating fish prior to reservoir drawdown. Fish will be transported around the diversion reach and released into the Carmel River.

A fish rescue and relocation program will be implemented in the diverted channels between the diversion points in the Carmel River and San Clemente Creek and the reservoir. Some diversion of water will occur to reduce the flow in the channels to be rescued. Block nets will be installed to prevent fish from moving from the reservoir into the stream. Drawdown of the reservoir will begin after all fish are rescued from the channels.

A fish rescue will be implemented in the reservoir during drawdown. Rescued fish will be relocated to other suitable habitat downstream of San Clemente Dam in the Carmel River.

Under the Proponent's Proposed Project, the reservoir water level will be lowered to 510 feet above mean sea level (MSL). Sheet piles will be installed in the reservoir around an inoperable mid-level intake gate located 31 feet below the spillway. The area between the dam and sheet piles will be excavated and the intake gate will be repaired. The intake will be moved to a location in the proximity of the sluice gate. The water level will be lowered to the bottom of the reservoir after the intake gate is repaired. During reservoir drawdown, a temporary fish screen, meeting NMFS and CDFG criteria, will be installed around the repaired intake gate.

Under Alternative 1, the reservoir water level will be lowered to 504 feet, which will completely dewater the reservoir. If lower storage in the reservoir during the spring months affects Steelhead upstream passage, a trap and truck operation will be implemented. Fish rescues will be implemented for two consecutive years. Fish traps operated at the inflowing channels to the reservoir will mitigate downstream passage.

<u>Stream Sediment Removal, Storage, and Associated Restoration (Alternative 1) (FI-14)</u>

Under Alternative 1, approximately 4,752 feet of channel in the Carmel River and about 1,350 feet in San Clemente Creek will be eliminated during the two years it will take to remove sediment from the reservoir and notch the dam. The channels will be flooded during the winter between construction seasons of years 2 and 3.

During the construction season of year 3, geomorphically appropriate channels will be reconstructed and revegetated. The Carmel River and San Clemente Creek channels will be reconstructed through the excavated sediments. The channels will be rebuilt with gravel, cobble and boulder materials salvaged during sediment removal. Channels will be geomorphically appropriate to the new valley gradient and substrate sizes. The channels will be revegetated with native trees and shrubs. Approximately 6,500 feet of channel will be constructed in the Carmel River and about 1,350 feet in San Clemente Creek.

<u>Stream Sediment Removal, Storage and Associated Restoration (Alternative 2)</u>

Under Alternative 2, the dam and most of the sediment behind it will be removed. The reservoir will be excavated down to 480 to 500 feet in elevation in the construction season of year 3 and in year 4 to the original bed of the river, around elevation 460 feet. At the end of the construction season of year 3, the reservoir will fill with approximately 1,000 acre-feet (AF) of water before it will spill.

Fish rescues will be implemented during the three consecutive years of construction. To mitigation for operation of a 500 AF and 1,000 AF reservoir in construction years 3 and 4, respectively, upstream passage will be maintained through the fish ladder or via the trap and truck operation. Fish traps operated at the inflowing channels to the reservoir will mitigate downstream passage.

The Carmel River and San Clemente Creek will be completely rebuilt with gravel, cobble, and boulder materials salvaged during sediment removal. Channels will be restored based upon an understanding of their historic conditions. Restoration of the channels will be based upon the uncovered topography and a geomorphic understanding of appropriate channel dimensions, considering substrate size, gradient, and valley width. The restored channel length will be similar to the channel lengths that existed prior to the construction of San Clemente Dam. The restoration will restore about 5,000 feet of Carmel River channel and about 2,2000 feet of San Clemente Creek channel. Riparian zones along the restored channels will be revegetated with native trees and shrubs (CAW 2007b).

<u>Stream Sediment Removal, Storage and Associated Restoration (Alternative 3)</u>

Sediments will be dewatered to near the original elevation of the bed of the river to allow for complete sediment removal in the San Clemente Creek arm of the reservoir and the Carmel River immediately upstream of the dam. The trap and truck operation will be implemented to maintain upstream fish passage.

Rock material from the diversion channel cut through the ridge separating the Carmel River from San Clemente Creek will be used to construct a cutoff wall across the Carmel River arm upstream of the diversion channel. Sediment will be excavated from about 800 feet of the existing San Clemente Creek channel.

Approximately 2,200 feet of the San Clemente Creek will be reconstructed to carry Carmel River flows, including about 850 feet of channel currently under the reservoir in the San Clemente arm. A new channel for the Carmel River will be constructed through the diversion bypass channel between the Carmel River and San Clemente Creek, and down the San Clemente Creek arm. The new configuration will include about 300 feet of constructed channel through the bypass and about 2,200 feet of newly constructed channel in the existing San Clemente Creek arm.

Channel restoration activities will include excavation and placement of gravel, cobble, and boulder materials salvaged during sediment removal. The new Carmel River channel will be geomorphically designed based upon flow capacity requirements, gradient, and valley width of the Carmel River. Habitat in restored channels will be revegetated with native trees and shrubs (CAW 2007b).

Sluicing, Dredging or Sediment Transport (Alternative 2 or 3)

Alternative 1 or 2 will remove the dam and most of the sediment behind it. Sedimentation may occur after dam removal in the winter following construction year 4. Erosion control and revegetation actions will be implemented in the reservoir zone during construction year 4 as the dam is being demolished. The channels through the former reservoir site will be restored to a geomorphically correct form.

Reservoir Drawdown (Alternative 4)

Reservoir drawdown will continue as an interim method to provide dam safety until the reservoir is filled with sediment. Drawdown will occur after June 15 and the reservoir will be drawn down to about 515 feet in elevation.

During drawdown, water quality will be protected as described in *Section 5.8.1. Water Quality Protection Measures* for activities in the reservoir.

A fish rescue and relocation program will be implemented in the reservoir during drawdown. Fish trapping and rescues will be implemented upstream of the reservoir for downstream migrating fish. Rescued fish will be relocated to suitable habitat in the Carmel River.

Trap and Truck at Old Carmel River Dam (Proponent’s Proposed Project, Alternative 1, 2 or 3) (FI-3, FI-7)

A trap and truck facility will be operated to mitigate for the closure of San Clemente Dam to upstream fish passage during the construction phase of the Proponent’s Proposed Project, or Alternatives 1, 2, or 3. The trap and truck facility will be located at the OCRD and will be operated whenever upstream migration is impaired at San Clemente Dam.

The fish ladder will be closed for a period of days to weeks, toward the end of the migration season during the construction season. The trap and truck facility will be constructed one year prior to reservoir drawdown and be operated to provide upstream migration during the drawdown.

The design of the facility will employ the most recent developments in fish passage design and the safe handling of fish to reduce the potential for injury and disease, and to minimize stress. The facility will be located at the OCRD and be operated whenever Steelhead upstream migration will be impaired at San Clemente Dam. Fish will be attracted into a ladder leading to a holding facility by redirecting flows from the river upstream of the OCRD into the ladder. Steelhead entering the ladder will move upstream to a holding facility. Both the ladder and holding facility will be supplied by water from the river upstream. Fish entering the facility will be trapped and held up to 24 hours. Trapped fish will be transported by truck to an upstream release sit in the Carmel River or San Clemente Creek. It is estimated that the transfer trip could take up to one hour.

Operators will closely track stream, holding facility, transport, and release water temperatures Injuries to fish and possible causes will be documented. Problems with trap and truck facilities will be quickly identified and addressed. If mortality rates exceed upper levels mandated by NMFS and CDFG, operations will be suspended until problems are identified solutions are established. A decision process will be developed during the permitting process to determine if and when the facility should be closed and fish left in the river to spawn below the Project area.

Fish Ladder Repair and Sluicing Operations (Proponent's Proposed Project) (FI-8, FI-9)

Under the Proposed Project, the existing fish ladder will be demolished and replace by a new, vertical slot ladder. All flows less than about 55 cfs will be conveyed through the ladder and not over the spillway. During times that the dam spills, the ladder will carry about 77 cfs.

A sluice gate will be installed near the ladder entrance to maintain passage conditions upstream of the ladder and to keep the ladder free of sediment. Details of the size, location and orientation of the sluice gate are provided in MEI (2006a). Sluicing operations and maintenance are defined in the Sluicing Operations and Maintenance Plan (CAW 2007c).

Sluicing will occur as needed to maintain the upstream river channel for adult fish passage and will only occur when certain flow conditions are met. A gate will be installed on the upstream end of the ladder to prevent fish from moving out of the ladder before and during sluice gate operation. The fish ladder exit will be closed about 2 to 4 hours before sluicing begins. Sluicing will occur consistent with the operations and management plan, then the sluice gate will be closed and the ladder reopened. Adequate fish passage conditions are defined as a minimum of one foot of water depth in the channel upstream of San Clemente Dam. Sluicing operations will begin with short-duration sluices and impacts will be thoroughly evaluated to determine effects on downstream channels, habitat and fishes.

Excavation or Dredging of Sediment for Fish Passage (Proponent's Proposed Project) (FI-10)

When sluicing sediment is not possible because of potential downstream impacts, mechanical sediment removal will be performed to maintain fish passage upstream of the fish ladder. Sediment will be removed with an excavator or a suction dredge. Sediment will be physically excavated during low flow conditions from upstream of the ladder. This activity will not occur during periods of peak Steelhead migration.

During dredging or excavation, flow through the fish ladder will be minimized and the upstream end of the ladder will be closed to prevent fish that are leaving the ladder from entering the excavation area. Flow into the ladder will be reduced to minimize suspended sediment from entering ladder flow. Recently deposited fine grained substrates impeding fish passage will be removed from the area upstream of the ladder and hauled and stored in the aggregate storage site.

Fish Ladder Replacement (Alternative 1 or 3)

The existing ladder will be replaced by a new, shorter vertical slot ladder.

Ongoing, as-needed, inspection of the river channel upstream of the fish ladder will be implemented to determine if adequate channel depths exist. As data accumulate, the frequency of inspection may be adjusted to the interval necessary to assure that sediment accumulation does not become problematic for fish passage.

A Sluicing Operation and Maintenance Plan will be implemented to maintain the upstream river channel for fish passage. The fish ladder exit will be closed during sluicing and/or dredging activities to protect fish.

Downstream Fish Passage at San Clemente Dam (Proponent's Proposed Project) (F-13)

The spillway will be modified by raising the elevation of the two lateral spillway bays by 0.5 feet relative to the center. Spillways will be extended to directly spill into the plunge pool and not strike the thickened dam face.

During low flows, all surface flow will be carried through the fish ladder (up to 55 cfs.). At flows higher than 55 cfs, surface flow will begin to spill through the center spillway bay. For flows in the range of approximately 55 to 115 cfs, most of the flow (55 to 62 cfs) will pass through the ladder and the remaining flow will spill over the lower, center spillway (elevation 525.0). Above streamflows of approximately 115 cfs, spill will also occur at the two higher spillway segments (elevation 525.5 feet). The ladder will continue to operate during higher flows and will be designed to carry up to about 77 cfs when river flow volume is about 700 to 800 cfs or higher.

This configuration provides an increased depth of flow during lower flows, compared to the existing spillway and ladder configuration. The new spillway bays will be equivalent to, or better than, the existing spillway bays for fish passage. The fish ladder will pass all flows up to about 55 cfs, reducing the amount of time the reservoir spills and will provide safer passage down the ladder.

Downstream Fish Passage at San Clemente Dam (Alternative 1)

Under Alternative 1, the dam will be lowered by 21 feet and the height of the fall for fish will be reduced from about 65 feet to 44 feet. This will benefit downstream fish passage. A notch will be cut in the dam at an elevation at the dam thickening point. The low flow channel will be created within the notched dam spillway to provide increase depth of flow depth. A new, shorter ladder will pass all flows downstream at flows up to 60 cfs.

Downstream Fish Passage at San Clemente Dam (Alternative 3)

The dam will be lowered by 21 feet and the height of the fall will be reduced from about 65 feet to 44 feet. A low flow channel will be created within the notched dam spillway to provide increased depth. The new, shorter ladder will pass all flows downstream at flows up to 60 cfs.

Fish Screen Installation at San Clemente Dam Intake (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-ll)

A new fish screen meeting NMFS and CDFG criteria will be installed at the intake for the new CAW water diversion point, at the head of the San Clemente Reservoir, to eliminate entrainment into the diversion and minimize impingement.

Notching Old Carmel River Dam (Proponent's Proposed Project, Alternative 1, 2, 3 or 4) (FI-15)

The OCRD will be notched during the construction season of year 2 under the Proponent's Proposed Project, in year 3 under Alternative 1, or year 4 under Alternative 2. A large center section of the dam will be removed, leaving only the north and south abutments. The OCRD will no longer be a passage barrier.

Construction activities will occur for several weeks, up to a month, during the Steelhead rearing season in construction year 2. The plunge pool downstream of the OCRD will be dewatered and the river diverted around the site prior to construction activities. A portion of the channel upstream will be dewatered.

A fish rescue and relocation operation will be implemented in the plunge pool and dewatered stream channel, as described above. Rescued fish will be relocated to suitable habitat in the Carmel River.

When dam notching activities are complete, the channel upstream will be recontoured based on the expected geomorphic condition for the notched dam. Access roads will be removed and the new channel banks revegetated.

<u>Sleepy Hollow Steelhead Rearing Facility (Proponent's Proposed Project, Alternative 1, 2, 3 or 4) (FI-16)</u>

During construction periods, road construction, dewatering the plunge pool at the San Clemente Dam, diverting water around the reservoir, and reservoir drawdown have the potential to affect water quality at the Sleepy Hollow Steelhead Rearing Facility (SHSRF). Sediment delivered to the river below San Clemente Dam from sluicing or from sediment transported over the dam also may affect the SHSRF.

An alternative water supply will be made available to the SHSRF. Water may be pumped up from the Russell Wells and be made available to the SHSRF during construction years or during periods of excessive turbidity or sediment levels in the Carmel River.

<u>Relocate CAW Water Diversion Upstream (Alternatives 1, 2, or 3) (FI-11)</u>

Under the alternatives, the water supply diversion intake will be relocated from the current dam site to 6,000 feet upstream on Carmel River. An Operations Plan will be developed in conjunction with NMFS, CDFG, SWRCB, and the MPWMD that will provide flows for Steelhead habitat in this reach.

REFERENCES

California American Water Company (CAW). 2007a. Storm Water Pollution Prevention Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

CAW. 2007b. Botanical Resources Management Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

CAW. 2007c. Sluicing Operations and Maintenance Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

Yadon, V. A botanical report for six areas designated for possible alteration or disturbance in selecting a receiver site for sediment from behind the San Clemente Dam. Prepared for ENTRIX, Inc. Seattle, Washington.

Appendix X   Air Quality Calculations

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Emissions Summary

Estimated Daily Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Sleepy Hollow Route	0.43	0.00	0.10	0.01	0.01	16
Cachagua Route	0.53	0.00	0.13	0.01	0.01	20
Tularcitos Route	0.41	0.00	0.10	0.01	0.01	15
Typical	**0.46**	**0.00**	**0.11**	**0.01**	**0.01**	**17**

Estimated Annual Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Sleepy Hollow Route	0.02	0.00	0.01	0.00	0.00	0.8
Cachagua Route	0.03	0.00	0.01	0.00	0.00	1.0
Tularcitos Route	0.02	0.00	0.00	0.00	0.00	0.7
Typical	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.8**

Prime. Estimated Daily Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	13	0	1	0	0	386
Dam Site	430	0	523	25	62	322
Totals	**443**	**0**	**524**	**25**	**62**	**708**

Prime. Estimated Annual Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	19
Dam Site	54	0	66	3	8	23
Totals	**55**	**0**	**66**	**3**	**8**	**42**

Alternative 1. Estimated Daily Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	9	0	1	0	0	254
Dam Site	233	0	285	13	34	164
Totals	**241**	**0**	**286**	**13**	**34**	**419**

Alternative 1. Estimated Annual Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	0	0	0	0	0	13
Dam Site	35	0	43	2	5	25
Totals	**35**	**0**	**43**	**2**	**5**	**37**

Emissions Summary

Alternative 2. Estimated Daily Project Construction Emissions - Demo & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	26	0	2	0	1	763
Dam Site	699	1	856	40	101	494
Totals	**725**	**1**	**858**	**40**	**101**	**1257**

Alternative 2. Estimated Annual Project Construction Emissions - Demo & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	38
Dam Site	105	0	128	6	15	74
Totals	**106**	**0**	**128**	**6**	**15**	**112**

Alternative 3. Estimated Daily Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R						
Dam Site	465	0	570	27	67	329
Totals	**465**	**0**	**570**	**27**	**67**	**329**

Alternative 3. Estimated Annual Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R						
Dam Site	70	0	86	4	10	49
Totals	**70**	**0**	**86**	**4**	**10**	**49**

Project Option	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Significance Threshold	**137**	**150**	**550**	**82**	**137**	**82**
Proposed Project	443	0	524	25	62	708
Alternative 1	241	0	286	13	34	419
Alternative 2	725	1	858	40	101	1257
Alternative 3	465	0	570	27	67	329
Alternative 4	0	0	0	0	0	0

Appendix Xa Revised Air Quality Calculations

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Emissions Summary

Revised Emission Summary

Estimated Daily Access Road Construction Emissions						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Sleepy Hollow Route	0.43	0.00	0.10	0.01	0.01	16
Cachagua Route	0.53	0.00	0.13	0.01	0.01	20
Tularcitos Route	0.41	0.00	0.10	0.01	0.01	15
Typical	**0.46**	**0.00**	**0.11**	**0.01**	**0.01**	**17**

Estimated Annual Access Road Construction Emissions						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Sleepy Hollow Route	0.02	0.00	0.01	0.00	0.00	0.8
Cachagua Route	0.03	0.00	0.01	0.00	0.00	1.0
Tularcitos Route	0.02	0.00	0.00	0.00	0.00	0.7
Typical	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.8**

Estimated Daily Access Road Construction Emissions						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Tassajara / Cachagua Road Improvements	**69**	**0**	**34**	**3**	**5**	**6**
Jeep Trail + Staging Areas	**63**	**0**	**31**	**3**	**4**	**106**
Reservoir Access Road + Staging Areas	**63**	**0**	**31**	**3**	**4**	**43**
Total	**196**	**0**	**95**	**8**	**13**	**155**

Estimated Annual Access Road Construction Emissions						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Tassajara / Cachagua Road Improvements	**3**	**0**	**1**	**0**	**0**	**0**
Jeep Trail + Staging Areas	**3**	**0**	**1**	**0**	**0**	**7**
Reservoir Access Road + Staging Areas	**3**	**0**	**1**	**0**	**0**	**3**
Total	**8**	**0**	**4**	**0**	**1**	**10**

Emissions Summary

Prime. Estimated Daily Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	13	0	1	0	0	386
Dam Site	430	0	523	25	62	322
Totals	**443**	**0**	**524**	**25**	**62**	**708**

Prime. Estimated Annual Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	19
Dam Site	54	0	66	3	8	23
Totals	**55**	**0**	**66**	**3**	**8**	**42**

Alternative 1. Estimated Daily Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	9	0	1	0	0	254
Dam Site	233	0	285	13	34	164
Totals	**241**	**0**	**286**	**13**	**34**	**419**

Alternative 1. Estimated Annual Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	0	0	0	0	0	13
Dam Site	35	0	43	2	5	25
Totals	**35**	**0**	**43**	**2**	**5**	**37**

Alternative 2. Estimated Daily Project Construction Emissions - Demo & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	26	0	2	0	1	763
Dam Site	699	1	856	40	101	494
Totals	**725**	**1**	**858**	**40**	**101**	**1257**

Alternative 2. Estimated Annual Project Construction Emissions - Demo & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	38
Dam Site	105	0	128	6	15	74
Totals	**106**	**0**	**128**	**6**	**15**	**112**

Emissions Summary

Alternative 3. Estimated Daily Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R						
Sediment Site	26	0	2	0	1	763
Additional Sediment Excavation	60	0	30	2	4	294
Dam Site	465	0	570	27	67	329
Totals	**552**	**0**	**602**	**29**	**72**	**1386**

Alternative 3. Estimated Annual Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R						
Sediment Site	1	0	0	0	0	38
Additional Sediment Excavation	4	0	2	0	0	19
Dam Site	70	0	86	4	10	49
Totals	**75**	**0**	**87**	**4**	**10**	**106**

Alternative 3. Estimated Daily Project Construction Emissions - Screening Plant						
Location	NO_x	SO_x	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Screening Plant	9	0	4	0	1	8
Totals	9	0	4	0	1	8

Alternative 3. Estimated Annual Project Construction Emissions - Screening Plant						
Location	NO_x	SO_x	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Screening Plant	0	0	0	0	0	0
Totals	0	0	0	0	0	0

Alternative 3. Estimated Daily Project Construction Emissions - Additional Truck Trips						
Location	NO_x	SO_x	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Additional Truck Trips	1	0	0	0	0	21
Totals	1	0	0	0	0	21

Emissions Summary

Alternative 3. Estimated Annual Project Construction Emissions - Additional Truck Trips						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10E}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Additional Truck Trips	0	0	0	0	0	3
Totals	0	0	0	0	0	3

Project Option	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Significance Threshold	**137**	**150**	**550**	**82**	**137**	**82**
Proposed Project	443	0	524	25	62	708
Alternative 1	241	0	286	13	34	419
Alternative 2	725	1	858	40	101	1257
Alternative 3	757	1	702	38	86	1570
Alternative 4	0	0	0	0	0	0

Mitigated Emission Summary

Estimated Daily Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Tassajara / Cachagua Road Improvements	69	0	34	3	5	2
Jeep Trail + Staging Areas	63	0	31	3	4	27
Reservoir Access Road + Staging Areas	63	0	31	3	4	11
Total	196	0	95	8	13	39

Estimated Annual Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Tassajara / Cachagua Road Improvements	3	0	1	0	0	0
Jeep Trail + Staging Areas	3	0	1	0	0	2
Reservoir Access Road + Staging Areas	3	0	1	0	0	1
Total	8	0	4	0	1	3

Alternative 3. Estimated Daily Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R						
Sediment Site	26	0	2	0	1	326
Additional Sediment Excavation	60	0	30	2	4	126
Dam Site	465	0	570	27	67	141
Totals	**552**	**0**	**602**	**29**	**72**	**592**

Alternative 3. Estimated Annual Project Construction Emissions - Demo & stabilize						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R						
Sediment Site	1	0	0	0	0	16
Additional Sediment Excavation	4	0	2	0	0	8
Dam Site	70	0	86	4	10	21
Totals	**75**	**0**	**87**	**4**	**10**	**45**

Fugitive Dust Mitigation Measures (control efficiencies presented when available)

Water all active construction areas and access roads at least twice daily.
Frequency would be based on the type of operation, soil, and wind exposure. 55%

Prohibit all grading (e.g., sediment removal) activities during periods of high wind (over 15-mph).

Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).	84%
Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.	
Haul trucks would maintain at least 2 feet of freeboard.	
Cover all trucks hauling dirt, sand, or loose materials.	
Seed or plant vegetative ground cover in disturbed areas as soon as possible.	5%
Cover inactive storage piles with tarps	
Post a publicly visible sign giving the telephone number and person to contact regarding dust complaints. This person would respond to complaints and take corrective action within 48 hours. The phone number of the MBUAPCD would be visible to ensure compliance with Rule 402 (Nuisance).	
Impose and enforce a 15-mph speed limit for all vehicles on unpaved haul roads	44%

Note: Control efficiencies were obtained from URBEMIS

Alternative 3. Estimated Carbon Dioxide Emissions		
Activity	CO_2	CO_2
	lb/day	tons/construction period
Dam Site	85761	4621
Project-related Traffic*	20026	2393
Sediment Removal	9460	596
Screening Plant	1168	18
Access Road Improvements	29134	1176
Additional Truck Trips	185	22

Alternative 3 - Dam Site Construction (GHG only)

						lb/hr	lb/day	lb/activity
SITE PREP - ADDITIONAL FIELD INVESTIGATION								
Drill rig	2	1500	80	9	0.50	928.28	8354.5453	665976.608
Backhoe Wheel Loader, 1 CY	2	90	80	9	0.36	47.01	304.6554	24285.38963
Truck, 3/4t, 4x4	2	385	80	9	0.38	223.67	1529.9108	121955.7447
SITE PREP - TEMPORARY DIVERSIONS								
Crawler Excavator, 2.75 CY	3	380	139	9	0.38	197.71	2028.5059	281672.5327
Articulated Wheel Loader, 4 CY	3	200	139	9	0.36	120.54	1171.6069	162685.9911
Standard Crawler Dozer	2	240	139	9	0.40	176.29	1269.2573	176245.449
Truck, 3/4 ton, 4x4	3	385	139	9	0.38	223.67	2294.8662	318658.5587
Drill	1	1500	139	9	0.50	928.28	4177.2726	580044.1425
DIVERSION DIKE								
Articulated Wheel Loader, 4 CY	1	200	103	9	0.36	120.54	390.5356	40169.3805
Vibratory Roller, 12t	1	160	103	9	0.38	94.74	324.0091	33326.6527
Standard Crawler Dozer	2	240	103	9	0.40	176.29	1269.2573	130552.1844
Truck, 3/4 ton, 4x4	1	385	103	9	0.38	223.67	764.9554	78681.1256
Truck, Off Highway, 22-30 CY	4	475	103	9	0.38	261.76	3580.8089	368311.7694
Crawler Excavator, 2.75 CY	1	380	103	9	0.38	197.71	676.1686	69548.7735
DSM Drill Rig	2	1500	103	9	0.50	928.28	8354.5453	859324.6555
DSM Drill Rig Support	2	500	103	9	0.42	254.24	1922.0427	197695.8192
REROUTE CHANNEL								
Articulated Wheel Loader, 4 CY	3	200	110	9	0.36	120.54	1171.6069	128542.0177
Standard Crawler Dozer	2	240	110	9	0.40	176.29	1269.2573	139255.6634
Rotary Blasthole	1	1500	110	9	0.42	254.24	961.0213	105437.7702
Crawler Excavator, 2.75 CY	2	380	110	9	0.38	197.71	1352.3373	148370.7168
Truck, 3/4 ton, 4x4	2	385	110	9	0.38	223.67	1529.9108	167853.0679
Truck, Highway, 25,000 GVW	2	475	110	9	0.38	261.76	1790.4044	196432.9437
Screen and Crush Grizzly, 200 CY	2	280	110	9	0.40	150.61	1084.3731	118971.2238
Truck, Off Highway, 22-30 CY	4	475	110	9	0.38	261.76	3580.8089	392865.8873
DEWATERING								
Truck, 3/4 ton, 4x4	1	385	139	9	0.38	223.67	764.9554	106219.5196
Drill Rig	2	1500	139	9	0.50	928.28	8354.5453	1160088.2850
Backhoe Wheel Loader, 1 CY	2	90	139	9	0.36	47.01	304.6554	42303.5819
Truck, 3/4 ton, 4x4	2	385	139	9	0.38	199.21	1362.6045	189207.3644
STABILIZED SEDIMENT								
Articulated Wheel Loader, 4 CY	2	200	69	9	0.36	120.54	781.0713	53559.1740
Vibratory Roller, 12t	1	160	69	9	0.38	94.74	324.0091	22217.7685
Standard Crawler Dozer	2	240	69	9	0.40	176.29	1269.2573	87034.7896
Truck, 3/4 ton, 4x4	1	385	69	9	0.38	223.67	764.9554	52454.0837
Truck, Off Highway, 22-30 CY	6	475	69	9	0.38	261.76	5371.2133	368311.7694
CHANNEL IMPROVEMENT								
Articulated Wheel Loader, 4 CY	2	200	122	9	0.36	120.54	781.0713	95067.5339
Crawler Excavator, 2.75 CY	2	380	122	9	0.38	197.71	1352.3373	164598.7639
Truck, 3/4 ton, 4x4	2	385	122	9	0.38	223.67	1529.9108	186211.9972
Truck, Off Highway, 22-30 CY	2	475	122	9	0.38	261.76	1790.4044	217917.7969
HABITAT RESTORATION								
Articulated Wheel Loader, 4 CY	1	200	121	9	0.36	120.54	390.5356	47199.0221
Truck, Off Highway, 22-30 CY	1	475	121	9	0.38	261.76	895.2022	108191.5823
Backhoe Wheel Loader, 1 CY	2	90	121	9	0.36	47.01	304.6554	36819.7843
Truck, 3/4 ton, 4x4	1	385	121	9	0.38	223.67	764.9554	92450.3226
Hydroseed truck/pump	1	385	121	9	0.42	205.69	777.5116	93967.8316
DAM DEMOLITION								
Crawler Excavator, 2.75 CY	2	380	91	9	0.38	197.71	1352.3373	122869.4998
Truck, 3/4 ton, 4x4	2	385	91	9	0.38	223.67	1529.9108	139003.3219
Articulated Wheel Loader, 4 CY	2	200	91	9	0.36	120.54	781.0713	70965.9056
Crane Hydraulic Truck Mount, 165 ton	2	2000	91	9	0.29	393.27	2052.8452	186515.6485
Hydraulic Hammer, 20,000 ft-lb	2	N/A	91	9	0.42	-	-	-
Concrete Saw, 24" depth	2	35	91	9	0.42	97.9	740.1240	67245.5520
Truck, Off Highway, 22-30 CY	0.3	475	91	9	0.38	261.76	268.5607	24400.6547
							TOTAL (lbs)	**9241686**
							TOTAL (tons/yr)	**4621**

Notes:

1. SOx and CO2 emission factors were obtained from OFFROAD 2007 because there is no change in the degradation factor, and therefore there would be no updated for the OFFROAD2011 model
2. Days for OCR Dam demolition was adjusted for 4 week s of dam removal, since the 2 weeks of dam naotching has already been accounted for.

Alternative 3 - Haul Truck Trips for Transport of Materials and Worker Vehicles (GHG only)

Transportation Information			**Comment**
2012			
- No. of annual truck round trips =	21,988		
- No. of annual worker vehicle round trips =	115,437		
- No. of operational days =	239	days	
- One-way truck distance =	23	miles	Assumed travel from Salinas, CA
- One-way worker vehicles distance =	17	miles	Assumed travel from home to work based on URBEMIS default value
- Total annual truck miles =	505,724	miles	
- Total daily truck miles =	2,116	miles	
- Total annual truck miles =	1,939,342	miles	
- Total annual truck miles =	8,114	miles	

EMFAC2011 Emission Factors: Haul Trucks

	Emissions in grams per mile
Vehicle Description	CO_2
Worker Vehicles	408.63
Heavy-Heavy Duty Diesel Truck	2725.93

Annual Emissions: Haul Trucks

		Tons/Year
Vehicle Description	VMT	CO_2
Worker Vehicles	1,939,342	873.55
Heavy-Heavy Duty Diesel Truck	505,724	1,519.61

Daily Emissions: Haul Trucks

		Lbs/day
Vehicle Description	VMT	CO_2
Worker Vehicles	8,114	7,310.06
Heavy-Heavy Duty Diesel Truck	2,116	12,716.43

Note:

- Emission factors for on-road vehicles are based on results from Emfac Emissions Model 2011 for light duty automobiles and lighht duty trucks, and T7 heavy duty trucks in Monterey County.

Alternative 3 - Construction Emmissions

Alternative 3 - Additional Construction Activities

						lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
SEDIMENT REMOVAL (2014)											
Articulated Wheel Loader, 4 CY	1	200	126	9	0.36	0.06	0.47	0.86	0.00	0.04	120.54
Standard Crawler Dozer	1	185	126	9	0.4	0.10	0.61	1.31	0.00	0.07	136.68
Crawler Excavator, 2.75 CY	2	380	126	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Truck, 3/4 ton, 4x4	2	385	126	9	0.38	0.10	0.63	1.44	0.00	0.06	223.67
Vibratory Roller, 17t	1	160	126	9	0.38	0.04	0.44	0.60	0.00	0.03	94.74
Truck, Off Highway, 22-30 CY	6	475	126	9	0.38	0.11	0.81	1.63	0.00	0.06	261.76
TASSAJARA / CACHAGUA ROAD IMPROVEMENTS (2012)											
Excavator w/ forestry attachment	1	380	98	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Mulcher	1	220	92	9	0.42	0.08	0.54	1.08	0.00	0.05	126.97
Truck, Off Highway, 22-30 CY	4	475	77	9	0.38	0.11	0.81	1.63	0.00	0.06	261.76
Standard Crawler Dozer w/ Ripper	2	240	77	9	0.40	0.11	0.62	1.49	0.00	0.07	176.29
Articulated Wheel Loader, 4 CY	1	200	112	9	0.36	0.06	0.47	0.86	0.00	0.04	120.54
Truck, 3/4 ton, 4x4	2	385	112	9	0.38	0.10	0.63	1.44	0.00	0.06	223.67
Grader Motor Articulated w/ Shank Ripper	1	215	48	9	0.41	0.07	0.53	1.12	0.00	0.05	149.62
Vibratory Roller, 17t	1	160	12	9	0.38	0.04	0.44	0.60	0.00	0.03	94.74
Asphalt Paver (AP600D)	1	174	21	9	0.36	0.07	0.55	0.92	0.00	0.05	127.21
Cold Planer	1	575	21	9	0.42	0.10	0.77	1.77	0.00	0.07	254.24
JEEP TRAIL + STAGING AREA ROAD IMPROVMENTS (2012)											
Excavator w/ tree felling attachment	1	380	98	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Excavator w/ forestry attachment	1	380	98	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Mulcher	1	220	92	9	0.42	0.08	0.54	1.08	0.00	0.05	126.97
Truck, Off Highway, 22-30 CY	4	475	77	9	0.38	0.11	0.81	1.63	0.00	0.06	261.76
Standard Crawler Dozer w/ Ripper	2	240	77	9	0.40	0.11	0.62	1.49	0.00	0.07	176.29
Articulated Wheel Loader, 4 CY	1	200	112	9	0.36	0.06	0.47	0.86	0.00	0.04	120.54
Truck, 3/4 ton, 4x4	2	385	112	9	0.38	0.10	0.63	1.44	0.00	0.06	223.67
Grader Motor Articulated w/ Shank Ripper	1	215	48	9	0.41	0.07	0.53	1.12	0.00	0.05	149.62
Vibratory Roller, 17t	1	160	12	9	0.38	0.04	0.44	0.60	0.00	0.03	94.74
RESERVOIR ACCESS ROAD + STAGING AREAS ROAD IMPROVMENTS (2012)											
Excavator w/ tree felling attachment	1	380	98	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Excavator w/ forestry attachment	1	380	98	9	0.38	0.06	0.59	1.05	0.00	0.03	197.71
Mulcher	1	220	92	9	0.42	0.08	0.54	1.08	0.00	0.05	126.97
Truck, Off Highway, 22-30 CY	4	475	77	9	0.38	0.11	0.81	1.63	0.00	0.06	261.76
Standard Crawler Dozer w/ Ripper	2	240	77	9	0.40	0.11	0.62	1.49	0.00	0.07	176.29
Articulated Wheel Loader, 4 CY	1	200	112	9	0.36	0.06	0.47	0.86	0.00	0.04	120.54
Truck, 3/4 ton, 4x4	2	385	112	9	0.38	0.10	0.63	1.44	0.00	0.06	223.67
Grader Motor Articulated w/ Shank Ripper	1	215	48	9	0.41	0.07	0.53	1.12	0.00	0.05	149.62
Vibratory Roller, 17t	1	160	12	9	0.38	0.04	0.44	0.60	0.00	0.03	94.74

Notes:

1. SOx and CO2 emission factors were obtained from OFFROAD 2007 because there is no change in the degradation factor, and therefore there would be no updated for the OFFROAD2011 model
2. Days for OCR Dam demolition was adjusted for 4 week s of dam removal, since the 2 weeks of dam naotching has already been accounted for.

Alternative 3 - Construction Emmissions

Alternative 3 - Additiona

	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/activity	lb/activity	lb/activity	lb/activity	lb/activity	lb/activity
SEDIMENT REMOVAL (2014)												
Articulated Wheel Loader, 4 CY	0.197997	1.529749	2.795266	0.004394	0.133223	390.5356439	24.947648	192.748423	352.203478	0.553669	16.786075	49207.49113
Standard Crawler Dozer	0.373316	2.205166	4.723473	0.005536	0.262758	492.0412504	47.03783	277.85095	595.157561	0.697575	33.107481	61997.19755
Crawler Excavator, 2.75 CY	0.379703	4.018432	7.209212	0.014022	0.231115	1352.337262	47.842573	506.322392	908.360695	1.766768	29.120436	170394.4951
Truck, 3/4 ton, 4x4	0.67381	4.335188	9.826023	0.015769	0.398139	1529.910775	84.900097	546.233675	1238.07896	1.986928	50.165473	192768.7577
Vibratory Roller, 17t	0.145264	1.499676	2.067277	0.003672	0.111288	324.0091236	18.303317	188.959145	260.476948	0.462672	14.022335	40825.14957
Truck, Off Highway, 22-30 CY	2.278471	16.55433	33.48263	0.053211	1.318082	5371.213304	287.08732	2085.84612	4218.8113	6.7046	166.0783	676772.8762
TASSAJARA / CACHAGUA ROAD IMPROVEMEN												
Excavator w/ forestry attachment	0.189851	2.009216	3.604606	0.007011	0.115557	676.1686312	18.551202	196.329091	352.221494	0.685073	11.291598	66071.33482
Mulcher	0.285297	2.038356	4.073028	0.005209	0.200176	479.9455788	26.165803	186.946386	373.554864	0.477747	18.358958	44017.86594
Truck, Off Highway, 22-30 CY	1.518981	11.03622	22.32175	0.035474	0.878721	3580.808869	117.1785	851.365764	1721.96379	2.736571	67.787059	276233.827
Standard Crawler Dozer w/ Ripper	0.785861	4.467959	10.71979	0.014281	0.526673	1269.257349	60.623536	344.671084	826.955582	1.101702	40.629088	97914.13833
Articulated Wheel Loader, 4 CY	0.197997	1.529749	2.795266	0.004394	0.133223	390.5356439	22.232258	171.769003	313.868406	0.493406	14.959019	43851.57373
Truck, 3/4 ton, 4x4	0.67381	4.335188	9.826023	0.015769	0.398139	1529.910775	75.65927	486.779669	1103.32206	1.770664	44.705286	171787.1242
Grader Motor Articulated w/ Shank Ripper	0.276135	1.971443	4.135685	0.006212	0.181042	552.1116914	13.254503	94.6292816	198.512897	0.298186	8.6900326	26501.36119
Vibratory Roller, 17t	0.145264	1.499676	2.067277	0.003672	0.111288	324.0091236	1.743173	17.9961091	24.8073284	0.044064	1.3354604	3888.109483
Asphalt Paver (AP600D)	0.219438	1.793939	2.996207	0.00464	0.15397	412.164023	4.5141603	36.9038779	61.6362565	0.095441	3.1673904	8478.80276
Cold Planer	0.393658	2.909209	6.699764	0.009433	0.2543	961.0213431	8.0981095	59.8465833	137.823715	0.194045	5.2313196	19769.58192
JEEP TRAIL + STAGING AREA ROAD IMPROVM												
Excavator w/ tree felling attachment	0.189851	2.009216	3.604606	0.007011	0.115557	676.1686312	18.551202	196.329091	352.221494	0.685073	11.291598	66071.33482
Excavator w/ forestry attachment	0.189851	2.009216	3.604606	0.007011	0.115557	676.1686312	18.551202	196.329091	352.221494	0.685073	11.291598	66071.33482
Mulcher	0.285297	2.038356	4.073028	0.005209	0.200176	479.9455788	26.165803	186.946386	373.554864	0.477747	18.358958	44017.86594
Truck, Off Highway, 22-30 CY	1.518981	11.03622	22.32175	0.035474	0.878721	3580.808869	117.1785	851.365764	1721.96379	2.736571	67.787059	276233.827
Standard Crawler Dozer w/ Ripper	0.785861	4.467959	10.71979	0.014281	0.526673	1269.257349	60.623536	344.671084	826.955582	1.101702	40.629088	97914.13833
Articulated Wheel Loader, 4 CY	0.197997	1.529749	2.795266	0.004394	0.133223	390.5356439	22.232258	171.769003	313.868406	0.493406	14.959019	43851.57373
Truck, 3/4 ton, 4x4	0.67381	4.335188	9.826023	0.015769	0.398139	1529.910775	75.65927	486.779669	1103.32206	1.770664	44.705286	171787.1242
Grader Motor Articulated w/ Shank Ripper	0.276135	1.971443	4.135685	0.006212	0.181042	552.1116914	13.254503	94.6292816	198.512897	0.298186	8.6900326	26501.36119
Vibratory Roller, 17t	0.145264	1.499676	2.067277	0.003672	0.111288	324.0091236	1.743173	17.9961091	24.8073284	0.044064	1.3354604	3888.109483
RESERVOIR ACCESS ROAD + STAGING AREAS												
Excavator w/ tree felling attachment	0.189851	2.009216	3.604606	0.007011	0.115557	676.1686312	18.551202	196.329091	352.221494	0.685073	11.291598	66071.33482
Excavator w/ forestry attachment	0.189851	2.009216	3.604606	0.007011	0.115557	676.1686312	18.551202	196.329091	352.221494	0.685073	11.291598	66071.33482
Mulcher	0.285297	2.038356	4.073028	0.005209	0.200176	479.9455788	26.165803	186.946386	373.554864	0.477747	18.358958	44017.86594
Truck, Off Highway, 22-30 CY	1.518981	11.03622	22.32175	0.035474	0.878721	3580.808869	117.1785	851.365764	1721.96379	2.736571	67.787059	276233.827
Standard Crawler Dozer w/ Ripper	0.785861	4.467959	10.71979	0.014281	0.526673	1269.257349	60.623536	344.671084	826.955582	1.101702	40.629088	97914.13833
Articulated Wheel Loader, 4 CY	0.197997	1.529749	2.795266	0.004394	0.133223	390.5356439	22.232258	171.769003	313.868406	0.493406	14.959019	43851.57373
Truck, 3/4 ton, 4x4	0.67381	4.335188	9.826023	0.015769	0.398139	1529.910775	75.65927	486.779669	1103.32206	1.770664	44.705286	171787.1242
Grader Motor Articulated w/ Shank Ripper	0.276135	1.971443	4.135685	0.006212	0.181042	552.1116914	13.254503	94.6292816	198.512897	0.298186	8.6900326	26501.36119
Vibratory Roller, 17t	0.145264	1.499676	2.067277	0.003672	0.111288	324.0091236	1.743173	17.9961091	24.8073284	0.044064	1.3354604	3888.109483
						TOTAL (lbs)	**1,566**	**11,339**	**23,223**	**37**	**964**	**3,543,153**
						TOTAL (tons/yr)	**1**	**6**	**12**	**0**	**0**	**1772**

Alternative 3 - Access Road and Earthmoving Activities

Tassajara / Cachagua Road Earthmoving (acres)	0.71
Jeep Trail + Staging Areas Earthmoving (acres)	12.56
Reservoir Access Road + Staging Areas Earthmoving (acres)	5.04
URBEMIS EF (tonPM/acre-month)	0.11
Tons PM-10 Emitted per month	2.01
Months	5
Emissions PM10 (Tons/Year)	10
Emissions PM2.5 (Tons/Year)	2
Emissions PM10 (lbs/day)	155
Emissions PM2.5 (lbs/day)	32

Notes:

1. PM2.5 emissions are 20.8% of PM10 emissions.

Source: South Coast AQMD Ceidars Appendix A: Updated CEIDARS Table
with PM2.5 Fractions for construction and demolition

Assume 26 working days per month

Alternative 3 - Screening Plant Emmissions

Screening Material (CY)	20,000
Screening Material (tons)	29,189
AP-42 EF (lbs PM10/ton)	0.0087
Number of days	30
Number of hours/day	9
PM-10 Emitted (tons/year) (2014)	0.13
PM-2.5 Emitted (tons/year) (2014)	0.04
PM-10 Emitted (lbs/day) (2014)	8.46
PM-2.5 Emitted (lbs/day)(2014)	2.54

Notes:

1. Emission factors are from USEPA AP-42 Capter 11.19-2, Table 11.19-2.2 for screening operations
2. Assume density of the material 1.459 tons/cy

Source: Malmon et al., 2005. Influence of sediment storage on downstream delivery of contaminated sediment. WATER RESOURCES RESEARCH, VOL. 41, W05008, 17 PP., 2005

3. PM2.5 emissions are 30% of PM10 emissions.

Source: South Coast AQMD Ceidars Appendix A: Updated CEIDARS Table with PM2.5 Fractions for screening

Equipment	Horsepower	ROG Emission Factor	CO Emission Factor	NOX Emission Factor	SOX Emission Factor	PM Emission Factor	CO2 Emission Factor	ROG	CO	NOX	SOX	PM	CO2	ROG	CO	NOX	SOX	PM	CO2
		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Diesel Engine Size	200	0.069	0.457	0.984	0.001	0.048	129.723	0.62	4.11	8.85	0.01	0.44	1167.51	0.009	0.062	0.133	0.000	0.007	17.513

Notes:

Assume other material handling equipment from OFFROAD 2011

Alternative 3 - Additional Sediment Volume

Unmitigated Emissions	
Sediment Movement (CY)	313,800
URBEMIS EF (tonPM/1000CY)	0.059
Tons PM-10 Emitted	19
Years	1
Emissions PM10 (Tons/Year)	19
Emissions PM2.5 (Tons/Year)	4
Emissions PM10 (lbs/day)	294
Emissions PM2.5 (lbs/day)	61

Notes:

1. PM2.5 emissions are 20.8% of PM10 emissions.

Source: South Coast AQMD Ceidars Appendix A: Updated CEIDARS Table with PM2.5 Fractions for construction and demolition

Alternative 3 - Additional Truck Trips for Transport of Materials

Transportation Information			**Comment**
2012			Assumed travel from Salinas, CA
- No. of annual truck trips =	160		2 round way trips
- No. of operational days =	239	days	
- One-way distance =	23	miles	
Total annual miles =	7,360	miles	
Total daily miles =	31	miles	

EMFAC2011 Emission Factors: Haul Trucks

	Emissions in grams per mile						
Vehicle Description	CO	CO_2	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
Heavy-Heavy Duty Diesel Truck	5.253	2,725.93	16.573	0.552	0.507	0	2.009

Annual Emissions: Haul Trucks

		Tons/Year						
Vehicle Description	VMT	CO	CO_2	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
Heavy-Heavy Duty Diesel Truck	7,360	0.04	22.12	0.13	0.00	0.00	-	0.02

Daily Emissions: Haul Trucks

		Lbs/day						
Vehicle Description	VMT	CO	CO_2	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
Heavy-Heavy Duty Diesel Truck	31	0.36	185.07	1.13	0.04	0.03	-	0.14

Note:

- Emission factors for on-road vehicles are based on results from Emfac Emissions Model 2011 for T7 heavy duty trucks in Monterey County.

Alternative 3 - Fugitive Dust Emissions from Additional Truck Trips

Entrained Dust Calculation - Dry Unpaved Road

$$E = k\left(\frac{s}{12}\right)^{0.9}\left(\frac{W}{3}\right)^{0.45}[1 - C]$$

Entrained dust estimates calculated using guidance from AP 42, Fifth Edition, Volume I Chapter 13.2.2: Unpaved Roads

Where:

E = particulate emission factor

k = particle size multiplier for particle size range and units of interest

sL = freeway road surface silt loading

W = average weight (tons) of the vehicles traveling the road

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

VMT = vehicle mile traveled on paved roads

Paved Roads

Equation Values		Comment
k =	1.5 lb/VMT	AP 42, Table 13.2.2-2: default k value for PM_{10}
k =	0.15 lb/VMT	AP 42, Table 13.2.2-2: default k value for $PM_{2.5}$
sL=	8.5 %	Silt loading values based on silt loadings measured by MRI in the South Coast Air Quality Management District and the San Joaquin Valley Unified Air Quality Management District.
W =	23.25 ton	Average fleet weight is based on the assumption from the average weight of HHDT (EMFAC2007): 46500 lbs
C =	0.75	
VMT=	7,360 miles/year	
VMT =	31 miles/day	

Annual Fugitive Dust PM_{10}

Roadway Surface	VMT	E	Base Emissions
	mile/yr	lb/VMT	ton/yr
Freeway	7360	0.69	2.54

Annual Fugitive Dust $PM_{2.5}$

Roadway Surface	VMT	E	Base Emissions
	mile/yr	lb/VMT	ton/yr
Freeway	7360	6.91E-02	0.25

Daily Fugitive Dust PM_{10}

Roadway Surface	VMT	E	Base Emissions
	mile/day	lb/VMT	lbs/day
Freeway	31	0.69	21.28

Daily Fugitive Dust $PM_{2.5}$

Roadway Surface	VMT	E	Base Emissions
	mile/day	lb/VMT	lbs/day
Freeway	31	6.91E-02	2.13

Appendix AA 2011 Wetland Delineation Report

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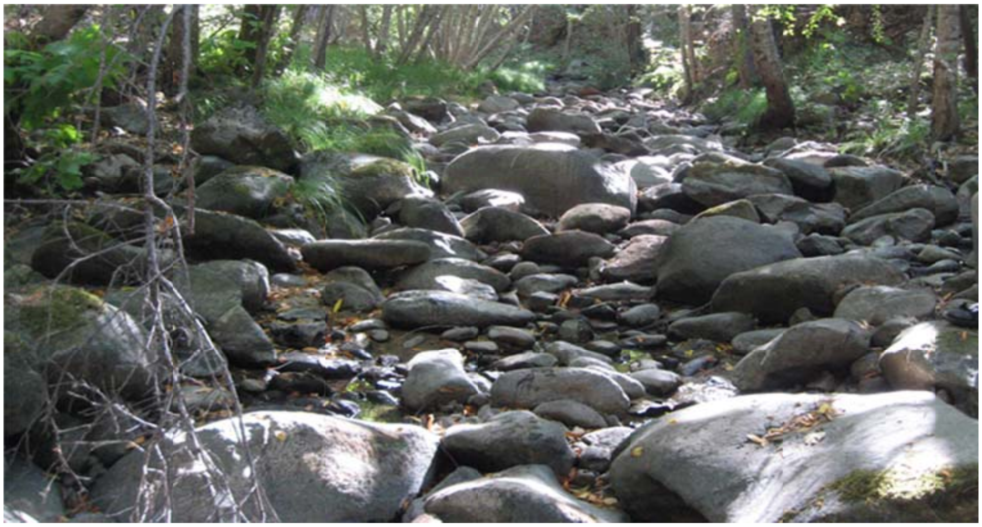
Carmel River Reroute & San Clemente Dam Removal Project Environmental Permitting Task 3.1



Jurisdictional Delineation of Waters of the U.S. including Wetlands

Prepared for:

California State Coastal Conservancy

California American Water

URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

December 2011

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Tables

Figures

Appendices

List of Abbreviations and Acronyms

°F	degrees Fahrenheit
CAW	California American Water
CGS	current growing season
Corps	United States Army Corps of Engineers
CRRDR	Carmel River Reroute and San Clemente Dam Removal Project
CWA	Clean Water Act
CWUS	culvert water of the United States
DSOD	Division of Safety of Dams
EPA	United States Environmental Protection Agency
FACU	facultative upland plant species
FAC	facultative plant species
FACW	facultative wetland plant species
GIS	Geographic Information System
GPS	Global Positioning System
LIDAR	light detection and ranging
NJC	non-jurisdictional culvert
NJW	non-jurisdictional water
NRCS	Natural Resource Conservation Service
OBL	obligate wetland plant species
OCRD	Old Carmel River Dam
OHWM	ordinary high water mark
OWUS	other waters of the United Status
Project	Carmel River Reroute and San Clemente Dam Removal Project
RPW	relatively permanent water
SCC	California State Coastal Conservancy
SCD	San Clemente Dam
TNW	traditionally navigable water
UPL	upland plant species
URS	URS Corporation
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WL	wetland waters of the United States
WUS	waters of the United States

1.0 Introduction

The San Clemente Dam (SCD), which was built in 1921 at the confluence of the Carmel River and San Clemente Creek by predecessors of the California American Water Company (CAW), has been declared seismically unstable by the California Department of Water Resources, Division of Safety of Dams (DSOD). CAW, with assistance from the California State Coastal Conservancy (SCC) and National Marine Fisheries Service, plans to remove SCD, to address public safety and restore riparian habitat and unobstructed fish passage (California American Water 2011). The project, known as the Carmel River Reroute and San Clemente Dam Removal (CRRDR) Project (project), will require a Clean Water Act (CWA) Section 404 permit from the United States Army Corps of Engineers (Corps) pursuant to 33 U.S.C. § 1344 [2007].

The first step in obtaining a CWA Section 404 permit is to define waters of the U.S. including delineating the boundaries of wetlands and special aquatic sites. This document describes the project area's water features, soils, hydrology, and vegetation communities, reviews the jurisdictional delineation methods, and reports the results of a delineation of wetlands and waters of the U.S. subject to Corps jurisdiction. The delineation is being submitted to the Corps for review. A CWA Section 404 permit application will be submitted to the Corps after receipt of an approved jurisdictional determination.

Chapter 1 includes a discussion of wetland delineation regulations and existing conditions in the project area including soils, hydrology, vegetation communities, climate and topography. Chapter 2 describes the methods used prior to and during field surveys for jurisdictional wetlands, other waters of the U.S. (OWUS) and culvert waters of the U.S. (CWUS). Chapter 3 presents the findings of desktop and field surveys, including significant nexus determination for waters of the U.S. (WUS), which includes jurisdictional wetlands (WL), other waters of the U.S. (OWUS) and culvert waters of the U.S. (CWUS). Chapter 4 describes areas that may qualify as jurisdictional exemptions. Chapter 5 lists staff that conducted the field delineation, prepared the report and/or performed internal technical review. Chapter 6 lists references cited throughout this report.

1.1 Regulatory Setting

The regulatory setting is framed by enabling legislation and case law. Under Section 404 of the CWA, the Corps regulates the discharge of dredged and fill materials into "Waters of the United States." Jurisdictional waters of the U.S. (WUS) include intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, and wetlands adjacent to any water of the U.S. (33 CFR § 328). In areas subject to tidal influence, CWA Section 404 jurisdiction extends to the high-tide line. Certain waters of the U.S. are considered "special aquatic sites" because they are generally recognized as having particular ecological value. Such sites include sanctuaries and refuges, mudflats, wetlands, vegetated shallows, coral reefs, and riffle and pool complexes. Special aquatic sites are defined by the U.S. Environmental Protection Agency (EPA) and may be afforded additional consideration in a project's permit process.

The Corps also regulates navigable waters under Section 10 of the Rivers and Harbors Act as "… those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce" (33 CFR § 322.2).

Projects that place fill in jurisdictional wetlands and non-wetland waters of the U.S. require either an individual or a nationwide permit from the Corps. Nationwide permits are issued by the Corps for specific types of activities that have minimal individual or cumulative adverse environmental impacts. Individual permits are required for large and or complex projects, or projects that exceed the impact threshold for nationwide permits. The CRRDR project will require an individual permit.

Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers

On January 9, 2001, the U.S. Supreme Court issued a decision in Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers. The case involved the filling of hydrologically isolated waters that had formed from remnant excavation ditches on a 533-acre parcel. In the decision, the Court denied the Corps jurisdiction over isolated water bodies, which the Corps had previously regulated using the "Migratory Bird Rule" established in 1986. The Court defined isolated waters as any body of water that is non-navigable, intrastate, and lacking any significant nexus to navigable bodies of water (Pooley 2002).

Isolated seasonal wetlands (i.e., wetlands that are not hydrologically connected with other jurisdictional wetlands or non-wetland waters of the U.S.) are generally considered non-jurisdictional.

Rapanos v. United States and Carabell v. Army Corps of Engineers

Two U.S. Supreme Court cases, Rapanos v. United States (No. 04 1034) and Carabell v. Army Corps of Engineers (No. 04-1384) (hereafter referred to as "Rapanos"), challenged the Corps' interpretation of waters of the U.S. (USACE 2007a). The Corps had interpreted the CWA 33 U.S.C. 1362(7) to regulate wetland areas that are separated from a tributary of a navigable water by a narrow, constructed berm, where evidence of an occasional hydrologic connection existed between the wetland and the tributary. Also, the case questioned Congress' authority under the Commerce Clause to apply the CWA to the wetlands at issue.

On June 19, 2006, the Court held 5 to 4 in favor of tightening the definition of "waters of the United States." According to the opinion, a water or wetland constitutes "navigable waters" under the CWA if it possesses a "significant nexus" to waters that are currently navigable or could feasibly be made navigable.

The Corps and the EPA issued a joint memorandum on June 5, 2007, with guidelines for establishing whether or not wetlands or other waters of the U.S. fall within Corps jurisdiction (USACE 2007a). As a result, the agencies assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to traditional navigable waters, non-navigable tributaries to TNWs that are relatively permanent waters, and wetlands that abut relatively permanent waters (RPW). The agencies may take jurisdiction over non-navigable tributaries that are not RPWs, wetlands that are adjacent to non-RPWs, and wetlands that are adjacent to but not directly abutting a relatively permanent non-navigable tributary. The agencies will generally not assert jurisdiction over swales, erosional features or ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

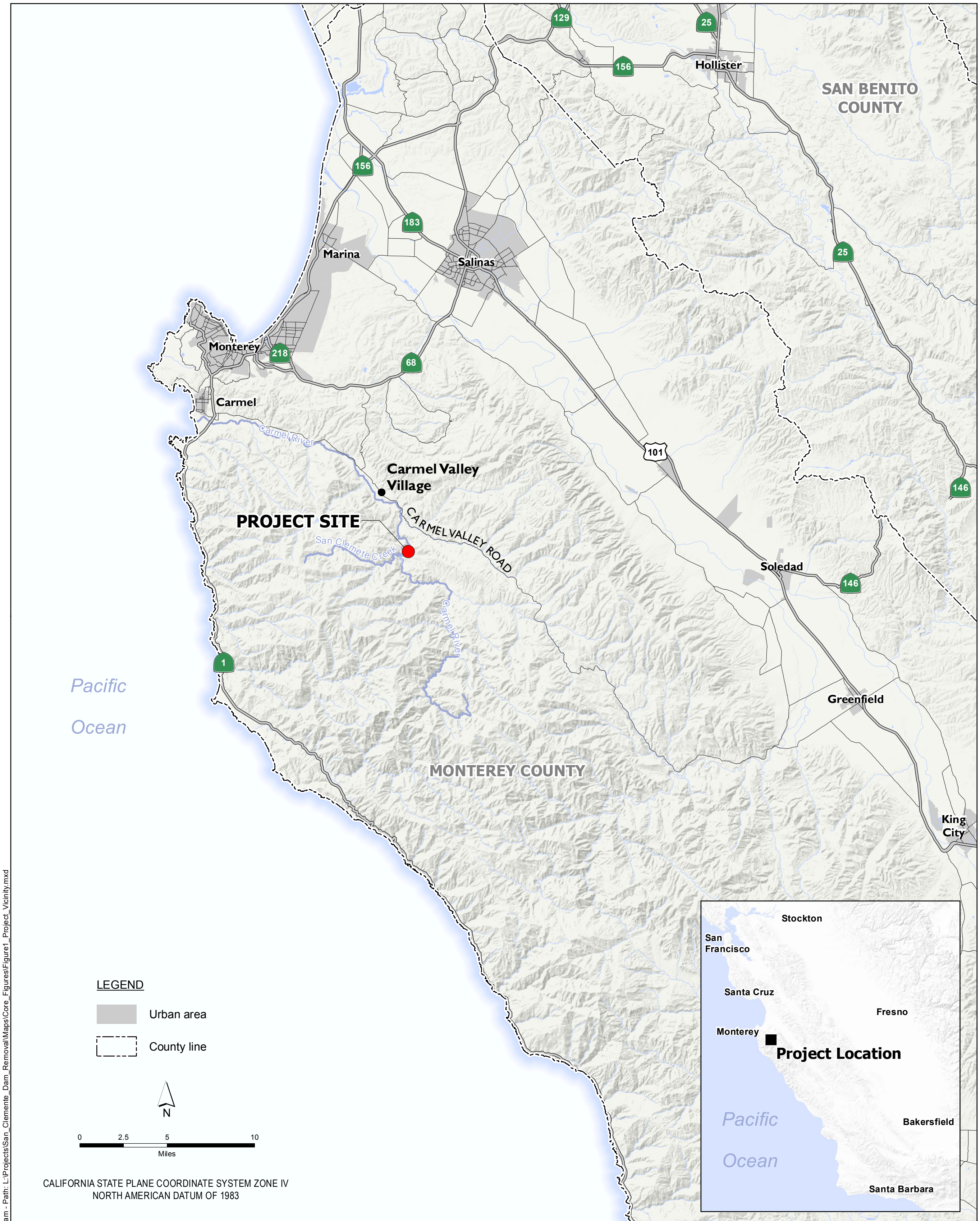
1.2 Project Area Setting

The project is located on the Carmel River in unincorporated Monterey County south of and upstream from the town of Carmel Valley Village, California (Figures 1and 2). The project area lies within the Carmel Valley USGS 7.5 topographic quadrangle Township 17 South, Range 2 East, and Sections 23 through 26. The majority of the project area is owned by CAW; however portions of the access roads are located on lands owned by Monterey Peninsula Park District.

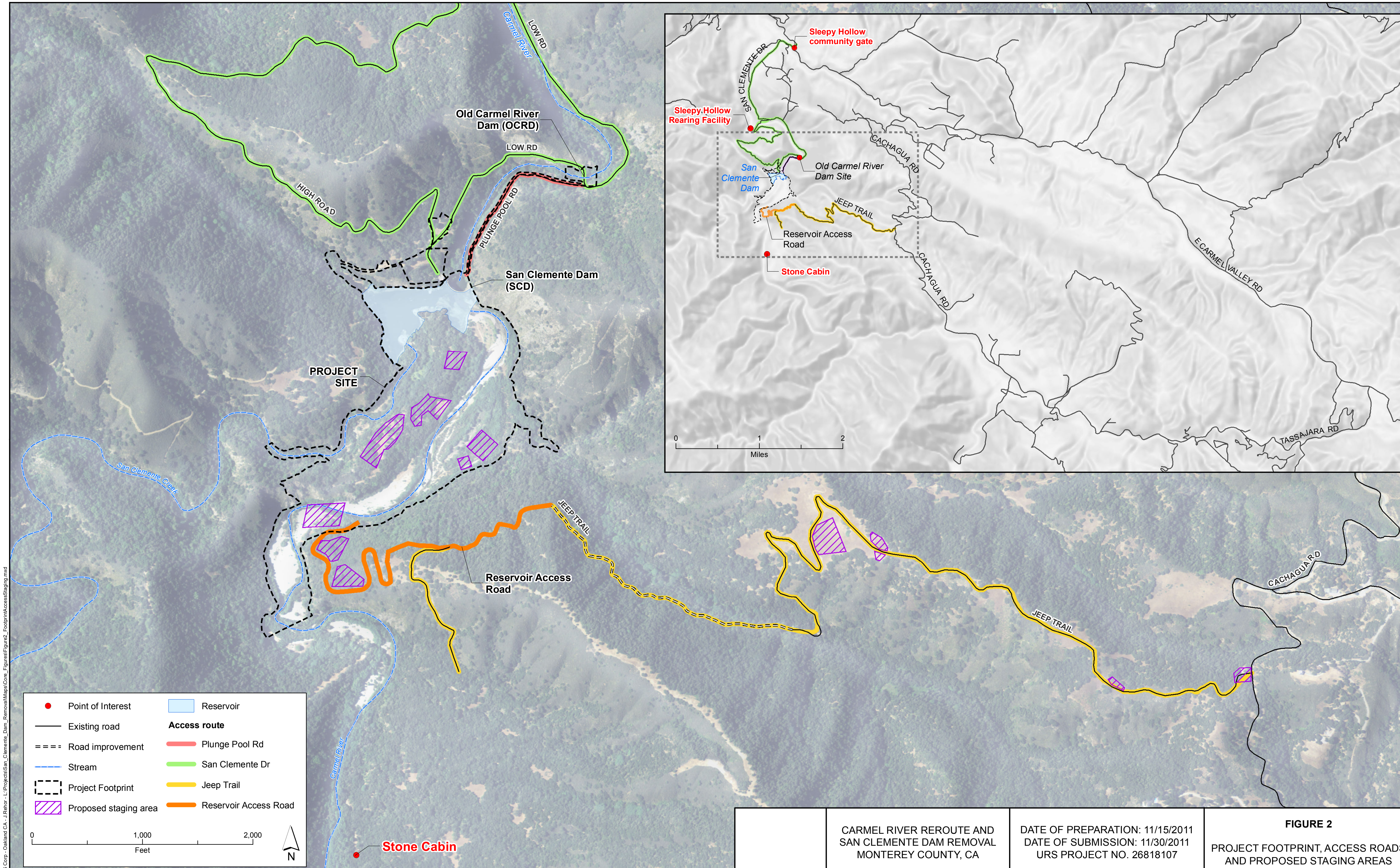
1.2.1 Climate and Topography

The project area has a Mediterranean climate; temperatures are typically mild with most precipitation in the cooler winter months. Winter temperatures typically range from 38 degrees Fahrenheit (ºF) to 65 ºF; summer temperatures typically range from 42 ºF to 79 ºF (data for Carmel Valley, California from 1958 through 2010; Western Regional Climate Center 2011). Average annual precipitation in Carmel Valley is 17.49 inches per year, whereas at the San Clemente Dam weather station, which has a 70 year period of record (from 1940-2010), the average annual precipitation is 21.92 inches. The Carmel Valley weather station records temperature data. Approximately 92 percent of this precipitation occurs between the months of November and April (Western Regional Climate Center 2011). For Monterey County, average annual precipitation ranges from 20 inches per year in the inland sections (the primary source of water to the Carmel River) to 80 inches per year in the coastal portions. To the east lies the San Joaquin Valley, where precipitation is generally low.

Elevations range from approximately 430 feet to 740 feet in the project area. Elevations in the Santa Lucia Mountains and surroundings range from sea level to 5,862 feet at Junipero Serra Mountain). The northern portion of the Santa Lucia range includes, from west to east, Mt. Carmel (4,417 feet), Devil’s Peak (4,158 feet), Little Pines Peak (4,189 feet), Uncle Sam Mountain (4,766 feet) and Elephant Mountain (4,048 feet), which lie to the south of the project area (USDA Forest Service 2011). Nearer to the project area, the village of Carmel Valley, through which the Carmel River flows, is situated just northwest of Hitchcock Canyon and Klondike Canyon. Farther upstream is Trampa Canyon. The canyons drain to the Carmel River via Tularcitos Creek, Pine Creek,



	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/14/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 1** PROJECT VICINITY



CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/15/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 2** PROJECT FOOTPRINT, ACCESS ROADS AND PROPOSED STAGING AREAS

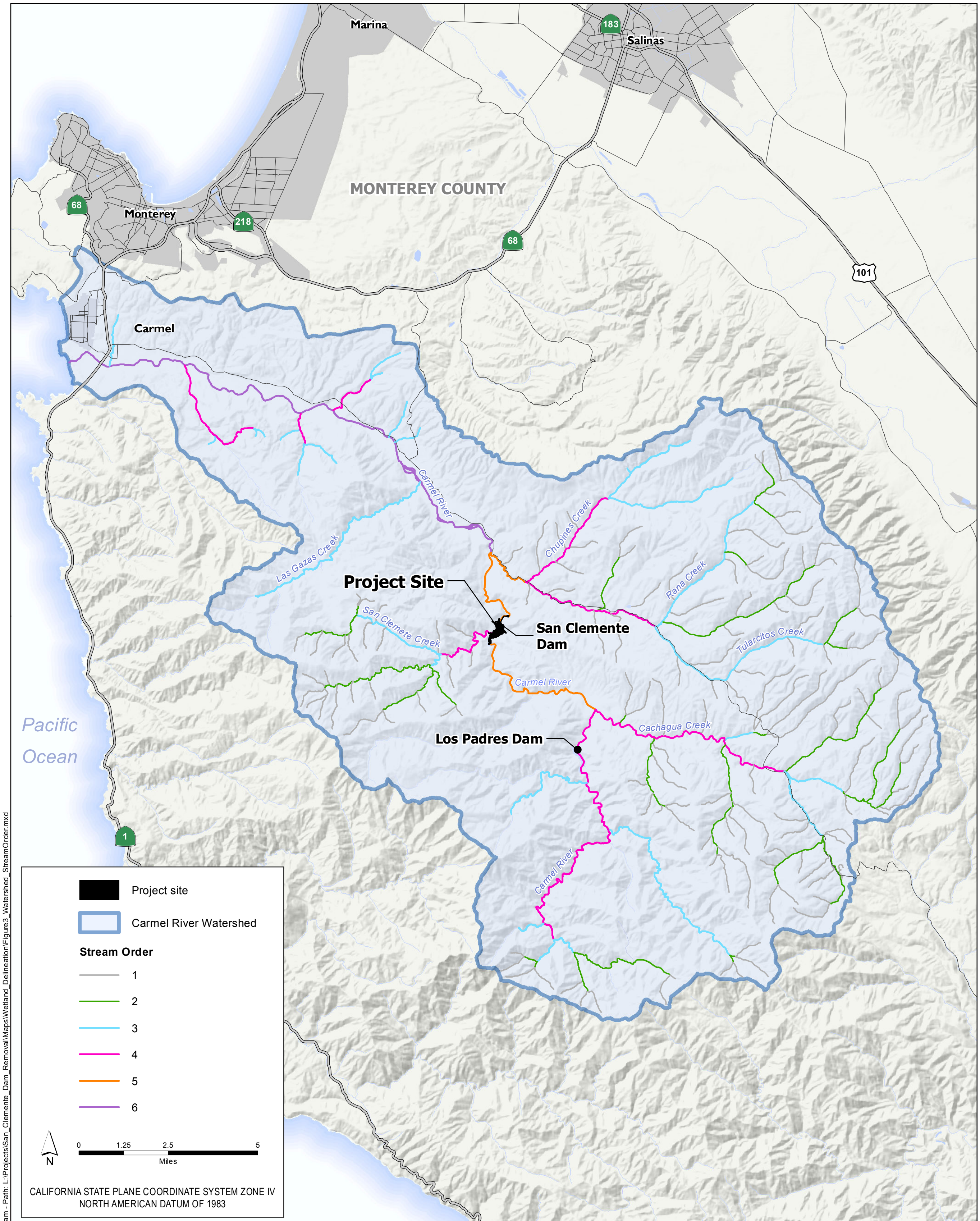
Cachagua Creek and other streams. San Clemente Creek enters the southwest portion of the project area after its confluence with Black Rock Creek and South Fork Creek.

1.2.2 Hydrology

The headwaters of the Carmel River are located in the Santa Lucia Mountains southeast of the project area and the river discharges to the Pacific Ocean at Carmel Bay near the City of Carmel. Figure 3 is a map of the 255-acre Carmel River watershed and displays stream orders for drainages in and around the project location. The hydrology of the Carmel River has been modified in the project area for over a century, particularly by construction of three dams to impound municipal water supply. The construction of the OCRD in 1883 provided the first municipal water supply to Monterey County and represents the first major alteration of the Carmel River.

The SCD, built in 1921 to impound 1,425 acre-feet of municipal water, lies at the confluence of San Clemente Creek and the Carmel River. Prior to the declaration of a potential seismic safety concern for the dam, the reservoir’s full pool, water surface elevation was approximately 537 feet. At that time the dam contained removable metal slats to increase water storage capacity (Lingenfelter, 2011). The metal slats were subsequently removed. Data from recent year’s hydrographs (see Appendix A) suggest that the water level at San Clemente Dam has not risen beyond 529 feet in the last seven years. The spillway of SCD is currently at an elevation of 525 feet. Sediment accumulation has reduced the capacity of the reservoir by over 90 percent (CAW, 2011). The impoundment transformed a perennial stream in a deeply incised canyon into a braided stream, on wide flood plain, with riparian vegetation. In areas where floodplains are absent, the flows typically abut rocky outcrops or cliffs.

Further upstream and outside the project area, the Los Padres Dam was built in 1949 to accommodate increased water demand.



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	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/14/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 3** **WATERSHED BOUNDARY AND STREAM ORDER FOR THE PROJECT**

Precipitation and Growing Season Analysis

Precipitation and growing season analyses are necessary components in establishing baseline hydrology conditions for the project area. They are also important in determining the validity or interpretation of hydrology field indicators during years with above- or below-normal rainfall. Therefore, establishing whether conditions during the delineation field survey were within a normal precipitation range is vital. For precipitation, this determination is made by comparing the amount of precipitation between July 31, 2010 and August 1, 2011 (the current growing season (CGS) during which the field work was performed) to the average annual precipitation over the available period of record. Positive wetland hydrology must be present for a minimum of 5 % of the growing season, determined as the number of days with soil temperatures above 41 ^{o}F at one-foot below ground surface (Environmental Laboratory 1987).

Precipitation Analysis

Using the standard methodology for assessing wetland hydrology developed by Sprecher and Warne (2000), current annual rainfall for the project area was analyzed to determine if conditions were normal, drier than normal, or wetter than normal during the field inspections. Normality is defined as the range of rainfall that is within the 30th to 70th percentiles.

The USDA National Water and Climate Center publishes the ranges of weather data for over 8000 National Weather Service weather stations (NRCS, 2011). These analyses, which present temperature, precipitation, and growing season information, are called WETS Tables (Table 1-1, Appendix B). To determine if the delineation was conducted in a normal year, the CGS precipitation data was compared with the period of record.

Table 1-1. WETS Data for Precipitation and Growing Season Analysis

Station and period of record	30th percentile	Average Annual Rainfall (Inches)	70th percentile	28°F Growing Season	# of Days	32°F Growing Season	# of Days
San Clemente Dam (1971-2000)	16.08	21.96	25.32	Not listed (NL)	NL	NL	NL
Monterey (1971-2000)	16.02	20.34	23.42	1/1-12/31	365	1/1-12/31	365
Salinas (1971-2000)	10.67	14.85	16.43	1/1-12/31	365	1/1-12/31	365
Note: °F = Degrees Fahrenheit							

Three WETS stations with 29 years of record were used to establish historical precipitation data: San Clemente Dam, Monterey, and Salinas stations (Monterey lies approximately 22 miles west and Salinas lies approximately 23 miles north). Current growing season precipitation totaled 20.11 inches at the Monterey Peninsula Airport; the nearest available data source, located approximately 19 miles, by road, from San Clemente Dam (Wunderground, 2011). This included 0.82 inches of rain recorded in the month of May, when field work started. The 20.11 inches of CGS precipitation is close to average for the Monterey WETS station (20.34 inches). Although no CGS precipitation data was available for San Clemente Dam, the data for the proximate Monterey station is considered evidence of normal precipitation conditions for the project area.

Growing Season Analysis
The growing season is defined as the period when soil temperatures 12 inches below ground surface are greater than 41°F. The length of the growing season is typically approximated by the beginning and ending dates of 28°F or 32°F temperatures with 50% probability (USACE 2008).

Temperature was not recorded at the San Clemente Dam weather station. However, temperature and growing season length were recorded at the Monterey and Salinas stations, which lie to the west and north of the project site and have 365-day growing seasons. The growing season at San Clemente Dam is assumed to be equivalent to these geographically proximate stations. Therefore, surface saturation and/or inundation would need to persist for 18 days (equivalent to 5% of the established growing season) to meet positive wetland hydrology criteria.

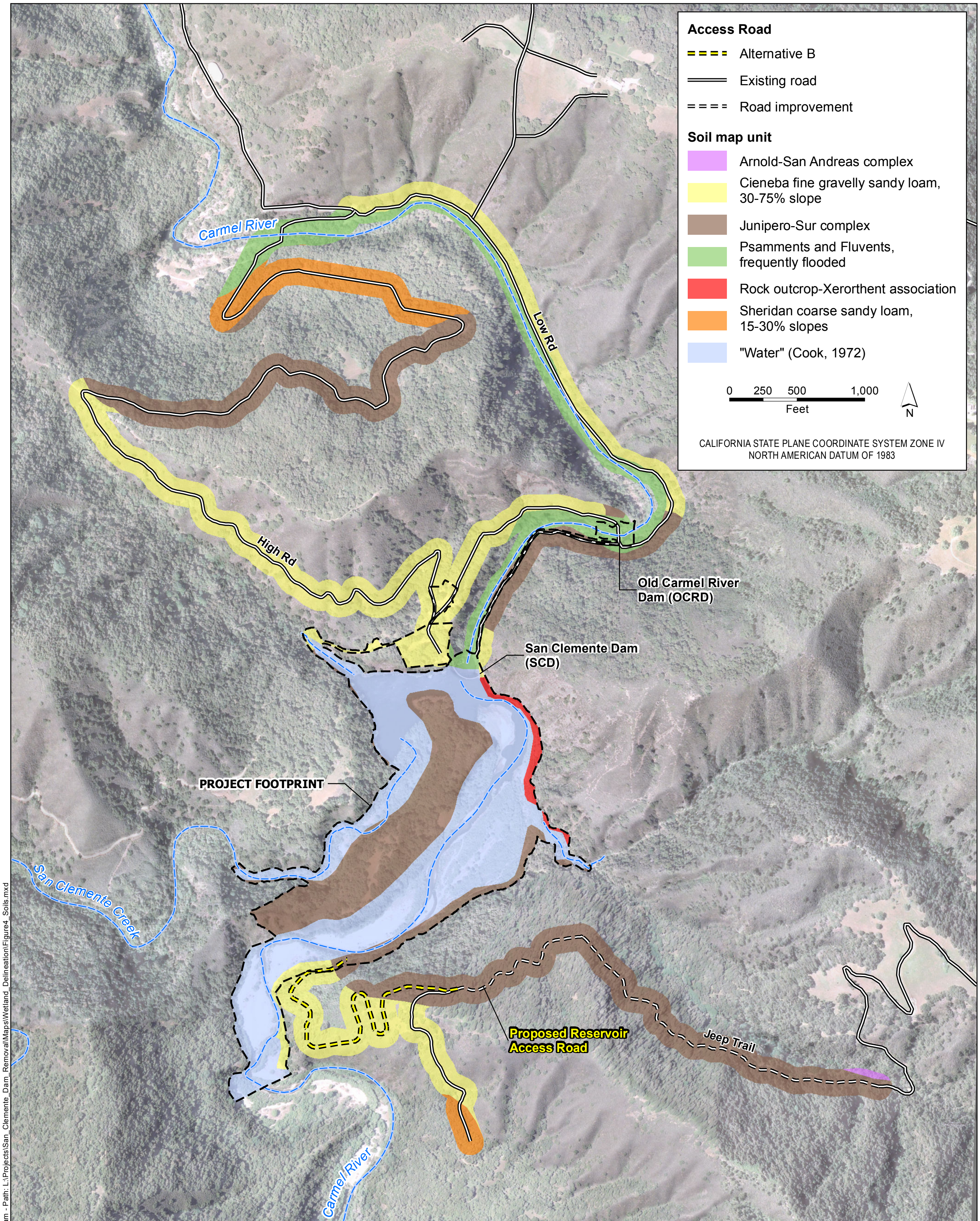
1.2.3 Soils
The Natural Resource Conservation Service (NRCS) soil survey identifies six soil map units within the project area and along the access roads (the soils analysis included a 250 foot buffer around the access roads):

- Arnold - San Andreas complex (Am)
- Cieneba fine gravelly sandy loam, 30 to 75 percent slopes (CcG)
- Junipero-Sur complex (Jc)
- Psamments and Fluvents, frequently flooded (Ps)
- Rock outcrop-Xerorthent association (Rc)
- Sheridan coarse sandy loam, 15 to 30 percent slopes (Sh)

NRCS also mapped some areas as water, indicating permanent inundation (i.e., not considered a soil) at the time of the soil survey (Cook 1972).

The Psamments and Fluvents, frequently flooded soil map unit contains 84% hydric soil components which are defined by the National Technical Committee for Hydric Soils as having formed under conditions of saturation, flooding or ponding during the growing season that persisted for long enough to develop anaerobic conditions in the upper portion of the soil (USDA Soil Conservation Service 1994). Hydric soils constitute one of the three parameters required for a location to qualify as a wetland under Corps jurisdiction (see Section 3). No other soil map unit contained hydric components.

Each of the soils map units is described in more detail below; Figure 4 displays the results of the NRCS soil surveys within the project area and along the access roads.



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	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/15/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 4** NRCS SOIL MAP UNITS LOCATED WITHIN PROJECT AND ALONG ACCESS ROADS

Arnold-San Andreas Complex

The Arnold-San Andreas complex (Am) contains 25% each of two dominant map units, the Arnold and San Andreas map units, as well as minor components. Arnold (Ak) soils are classified as being mixed, thermic Typic Xeropsamments. Typical texture consists of sands and loamy sands. Parent material consists of soft sandstone. Ak soils have a depth to paralithic contact of 40 to 60 inches. Ak soils have a rapid infiltration rate (somewhat excessively drained) with rapid permeability above the sandstone. They typically form in hills and hilly uplands at elevations from 100 to 2,500 feet.

San Andrea (SC) soils are classified as being coarse-loamy, mixed, thermic Typic Haploxerolls. Typical texture includes sandy loams, fine sandy loams and loams. Parent material consists of soft sandstone. SC soils have a depth to paralithic contact of 20 to 40 inches. SC soils have a moderate infiltration rate (well-drained) yielding low to medium surface runoff potential. They typically form on hills and mountainous uplands ranging from 200 to 2,500 feet in elevation. A single area was mapped by NRCS as Arnold-San Andreas (Am) complex soils in the project area; The Am complex soils lie in the southwest corner of the Jeep Trail.

Cieneba fine gravelly sandy loam, 30 to 75 percent slopes

Cieneba fine gravelly sandy loam (CcG) soils are classified as loamy, mixed, nonacid, thermic, shallow Typic Xerorthents. Typical textures include coarse sandy loam, gravelly sandy loam, light loam or gravelly light loam. Parent material consists of sandy and gravelly residuum weathered from igneous and metamorphic rock. The shallow soils have a depth to a paralithic contact of 4 to 20 inches. They have slightly higher (though still considered very low) available water capacity than AsC soils in part due to a slower infiltration rate which also yields medium surface runoff potential. The reduced infiltration rate is due to a weakly cemented paralithic bedrock restrictive layer. CcG soils generally do not support ponding or flooding. From a depth of 0 to 11 inches, CcG soils have a gravelly sandy loam texture; from 11 to 14 inches, CcG soils have a weathered bedrock texture. CcG soils typically occur at elevations between 500 and 4,000 feet in mountainous landscapes. NRCS surveys indicate CcG soils occur at both the northern and southeastern ends of the project area as well as along the High Road, Low Road, and Reservoir Access Road.

Junipero-Sur complex

Junipero-Sur complex (Jc) soils are made up of approximately 35 percent Junipero and 35 percent Sur soils (the remainder is various minor components). Junipero soils are coarse-loamy, mixed, mesic Pachic Ultic Haploxerolls; parent material consists of coarse-loamy residuum weathered from igneous and metamorphic rock. Typical textures of Jc soils include sandy loam, fine sandy loam or loam (some pedons being gravelly, cobbly, or stony). The Jc soil typically has a depth to a paralithic contact of weathered rock of 28 to 40 inches. Junipero soils contain a weakly cemented paralithic bedrock restrictive layer.

Sur soils are loamy-skeletal, mixed, mesic Entic Haploxerolls, which may include coarse sandy loam, sandy loam or fine sandy loam; parent material consists of coarse-loamy residuum weathered from igneous and metamorphic rock. The Sur soil has a depth to lithic contact of 20 to 40 inches. Sur soils contain a very strongly cemented lithic bedrock restrictive layer.

Available water capacity in the JC soils is low, similar to Am but higher than CcG soils. JC complex soils have moderate infiltration rates and medium surface water runoff potential. The JC soils don't support ponding or flooding. The Jc soils occur in mountainous landscapes from 300 to 5,500 feet elevation typically on 50 to 85 percent slopes. Jc soils are the most common in the project area; NRCS surveys indicate Jc soils throughout the project area, including portions of the Plunge Pool Road and High Road, Low Road, and the Jeep Trail.

Psamments and Fluvents, frequently flooded

Psamments and Fluvents, frequently flooded (Ps) soils consist of approximately 40 percent Psamments and 40 percent Fluvents (the remainder is various minor components). Psamments are mixed, thermic Typic Xeropsamments; Fluvents are Xerofluvents. Parent material consists of sandy and gravelly alluvium. Ps soils have a depth to 60 inches, consisting of stratified gravel to sand. Their available water capacity is very low due to a high infiltration rate. The corresponding surface water runoff potential is very low though both Psamments and Fluvents support frequent, long-lasting flooding. Neither supports ponding. Ps soils typically occur in flood plains and are a widespread hydric soil in Monterey County. NRCS surveys indicate Ps soils primarily in the vicinity immediately downstream of the SCD (Figure 6) as well as the Plunge Pool Road, the Low Road and, to a lesser degree, the High Road.

Rock outcrop-Xerorthent association

Rock outcrop-Xerorthent association (Rc) soils consist of approximately 50 percent rock outcrop (unweathered bedrock) and 30 percent Xerorthents (the remainder is made up of minor components). Parent material consists of residuum weathered from igneous, metamorphic and sedimentary rock. Rc soils typically have a depth to bedrock (lithic contact) of 8 inches depth. Rc soils have a very slow infiltration rate (high surface water runoff potential) due in part to their lithic bedrock restrictive layer. They occur in mountainous landscapes between 0 and 5,800 feet elevation; rock outcrops occur on slopes from 30 to 75 percent while Xerorthents occur on slopes from 9 to 100 percent. Rc soils do not support ponding or flooding. NRCS surveys indicate that Rc soils occur on the steep slopes at the eastern edge of the reservoir (east side of the project area).

Sheridan coarse sandy loam, 15 to 30 percent slopes

Sheridan coarse sandy loam (Sh) soils are classified as coarse loamy, mixed, thermic, Pachic Haploxerolls. Typical textures include sandy loam, coarse sandy loam or light loam. Parent material consists of coarse-loamy residuum weathered from igneous and metamorphic rock. Sh soils have a depth to a paralithic contact of weathered granite of 25 to 40 inches. Sh are well drained soils with low available water capacity. From a depth of 0 to 39 inches, Sh soils have a gravelly sandy loam texture; from 39 inches downwards, Sh soils have a weathered granitic bedrock texture. Sh soils typically occur at elevations between 1,000 and 3,000 feet on moderately sloping to very steep hills. NRCS surveys indicate Sh soils are located along the High Road in the project area.

1.2.4 Vegetation Communities

Vegetation communities are assemblages of plant species defined by species composition and relative abundance, which occur together in the same area. The natural communities presented in this report are based on the classification as presented in *A Manual of California Vegetation* (Sawyer et al. 2009). Botanical nomenclature follows The Jepson Manual (Hickman 1993).

Vegetation communities observed in the project area included upland and riparian communities (Figure 5). Upland communities included wild oat annual grassland, coast live oak woodland, California sagebrush scrub, and black sage scrub. Riparian vegetation communities included white alder riparian forest, red willow riparian forest, limited stands of California sycamore woodland, and arroyo willow riparian scrub. Some areas within the project area did not have plant communities; these included residential areas, dam facilities and bare ground in the form of unvegetated rock cliffs, gravel, cobble or sand bars.

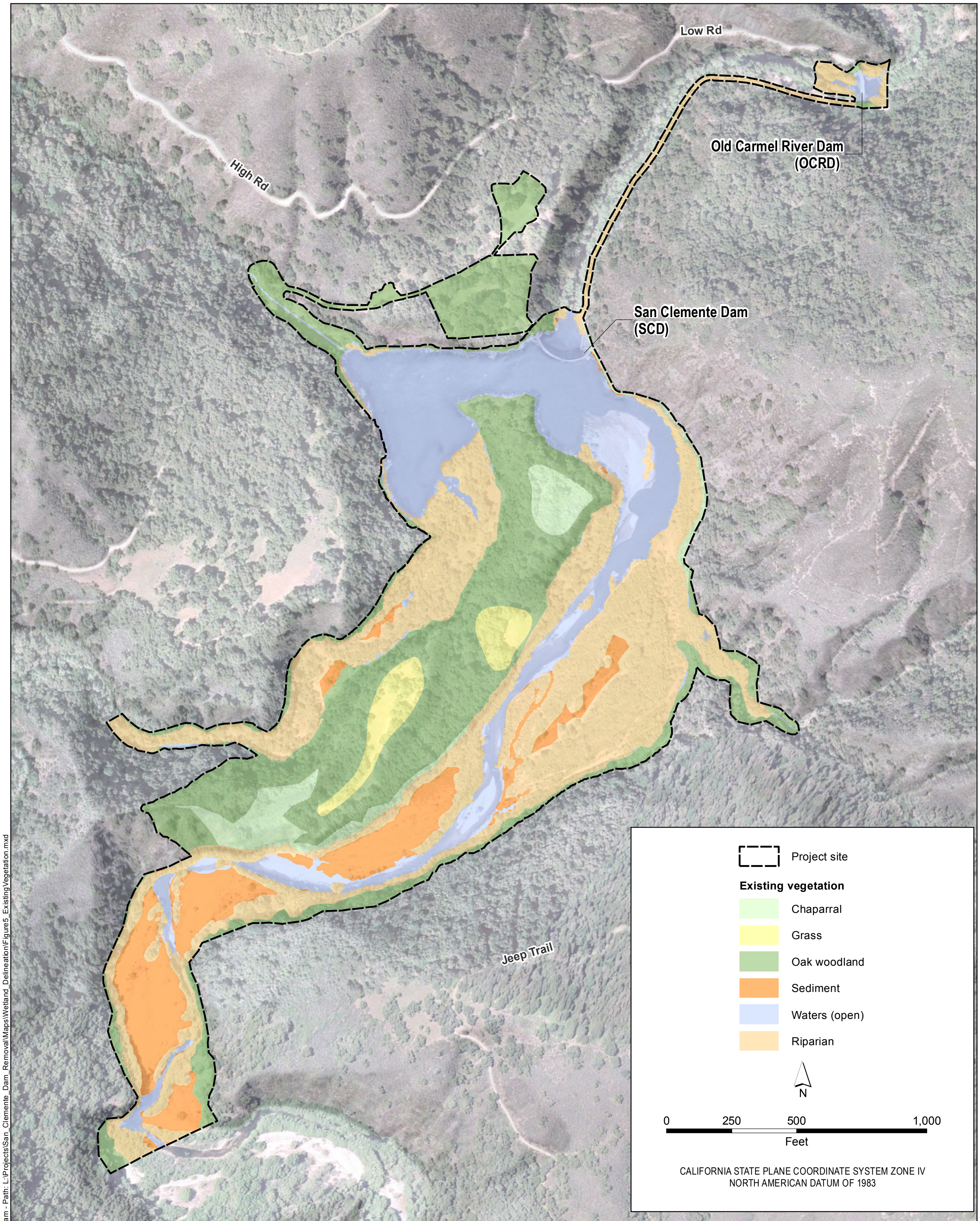
Upland Vegetation Communities

Grassland: Wild Oat Grassland

Wild oat grassland occurs on broader sandbars and floodplains, especially above the SCD on the Carmel River side of the SCD reservoir and in other places upstream of the reservoir. Annual grassland dominated by wild oat (*Avena barbata*) occurs in limited areas of the project site. Other associated annual grasses and herbs include ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), rattlesnake grass (*Briza maxima*), rattail fescue (*Vulpia myuros*), California poppy (*Eschscholzia californica*), and golden telegraph weed (*Heterotheca sessiliflora* ssp. *echioides*).

Woodland: Coast Live Oak Woodland

Coast live oak woodland occurs on north facing slopes and valley bottom terraces near the reservoir, along the majority of the new reservoir access road and on the wooded ridgeline that divides San Clemente Creek from the Carmel River. The overstory canopy is dominated by coast live oak (*Quercus agrifolia*). Associated canopy trees include Pacific madrone (*Arbutus menziesii*), and California bay (*Umbellularia californica*). Shrub layers within these woodlands are moderate to heavy and include toyon (*Heteromeles arbutifolia*), snowberry (*Symphoricarpos mollis*), coffeeberry (*Rhamnus californica*), hillside gooseberry (*Ribes californicum*) and extensive poison-oak (*Toxicodendron diversilobum*). Herb layers are diverse in openings and include California fescue (*Festuca californica*), hedgenettle (*Stachys ajugoides*), sweet cicely (*Osmorhiza chilensis*), Chinese houses (*Collinsia heterophylla*), various clarkia species (*Clarkia* spp.) and ferns including wood fern (*Dryopteris arguta*) and bracken fern (*Pteridium aquilinum*).



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	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/7/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 5** GENERAL VEGETATION WITHIN THE PROJECT AREA

Scrub: California Sagebrush Scrub
A scrub type dominated by California sagebrush (*Artemisia californica*) occurs on some south-facing rocky slopes in the project site. Associated shrub species include California broom (*Lotus scoparius*), golden sticky monkeyflower (*Mimulus aurantiacus*), California brickellbush (*Brickellia californica*) and California buckwheat (*Eriogonum fasciculatum*). Herb layers are diverse and include annual and perennial grasses and wildflowers.

Scrub: Black Sage Scrub
This vegetation type occurs on the cliff-like slope immediately east of the SCD. Certain south facing slopes in and adjacent to the project site are dominated by black sage (*Salvia mellifera*). Herb layers are diverse and include annual and perennial grasses and wildflowers and ferns including coffee fern (*Pellaea andromedifolia*), and birdfoot fern (*Pellaea mucronata*). Associated species include Our Lord's candle (*Yucca whipplei*), California broom, and California buckwheat.

Riparian Vegetation Communities

Shrubland: Arroyo Willow Riparian Shrubland
Limited stands of willow riparian scrub dominated by arroyo willow (*Salix lasiolepis*) occur in portions of the floodplains along the Carmel River and edges of the reservoir. Other associated shrub species include mulefat (*Baccharis salicifolia*), shining willow (*Salix lucida* ssp. *lasiandra*) and sandbar willow (*Salix exigua*). Herb layers include mugwort (*Artemisia douglasiana*), and water speedwell (*Veronica anagallis-aquatica*).

Woodland: California Sycamore Woodland
Limited stands dominated by California sycamore (*Platanus racemosa*) occur along the floodplain terraces of the Carmel River, especially below the dam. Associated canopy species include black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) and white alder (*Alnus rhombifolia*). Shrubs that are present include blue elderberry (*Sambucus mexicana*) and poison oak. Ground layers include California blackberry (*Rubus ursinus*), giant chain fern (*Woodwardia fimbriata*), and common horsetail (*Equisetum arvense*).

Forest: Red Willow Riparian Forest
Extensive riparian forest dominated by red willow (*Salix laevigata*) and, to a smaller extent, shining willow occurs on the floodplains and channels of both San Clemente Creek and the Carmel River. These forests are especially broad on the floodplains associated with the reservoir. Associated herbaceous species are often hydrophytes and include Santa Barbara sedge (*Carex barbarae*), panicled bulrush (*Scirpus microcarpus*), least spikerush (*Eleocharis acicularis*), and stinging nettle (*Urtica dioica* ssp. *holosericea*).

Forest: White Alder Riparian Forest
Riparian forest dominated by white alder occurs extensively along the immediate sandy and granitic banks of the Carmel River and San Clemente Creek. Associated tree species include box elder (*Acer negundo*), black cottonwood and willows, while understory species include poison oak, California blackberry, and nutsedge (*Cyperus eragrostis*).

2.0 Methods

There were three rounds of field investigations: a reconnaissance visit, the primary field investigations of the main project sites, and a follow-up visit to evaluate areas around the access roads. Prior to field investigations, a desktop analysis of the site was performed using appropriate reference materials and maps. The remainder of this section provides details on these analytical methods.

2.1 Reference Materials

Reference material was assembled to inform the methods and data interpretation used in the delineation. The primary reference material sources were:

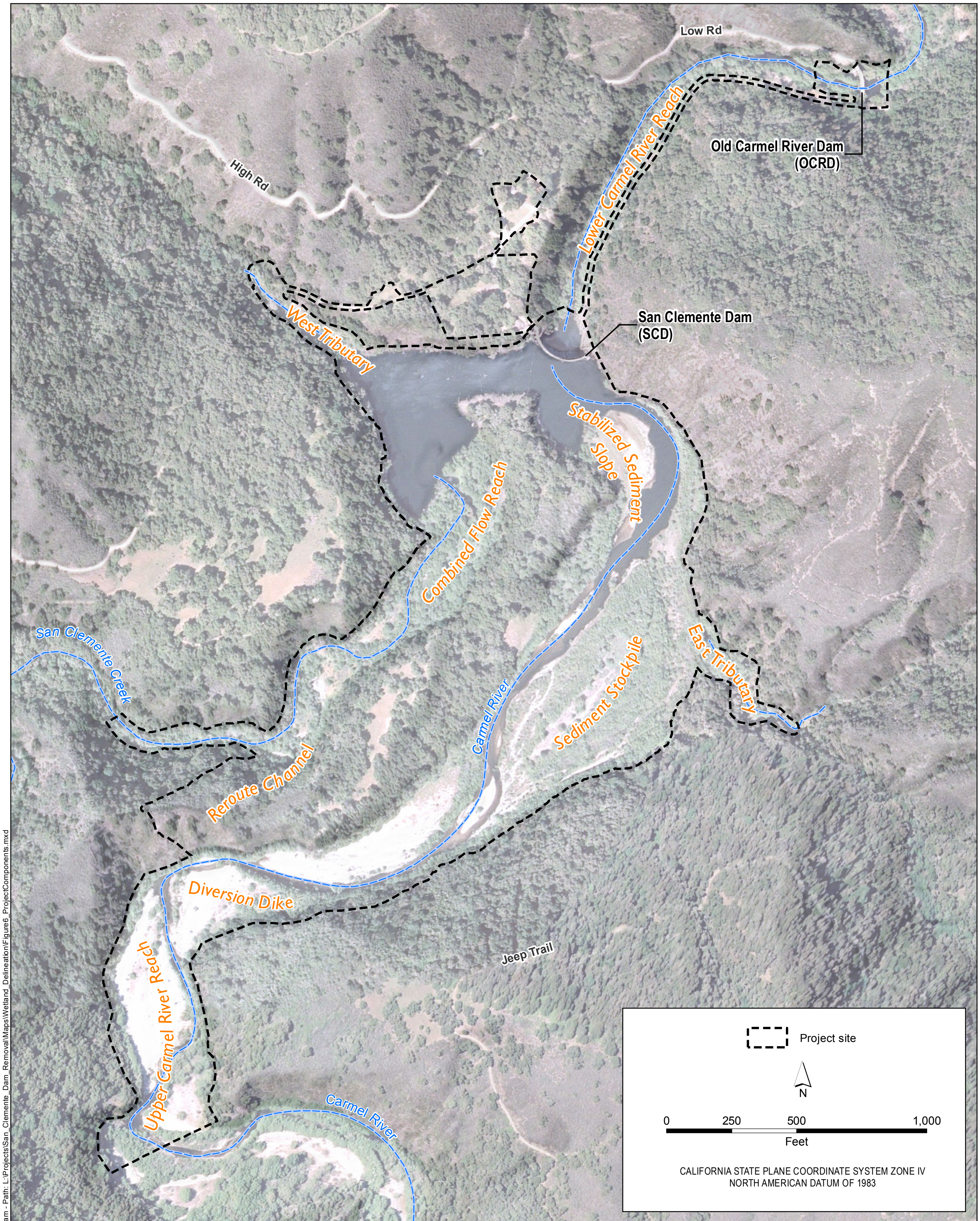
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin 1979)
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement (USACE 2008)
- Corps of Engineers Wetlands Delineation Manual, online edition (Environmental Laboratory 1987)
- The Jepson Manual (Hickman 1993)
- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008)
- National List of Vascular Plant Species That Occur in Wetlands (USFWS 1988)

In addition, digital elevation base maps were created in GIS using light detection and ranging (LIDAR) data from a flight on April 26, 2011. The LIDAR data were overlaid on an aerial photo taken on April 12, 2011.

2.2 Field Surveys

URS biologists conducted the reconnaissance visit on May 19, 2011. Based on the reconnaissance visit, site topography, and the conceptual project design the following features were identified to facilitate discussion, Figure 6.

- Carmel River from the upstream project limit to SCD
- Carmel River from SCD to OCRD
- Western Tributary, an ephemeral stream, from the project limit to reservoir's OHWM
- Eastern Tributary, an ephemeral stream from the project limit to reservoir's OHWM



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	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/14/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 6** PROJECT COMPONENTS

- San Clemente Creek from the upstream project limit to SCD
- Access roads: Low Road, High Road, Plunge Pool Road, Jeep Trail, reservoir access road, and Cachagua Road.

The detailed investigation of the project area was conducted from May 24 to May 27, 2011. A follow-up visit took place on August 10, 2011. These investigations delineated WL, CWUS and OWUS, which are collectively referred to as WUS. These types of WUS are described below. The survey involved identifying ordinary high water mark (OHWM) for WUS and evaluating potential wetland areas. The survey was conducted on foot and, in some cases, with the aid of a small boat. Existing landforms, vegetation, hydrology, and soil conditions were evaluated to identify potential wetlands; these parameters in addition to OHWM indicators (e.g., long gravel bars, drift debris) were used to identify potential OWUS within the project area. Photographs, provided in Appendix C, were taken to document important observations. Plants identified during the investigation were recorded and the list is available in Appendix D.

The delineation of jurisdictional wetlands in the project area followed the methods described in the *Corps Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement* (USACE 2008). The delineation of jurisdictional OWUS in the project area followed the methods described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008).

2.2.1 Field Survey for Wetlands

The 1987 Corps wetland delineation field manual requires that a feature meet three parameters to qualify as a jurisdictional wetland: hydric soils, wetland hydrology and hydrophytic vegetation. Under normal circumstances (undisturbed conditions), a potential jurisdictional wetland must have positive indicators of all three parameters. Positive wetland indicators include field indicators as well as published and online data, such as the United States Department of Agriculture (USDA—NRCS) hydric soils list.

This three-parameter approach is adapted to various regions in the Corps' Regional Supplements, which are intended to improve the accuracy and efficiency of wetland delineation procedures by highlighting conditions and scenarios specific to a particular region (USACE 2008). The project area is within the Arid West Region defined by the Corps.

Vegetation, soil, and hydrological conditions were analyzed in the field to determine the locations and boundaries of the Corps' jurisdictional wetlands within the project area. During the site visit, paired data points were analyzed in suspected wetland areas and corresponding upland areas; test pits were dug at each point to examine hydrological conditions, soil types and soil distributions, which, along with vegetative cover data, guided the jurisdictional determination of the surrounding feature.

Locations of wetland data points were recorded using a Trimble GeoXT 2005 Series global positioning system (GPS) with sub-meter accuracy. Connectivity for each potential wetland feature was analyzed in the field and relevant connective features such as culverts and off-site drainage pathways were mapped. Arid West Manual data sheets for each sample point are included in Appendix E.

After evaluating the hydrology, soils and vegetation at all of the data points, the boundaries of wetlands were extrapolated by following topographic contours, wetland vegetation boundaries, and clear hydrologic boundaries. All features that potentially met Corps criteria for wetlands were recorded as line, point, or polygon features using GPS. Acreages for jurisdictional wetlands were calculated from digitized data in ArcGIS software and coded with the acronym “WL” to annotate their wetland status. Jurisdictional Determination field data recording sheets were completed and are presented as Appendix F.

2.2.2 Field Survey for Other Waters and Culvert Waters of the U.S.

The Corps takes jurisdiction over all TNW, a category that includes historic navigable waters (33 C.F.R. § 328.3[a][1]; 40 C.F.R. § 230.3[s)][1]. In most cases, the jurisdictional status of a water feature depends on whether the feature has a significant nexus with an established TNW. Background research was conducted to determine the closest TNWs to the project area and the jurisdictional status of any other large water features in the vicinity.

Temporal variation in site hydrology is caused by climate and reservoir operation. Due to the operational changes in water surface elevation behind SCD (which are discussed in Section 1.2.1), additional information was necessary to delineate the ordinary high water mark as it pertains to present conditions. Following guidance from the Corps (URS, 2011), URS staff delineated OHWM based on a two-pronged approach. First, URS used a definition of the OHWM found in the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). OHWM for the channel features was defined as occurring at the top of bank of the active river channel. The abutting floodplain is above OHWM in various locations because it is a relic of dam and reservoir operation at a higher routine water surface elevation that occurred prior to dam seismic safety concerns. Inundation of the abutting floodplain results from SCD and Los Padres Dam which we consider to be unnatural hydrology.

Second, URS reviewed hydrographs of reservoir water surface elevations for the years 2002 to 2008 to determine the annual recurring high water interval within the project area (Appendix A). Based on this research, the current OHWM is determined to occur between 526 and 527 feet. URS biologists used *The OHWM Field Guide*’s definitions for low-flow channel, active flood-plain and riparian corridor limits, and the modified definition of OHWM described above to delineate lateral limits for Carmel River, San Clemente Creek and the reservoir. The normal bed and bank for two intermittent streams that run into the project area were identified. Except where physically inaccessible, OHWM, channels, floodplains and riparian corridors were walked or travelled by boat; GPS was used whenever possible to record the locations of these features. When GPS was not functional (e.g., at the base of cliffs or under dense forest canopy), field biologists recorded features by hand and used aerial imagery to supplement mapping.

LiDAR data (in GIS) was used to map the location of the 527 foot contour, determined to be OHWM around the reservoir. Upstream on the San Clemente Creek and the Carmel River, and elsewhere in the project area, OHWM was delineated using *The OHWM Field Guide*, as described above.

As part of the jurisdictional delineation, URS identified and delineated CWUS along the High Road, the Low Road, the jeep trail and several areas along Cachagua Road. For all existing culverts within the project area, the size, type and length of the culvert was recorded and the location was mapped using GPS. The Corps has jurisdiction over CWUS along streams that have a significant nexus to a TNW or RPW.

Feature lengths and acreages were obtained by analyzing field data, in some cases augmented by aerial photo interpretation, using ArcGIS software. Aerial imagery was then used to confirm the jurisdictional nature of all features identified in the field, based on post-Rapanos guidance by the Corps (USACE and EPA 2007). Not all features delineated in the field were determined to be jurisdictional, and access limitations in the field required that OHWM be extrapolated from accessible points in some areas along Carmel River and the reservoir behind SCD.

Features were labeled with acronyms that correspond to their jurisdictional status: OWUS and non-jurisdictional waters (NJW); CWUS and non-jurisdictional culverts (NJC). Jurisdictional Determination datasheets were also completed for the sub-watersheds (drainage areas) in the project area (Appendix F).

3.0 Findings

3.1 Summary of Results

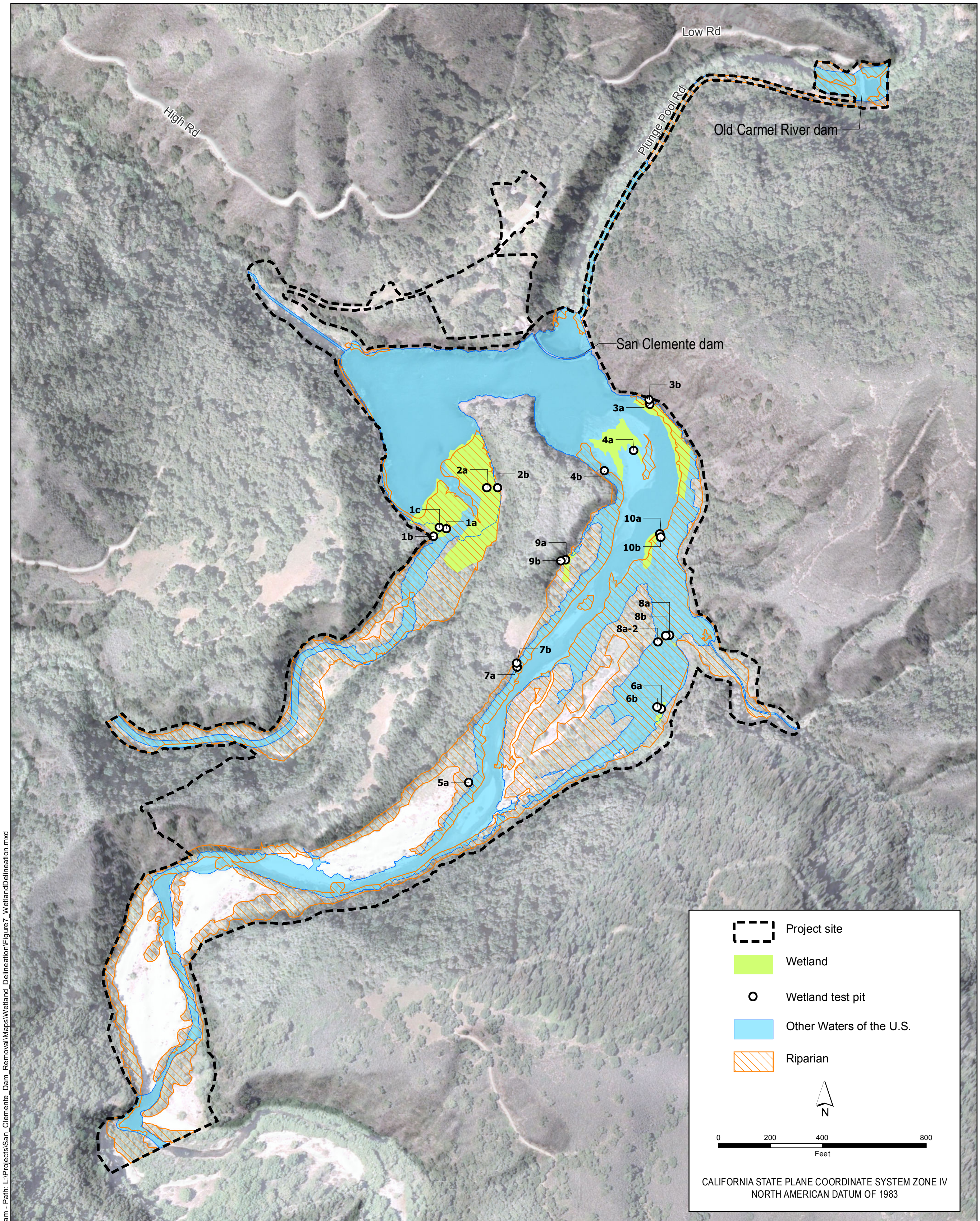
There are 28.63 acres (1,247,265 square feet) of WUS in the project area. Of this total, 2.95 (128,569 square feet) acres are wetlands and 25.68 acres (1,118,696 square feet) are OWUS. There are no non-jurisdictional waters in the project area. Figure 7 displays the features mapped in the project site. Figure 8 displays culvert water features along the access roads to the project site. Twenty test pits were mapped and labeled with the suffix ‘a’ for wetland pits and ‘b’ for upland pits.

Plant species are reported in descriptions of various delineated areas with their wetland indicator status (Reed 1988), which is defined using the following terms:

- UPL (upland) – greater than 99 percent of a species’ occurrences are in non-wetlands;
- FACU (facultative-upland) – 67-99 percent of a species’ occurrences are in non-wetlands;
- FAC (facultative) – 33-67 percent of a species’ occurrences are in wetlands;
- FACW (facultative-wetland) – 67-99 percent of a species’ occurrences are in wetlands;
- OBL (obligate) – greater than 99 percent of a species’ occurrences are in wetlands;
- NL (not listed) – treated as upland because not on wetland plant list.

3.2 Significant Nexus Determination

Carmel River is a waterway that is “navigable-in-fact”, making it a TNW under 33 CFR 328.3(a)(3)(i), based on its recreational usage by kayakers (California Creeks 2011). It flows into the Pacific Ocean approximately 18.5 miles downstream of the project area. The San Clemente Creek is an RPW whose confluence with the Carmel River occurs immediately upstream of the reservoir. The Western Tributary and the Eastern Tributary also have a significant nexus to the TNW (the Carmel River) via the reservoir. Carmel River and San Clemente Creek each have adjacent wetlands, which are potentially jurisdictional.



	CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/15/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	**FIGURE 7** MAPPED WETLAND AND OTHER WATERS OF THE UNITED STATES WITHIN THE PROJECT

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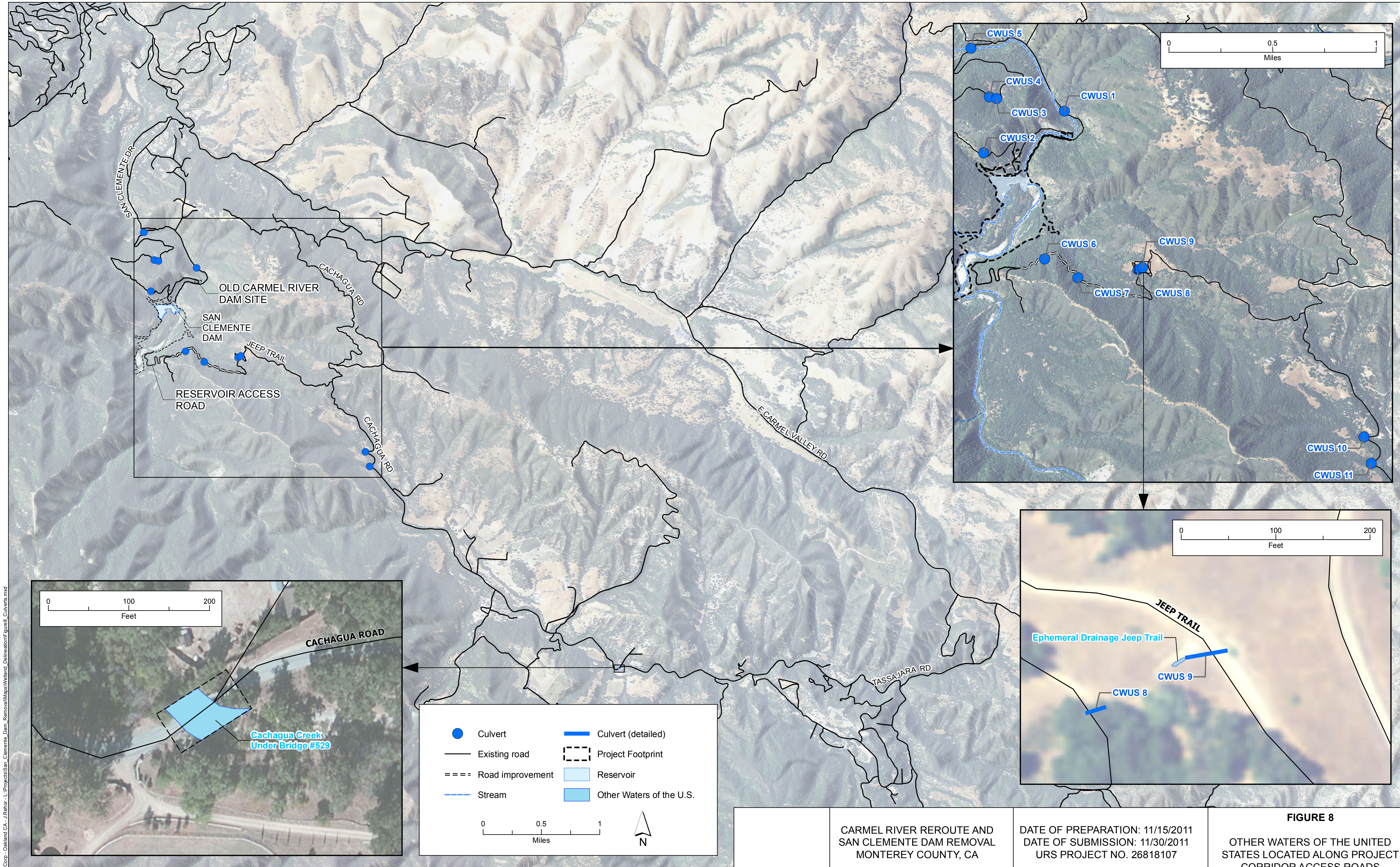

CARMEL RIVER REROUTE AND SAN CLEMENTE DAM REMOVAL MONTEREY COUNTY, CA	DATE OF PREPARATION: 11/15/2011 DATE OF SUBMISSION: 11/30/2011 URS PROJECT NO. 26818107	FIGURE 8	OTHER WATERS OF THE UNITED STATES LOCATED ALONG PROJECT CORRIDOR ACCESS ROADS

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3.3 Wetlands

Surveys identified and delineated the presence and boundaries of 10 potentially jurisdictional wetland (WL) features within the project area which are listed in Table 3-1 and described below.

Table 3-1. Area of Potentially Jurisdictional Wetlands in the Project Area

Feature	Area (acres)	Area (square feet)
WL 1	0.56	24,517
WL 2	1.39	60,528
WL 3	0.41	17,988
WL 4	0.37	16,246
WL 6	0.03	1,321
WL 7	0.01	265
WL 8	0.01	248
WL 8-2	<0.01	93
WL 9	0.06	2,820
WL 10	0.10	4,544
Total	2.95*	128,569*

*Totals are based on unrounded values. Columns may not sum to totals due to rounding of individual rows, but totals are accurate.

Wetland 1

WL 1 is located near the confluence of San Clemente Creek and the reservoir; it lies within the OHWM of the reservoir and is also fed by San Clemente Creek. This floodplain at the mouth of San Clemente Creek is a high deposition zone. It is classified in the Cowardin system as a Lacustrine Littoral Unconsolidated Bottom wetland as it lies within the reservoirs' OHWM (Cowardin et al. 1979).

The herbaceous layer is dominated by mugwort (FACW) and California blackberry (FAC), while red willow (FACW) is the dominant species in the canopy.

Soils in WL 1 are mapped by NRCS as Water, a designation that indicates this area is ponded and not technically soil. The soil survey data was published in 1978 (USDA, 1978), when the normal operating reservoir water surface elevation was 537 feet, higher than the current 525 feet. However, this area is now only seasonally flooded and current conditions are best represented by the stratified sands described in the Psamments and Fluvents soil descriptions.

Two wetland and one upland soil test pit were dug in WL 1 to confirm the wetland boundary. Pit 1c is located slightly nearer to the upland border than Pit 1a, though both pits meet all three wetland parameters (1b is the upland test pit). Soils were found to contain a significant amount of organic matter, especially in the upper horizons. Test Pit

1A had high amounts of semi-decomposed organic matter in the upper mineral horizon, sufficient to cause a hydrogen sulfide odor; Test Pit 1C had higher levels of decomposed organic matter, sufficient to be classified as a sapric A horizon (muck texture). Both test pits contained distinct sand or sandy loam subsurface horizons with minimal organic material. The observed hydric soil indicators were hydrogen sulfide odor (hydric soil indicator A4) and sandy mucky mineral (S1).

Indicators of wetland hydrology in WL 1 include visible saturation (A3), a high water table (A2), hydrogen sulfide odor (C1), water marks (B1), and drift deposits (B3). The water table was present at 7 inches for Pit 1a and at 18 inches at Pit 1C. Likewise, saturation was present at the surface for Pit 1a and at 12 inches for Pit 1C.

Wetland 1 is considered jurisdictional because it meets the three-parameter test and lies at the confluence of San Clemente Creek, an RPW, and the reservoir. The reservoir is formed by the damming of the Carmel River, a TNW.

Wetland 2

WL 2 is located near WL 1 on the opposite (east) side of San Clemente Creek. It lies in the concave portion of a floodplain abutting an upland area on a 15 percent slope; the adjacent upland separates the channels and floodplains of San Clemente Creek and Carmel River from one another.

WL 2 is considered a Lacustrine Littoral Unconsolidated Bottom wetland in the Cowardin classification, as it lies within the OHWM of the reservoir. Vegetation in WL 2 is dominated by arroyo willow (FACW), American tule rush (*Scirpus americanus*, OBL), poison hemlock (*Conium maculatum*, FACW) and stinging nettle (FACW).

Soils at WL 2 were mapped by NRCS as Water (as described in Wetland 1) for the wetland point and Junipero-Sur complex for the upland point. Hydric soil indicators at WL 2 include the presence of sandy mucky mineral (S1) and depleted matrix below dark surface (A11). The upper horizon persists from the soil surface to seven inches depth and has a mucky mineral texture with a massive structure. The next horizon extends from seven to ten inches depth and has the same texture as the first horizon except with a granular structure. The third horizon extends from 10 to 16 inches and has a loamy sand texture. Only the third horizon has visible redoxomorphic features (15 percent matrix concentrations).

Wetland hydrology was confirmed at WL 2 by the observation of the water table present at 10 inches depth (A2) and saturation (A3) present at seven inches depth. No surface water was present at the time of the delineation.

Wetland 2 is considered jurisdictional because it lies at the confluence of San Clemente Creek, an RPW, and the reservoir. The reservoir is formed by the damming of the Carmel River, a TNW.

Wetland 3

WL 3 is located on the east side of the reservoir. It extends from the edge of the reservoir itself to the toe of the surrounding cliff. WL 3 is a Lacustrine Littoral Unconsolidated

Bottom wetland according to the Cowardin classification system. Vegetation at WL 3 is dominated by Santa Barbara sedge (FACW), red willow, and needle spikerush (*Eleocharis acicularis*, OBL).

Soils at WL 3 were mapped by the NRCS as Rocky Outcrop-Xerorthent Association, though the wetland itself, which lies on a bank of sediment deposited by Carmel River near the San Clemente Dam, is better represented by the Psamments and Fluvents description found in WL 1 and WL 2. The A horizon in the soil profile extends from zero to four inches and has a mucky mineral texture, which feels greasy when rubbed between the fingers(USACE 2008); the B horizon extends from four to 18 inches and has a loamy sand texture. The B horizon in the soil profile has a higher value and chroma than the A horizon; neither have redoxomorphic features. The hydric soil indicators observed at WL 3 were hydrogen sulfide odor (A4) and a one centimeter muck horizon (A9).

The water table (A2) was present at a depth of 2 inches and WL 3 was saturated up to the surface during the field investigation (A3). Wetland hydrology was indicated by these factors as well as a hydrogen sulfide odor (C1).

WL 3 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

Wetland 4

WL 4 is located on the west bank of the Carmel River, across from WL 3; it lies in an alluvial deposit and is classified in the Cowardin system as a Riverine Unconsolidated Bottom wetland, as it lies above the reservoir's ordinary high water mark. Vegetative cover is lower at WL 4 than most other wetlands in the project area, most notably because of the lack of tree cover (only an herbaceous stratum is present for the majority of the wetland). The only dominant plant species at WL 4 is hyssop loosestrife (*Lythrum hyssopifolium*, FACW).

Soils at WL 4 are mapped by the NRCS as Water (as described in WL 1) at the wetland test pit and as Junipero-Sur complex at the upland test pit. For Wetland Test Pit 4A, six horizons were identified in the field. The upper horizon extends from zero to two inches depth, has a sand texture and contains 10 percent redoxomorphic features; the second horizon extends from two to four inches and consists of a mucky peat with no redoxomorphic features; the third horizon extends from four to five and a half inches, has a loamy sand texture and contains 50 percent redoxomorphic features; the fourth horizon extends from five and a half to six and a half inches, has a sand texture and contains 15 percent redoxomorphic features; the fifth horizon extends from six and a half to eight and a half inches, has a loamy sand texture and no redoxomorphic features; the sixth horizon extends beyond eight and a half inches, has a sand texture and no redoxomorphic features. Hydric soil indicators were: the presence of hydrogen sulfide (A4), stratified layers (A5), a sandy gleyed matrix (S4) and a one centimeter horizon of muck (A9).

Wetland hydrology was confirmed at WL 4 by the presence of a high water table (A2) at six inches depth and saturation (A3) at four inches depth. Oxidized rhizospheres (C3) along living plant roots and the FAC-Neutral test (D5), a secondary indicator, further evidenced this finding.

WL 4 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

Wetland 5
WL 5 was tested as a potential wetland but did not meet the required hydric soils parameter. WL 5 did not qualify for having a problematic hydric soil since wetland hydrology was limited to two secondary indicators; drift deposits (B3) and the FAC-neutral test (D5). These indicators imply that flooding at this site is insufficient to produce anaerobic conditions for hydric soils to develop.

Wetland 6
WL 6 is located on the east bank of Carmel River upstream of other wetlands delineated in the project area. It is a narrow swath at the toe of a steep rocky slope. The dominant plant species at WL 6 are red willow and Santa Barbara sedge.

Soils at WL 6 are mapped by the NRCS as Water (as described in WL 1). Beneath a half inch horizon of organic litter there are three soil horizons. The first extends to two inches depth with a clay loam texture; the second horizon extends from two to eight inches depth with a sand texture and the third horizon extends from eight to 18 inches with a loamy sand texture. The third horizon featured redoxomorphic features (2 percent gleyed matrix concentrations and 10 percent 7.5 YR 5/8 matrix concentrations). Hydric soil indicators observed at WL 6 were sandy redox (S5) and loamy gleyed matrix (F2).

Indicators of wetland hydrology at WL 6 include saturation at 10 inches depth (A3), presence of a water table at 16 inches (A2), riverine drift deposits (B3) and visible drainage patterns (B10). Furthermore, the presence of reduced iron (C4), another positive hydrological indicator, was observed at WL 6.

WL 6 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

Wetland 7
WL 7 lies adjacent to Carmel River in a small depression. It is classified as a Riverine Unconsolidated Bottom wetland under the Cowardin system. The dominant vegetation at WL 7 is white alder (*Alnus rhombifolia*, FACW), arroyo willow and American tule.

Soils at WL 7 are classified by the NRCS as Water (as described in WL 1). The soil profile at WL 7 consists of a single horizon of gleyed sand extending from the surface to 18 inches in depth. There were no redoxomorphic features in the soil profile, which was dominated by organic matter. The hydric soil indicators observed were the presence of a sandy gleyed matrix (S4) and hydrogen sulfide odor (A4).

Saturation (at 9 inches) and a high water table (at 12 inches) are positive indicators for wetland hydrology at WL 7. Additionally, drift deposits and the FAC-neutral test act as secondary hydrological indicators at this site.

WL 7 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

Wetland 8 and Wetland 8-2

WL 8 and WL 8-2 have the same vegetation, soil indicators and hydrological indicators but are separated by a small upland berm. These two wetlands are located on the eastern portion of Carmel River on the edge of the floodplain well outside of the current river channel but within the delineated OHWM. They are Riverine Unconsolidated Bottom wetlands in the Cowardin classification system. Vegetation is dominated by red willow and needle spikerush (OBL). Soils at WL 8 and 8-2 are mapped by NRCS as Water (as described in WL 1); there are two horizons in the soil profile. The upper horizon extends to one inch depth and is a darker sand horizon. The second extends to 18 inches and consists of a lighter colored soil with a similar sand texture. Neither horizon has redoxomorphic features, though the presence of hydrogen sulfide (A4) provides a positive hydric soil indicator.

These wetlands had six inches of surface water at the time of the field investigation. This hydrology indicator (A1) and the correspondingly high water table (A2) and presence of saturation (A3) provided sufficient indication of wetland hydrology. A noted hydrogen sulfide odor (C1) also constitutes a primary indicator of wetland hydrology.

WL 8 and WL 8-2 are considered jurisdictional because they directly abut the Carmel River, a TNW.

Wetland 9

WL 9 is located on the west bank of Carmel River approximately 400 feet downstream of WL 7. It is a Riverine Unconsolidated Bottom wetland according to the Cowardin system. It lies in a relatively flat portion of the floodplain; Santa Barbara sedge is very common at WL 9 (60 percent absolute cover) while the only other dominant plant is red willow.

Soils at WL 9 are mapped by the NRCS as Water (as described in Wetland 1). The field investigation identified four horizons in the soil profile. The first is a one inch thick organic top horizon followed by a loamy sand horizon from zero to two inches depth. The third horizon extends from two to eight inches, has a loam texture and includes five percent redoxomorphic concentrations in the pore linings. The final horizon extends from eight to 16 inches, has a sandy texture and contains 10 percent redoxomorphic concentrations in the matrix. The sole hydric soil indicator at WL 9 is the presence of a depleted matrix (F3).

The only primary hydrological indicator observed at WL 9 is the presence of oxidized rhizospheres along living roots (C3). However, secondary indicators of riverine sediment deposits (B2) and FAC-Neutral Test (D5) provided further evidence of wetland hydrology.

WL 9 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

Wetland 10

WL 10 is a small depression on a terrace near the east edge of the reservoir by its confluence with Carmel River. It is a Riverine Unconsolidated Bottom wetland according to the Cowardin system. Dominant vegetation at WL 10 includes red willow and water speedwell (*Veronica anagallis-aquatica*, OBL).

Soils at WL 10 are mapped by the NRCS as being under water (as described in WL 1). The top horizon in the soil profile extends to three inches depth and has a mucky mineral texture. The second horizon extends to 18 inches depth and has a sand texture. The top portion of this second horizon contains approximately five percent redoxomorphic features. Hydric soil indicators at WL 10 include the presence of sandy redox (S5) as well as a centimeter of muck (A9).

The water table is present at three inches and saturation is present throughout the soil profile at WL 10. The high water table (A2) and saturation (A3) act as positive indicators of wetland hydrology at WL 10.

WL 10 is considered jurisdictional because it directly abuts the Carmel River, a TNW.

3.4 Non-Wetland Waters of the U.S.

The area of all of the non-wetland water features identified in the project area is presented in Table 3-2. Each of these waters is described below.

Table 3-2. Potentially Jurisdictional Non-Wetland Waters Mapped in the Project area

Feature type	Feature	Length (linear feet)	Area (square feet)
Other Waters of the U.S.	Upstream of San Clemente Dam (Carmel River, San Clemente Creek, Dam Reservoir)	*	1,042,027 (23.92 acres)
	Downstream of San Clemente Dam (Plunge Pool, Plunge Pool Road, and Old Carmel River Dam Area)	*	66,602 (1.53 acres)
	Western Tributary	485	3,311
	Eastern Tributary	521	2,086
	Jeep Trail Ephemeral Drainage	16	49
	Cachagua Creek Under Bridge #529 (Cachagua Road)	60	3,133
	Subtotal	**1,082***	**1,117,209**
Culvert Waters of the U.S.	CWUS_1	14	28
	CWUS_2	29	57
	CWUS_3	14	28
	CWUS_4	14	28
	CWUS_5	44	788
	CWUS 6	25	37

Table 3-2. Potentially Jurisdictional Non-Wetland Waters Mapped in the Project area

Feature type	Feature	Length (linear feet)	Area (square feet)
Culvert Waters of the U.S. (cont)	CWUS 7	20	30
	CWUS 8	23	34
	CWUS 9	46	68
	CWUS 10	44	174
	CWUS 11	54	214
	Subtotal	**325**	**1,487**
Total Jurisdictional Non-Wetland Waters		**1,407***	**1,118,696** (25.68 acres)**

*Linear feet are not applicable to the Dam Reservoir and Old Carmel River Dam.

**Totals are based on unrounded values. Columns may not sum to totals due to rounding of individual rows, but totals are accurate.

3.4.1 Upstream of San Clemente Dam

Non-wetland water features upstream of San Clemente Dam (SCD) include the reservoir area, Carmel River, San Clemente Creek, western and eastern tributaries.

The reservoir area lies immediately behind SCD. The floodplains and alluvial fans adjacent to the southeast portion of the reservoir are deposits of sandy, well-drained soils that have been carried downstream via Carmel River. The perimeter of the reservoir contains a narrow strip of riparian vegetation, predominantly willows, but is otherwise sparsely vegetated.

Sediment deposits have accumulated along Carmel River and a large floodplain has developed upstream of SCD as a result of the manipulated flow. This floodplain is periodically inundated as evidenced by hydrologic records (Appendix A), historical photos and indicators observed in the field (e.g., drift deposits). The river is lined with riparian vegetation, including red willow, arroyo willow, sandbar willow, black cottonwood and California sycamore. Pockets of emergent vegetation, including American tule, Santa Barbara sedge and hyssop loosestrife, were also found and are discussed in Section 3.3. The majority of the active channel is unvegetated. The Carmel River flows slowly within the project area; during the initial May visit, water levels were high enough for a small aluminum boat to navigate upstream for several hundred feet. By August, the flow rate had dropped and the river was no longer navigable.

San Clemente Creek is an RPW tributary to the reservoir just west of Carmel River. While it also shows signs of high sediment deposition close to SCD, the upper reaches within the project area are relatively pristine and contain riffles, runs, and various bed materials including cobble. Much of San Clemente Creek is heavily vegetated and contains a substantial tree canopy that extends over portions of the Creek and includes red willow, arroyo willow, black cottonwood and white alder.

The western tributary is a small drainage at the northwest corner of the reservoir. The sandy and sandy loam textured channel was dry at the time of the field investigation, but OHWM was indicated by a sporadically discernable bed and bank as well as drift deposits. Within the project area, the western tributary drains toward the reservoir under a small access road via an 18-inch culvert. The drainage is approximately three feet wide for the first forty feet from the culvert. It then widens to approximately five feet before terminating in the reservoir. The area around the drainage is heavily vegetated in the herbaceous and sapling/shrub strata. The plant species observed surrounding the western tributary include: mulefat (FACW), blue elderberry (FAC), arroyo willow, sweet cicely (NL), big leaf maple (*Acer macrophyllum*, FAC), oceanspray (*Holodiscus discolor*, NL) and yerba buena (*Satureja douglasii*, NL).

The eastern tributary discharges to the eastern side of the reservoir and to a seasonal backwater in the eastern floodplain of the Carmel River. This backwater provides a consistent connection between the eastern tributary and the Carmel River. This tributary enters the project area with a width of approximately 2 feet and eventually widens to 4 feet before terminating. Its entire length within the project area lies beneath a well-developed canopy including red willow, white alder and black cottonwood. The herb stratum is dominated by Pacific rush (*Juncus effusus*, OBL), Santa Barbara sedge, stinging nettle, poison oak and some non-native annual grasses.

3.4.2 Lower Carmel River (Plunge Pool Road and OCRD)

The Lower Carmel River extends downstream of SCD, parallel to the Plunge Pool Road, reaching the downstream project limit just past the OCRD. In addition to the OCRD area, a portion of the western side of Plunge Pool Road is below the OHWM of Lower Carmel River. The Lower Carmel River has been heavily manipulated. While sediment deposition is less prevalent than in the Upper Carmel River, hydrology is altered such that the OHWM does not reflect a natural regime. Nevertheless, healthy riparian vegetation exists along the corridor of Plunge Pool Road and the bed and bank are more natural (e.g., contain cobble and less sand) than the Upper Carmel River.

3.4.3 Jeep Road Ephemeral Drainage

The Jeep Trail Ephemeral Drainage is an incised channel that connects Culvert Waters (CWUS) 8 and 9 (addressed in Section 3.4.4), which drain underneath Jeep Trail. The drainage was likely created as a result of the culvert, which has no down-slope protection. The culvert concentrated hill-side, non-point source flow, eroding the unprotected area downslope. As a result, the channel is about 15 feet below the culvert, which now overhangs the channel. Finer sediment in the channel bed is an indicator of the ordinary high water mark.

3.4.4 Bridge # 529

Bridge #529 is a bridge on Cachagua Road that crosses Cachagua Creek. The creek area consists of very gravelly sand with several tall California sycamores providing riparian vegetation. The active channel is unvegetated. The creek was flowing in October 2011, suggesting it has perennial flow.

3.4.5 CWUS

Culvert waters of the U.S. were identified along Low Road, High Road, jeep trail and Cachagua Road. CWUS_1 occurs along the Low Road and consists of a single 18-inch diameter corrugated metal pipe. CWUS_2 and CWUS_4 occur along the High Road; both consist of a single 18-inch diameter corrugated metal pipe. CWUS_3 occurs along the High Road and consists of two 18-inch diameter corrugated metal pipes. CWUS_5 occurs along the High Road and is a concrete box-culvert used seasonally (i.e., when not over-topped) as an automobile bridge. CWUS 6-9 occur along the jeep trail; the ephemeral waters draining through these culverts eventually connect with eastern tributary. CWUS 10-11 are culverts located underneath Cachagua Road which allow drainages to pass below the roadway.

3.5 Non-Jurisdictional Waters

There are no non-jurisdictional waters of the U.S. in the project area.

4.0 Potential Jurisdictional Exemptions

4.1 Wetlands and Other Waters Potentially Exempt from Corps Jurisdiction

A number of exemptions from CWA regulations exist for areas that would otherwise qualify as waters of the United States. These exemptions are classified as either discretionary or non-discretionary exemptions.

4.1.1 Discretionary Exemptions

As described in Corps regulations, certain areas that meet the technical definition of wetlands are generally not considered waters of the U.S. (33 CFR § 328.3[a]). However, the Corps and EPA reserve the right to determine that a particular waterbody within the categories listed below is a water of the U.S. on a case-by-case basis. Such areas are:

- Non-tidal drainage and irrigation ditches excavated on dryland
- Artificially irrigated areas that would revert to upland if the irrigation ceased
- Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and that are used exclusively for purposes such as stock watering, irrigation, settling basins, and rice growing
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons
- Water-filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the U.S.

Determination of Exemption
No mapped features in the project area meet the criteria for discretionary exemption.

4.2 Non-Discretionary Exemptions

In addition to the discretionary exemptions described above, Corps regulations contain a non-discretionary exemption for waste treatment systems designed to meet the requirements of the CWA (33 CFR § 328.3[a][7]). Such areas, which include treatment ponds and lagoons, are not considered waters of the U.S.

Determination of Exemption
No mapped features in the project area meet the criteria for this non-discretionary exemption.

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Appendix A
Hydrographs of Reservoir at San Clemente Dam

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

CARMEL RIVER BASIN

SURFACE WATER RESOURCES DATA REPORT
WATER YEARS 2004 - 2008

Prepared By

GREG W. JAMES
HYDROGRAPHY PROGRAMS COORDINATOR

SEPTEMBER 2009

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

CARMEL RIVER BASIN

SURFACE WATER RESOURCES DATA REPORT
WATER YEARS 2004 - 2008

APPENDIX F

RESERVOIR LEVELS

FIGURE F-6

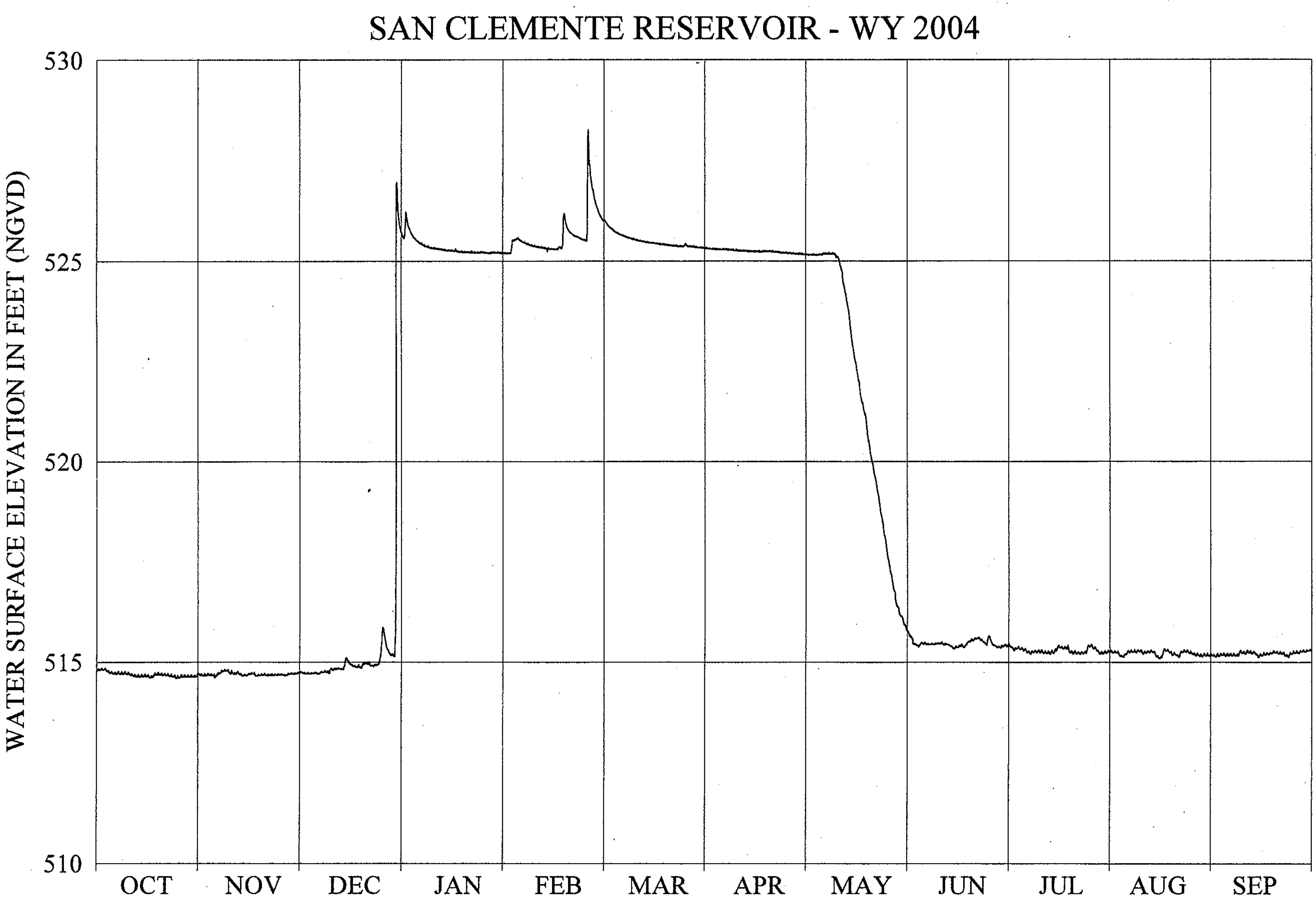

SAN CLEMENTE RESERVOIR - WY 2004
WATER SURFACE ELEVATION IN FEET (NGVD)
530
525
520
515
510
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP

FIGURE F-7

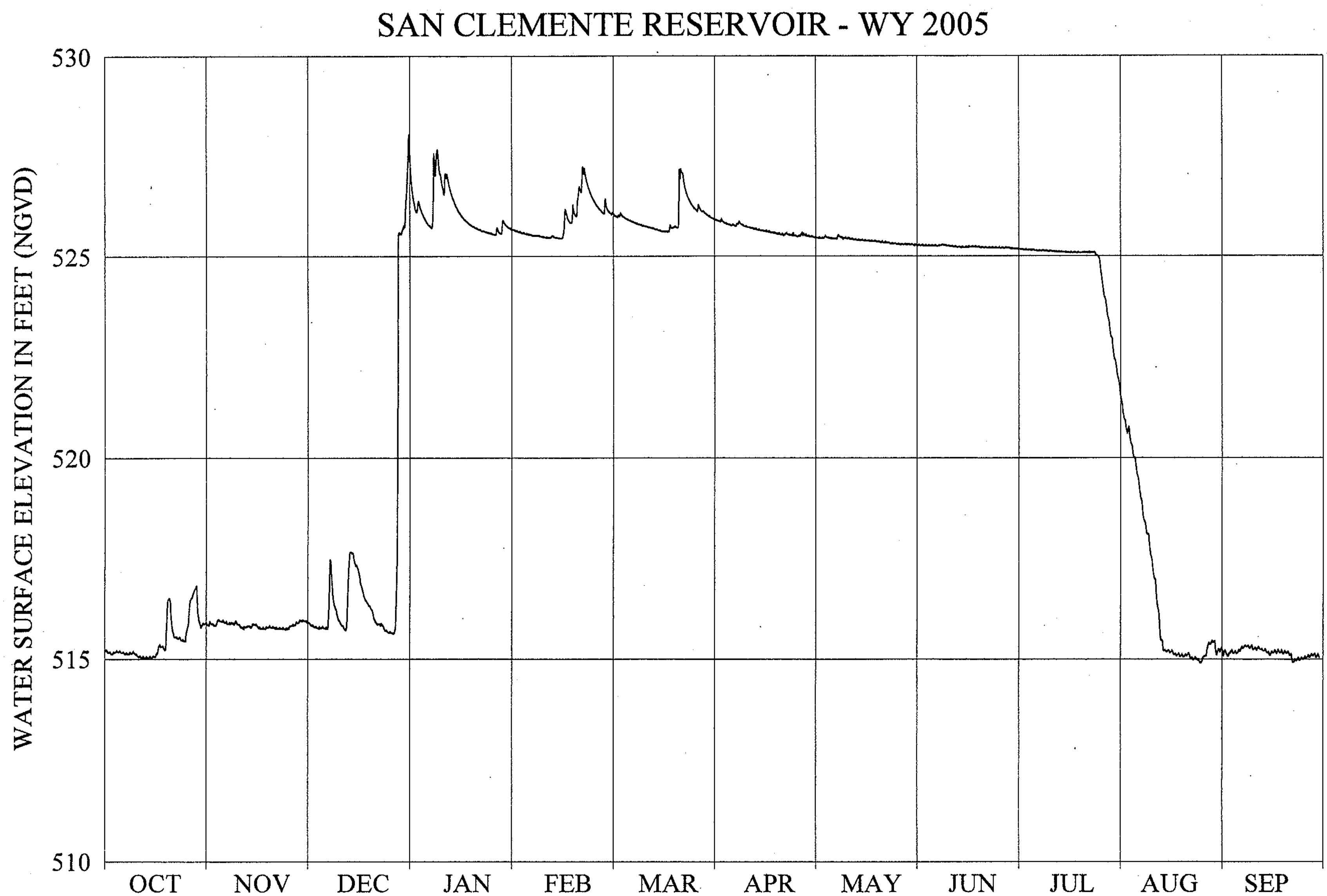
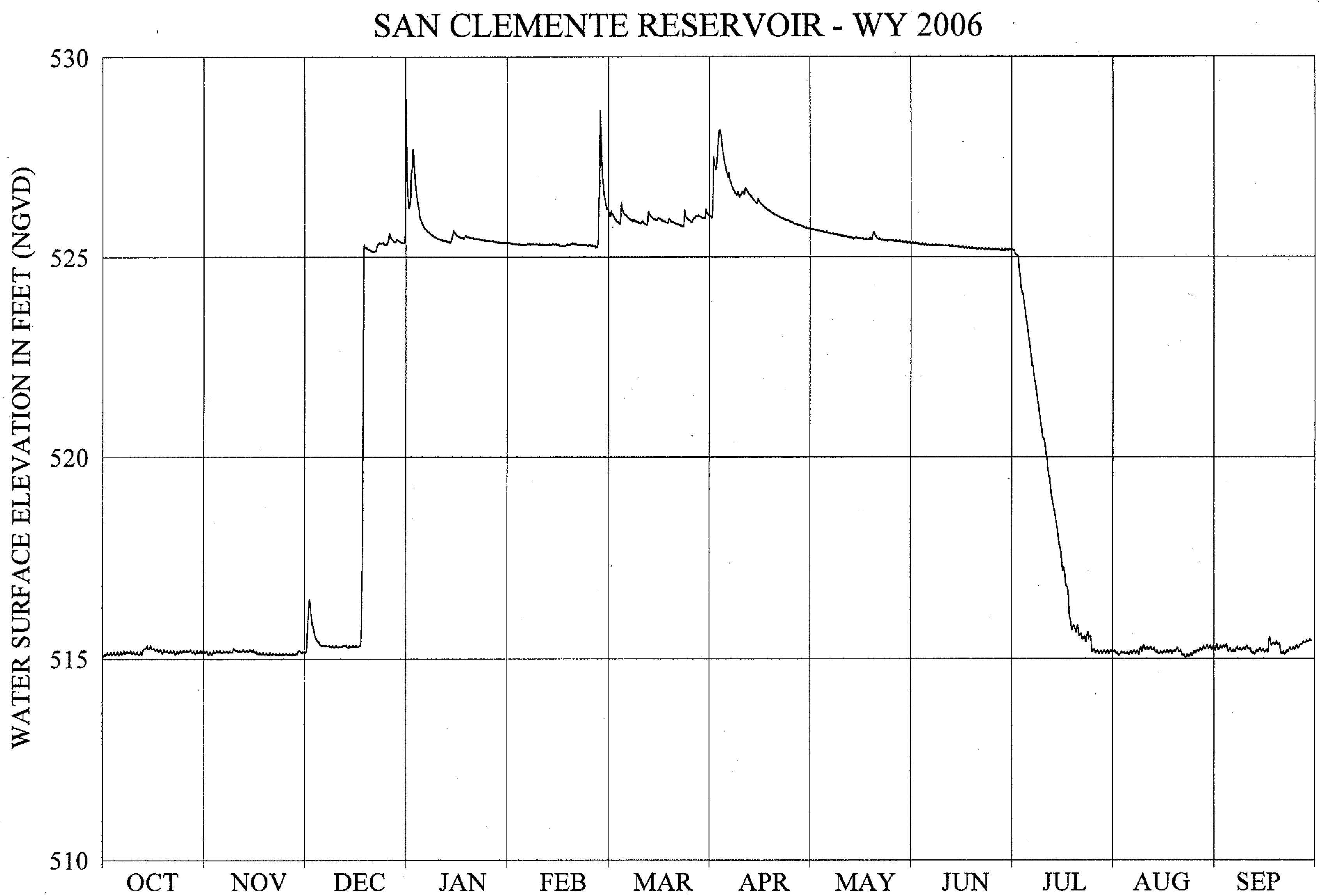
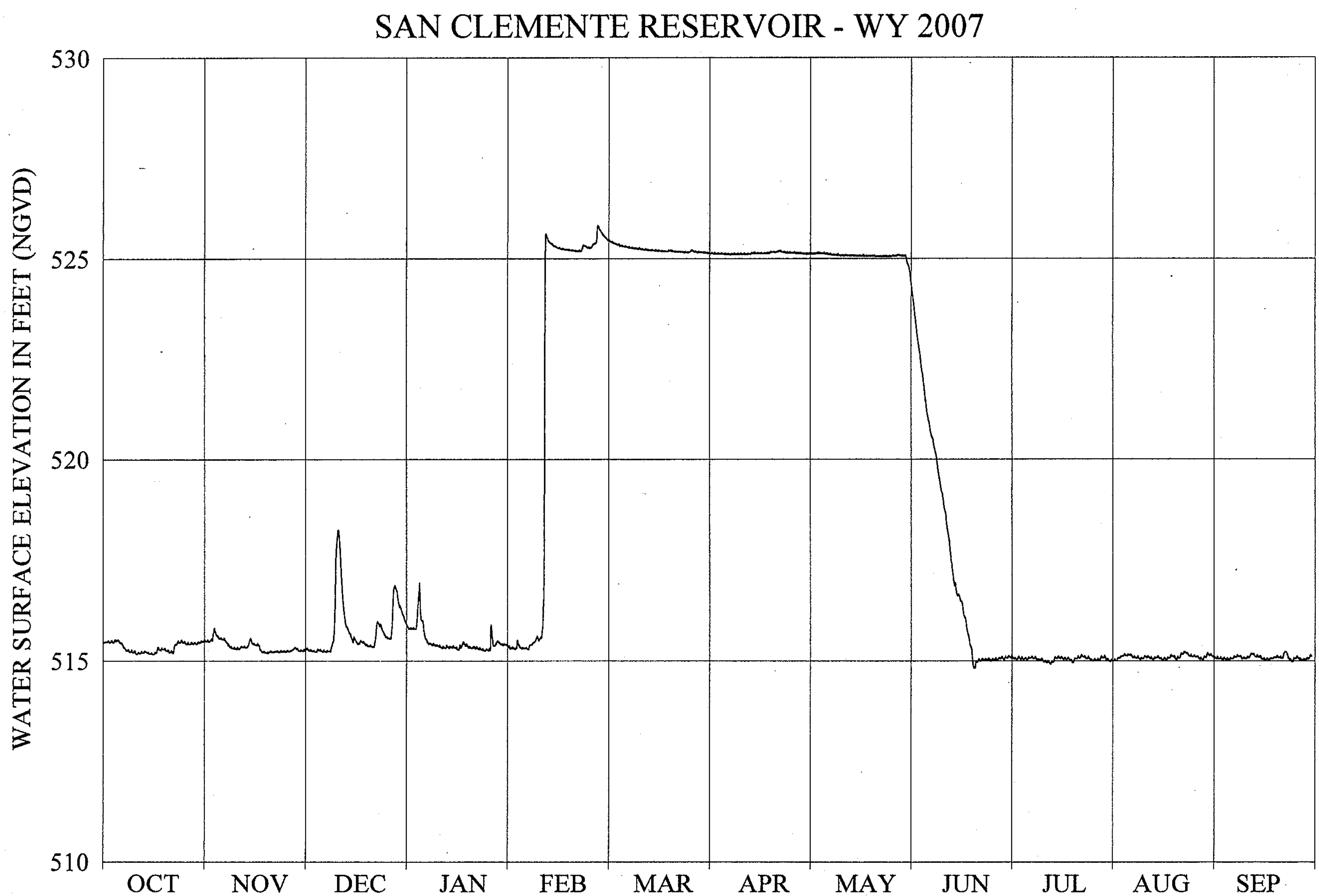

SAN CLEMENTE RESERVOIR - WY 2005
WATER SURFACE ELEVATION IN FEET (NGVD)
530
525
520
515
510
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP

FIGURE F-8



SAN CLEMENTE RESERVOIR - WY 2006
WATER SURFACE ELEVATION IN FEET (NGVD)
530
525
520
515
510
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP

FIGURE F-9



SAN CLEMENTE RESERVOIR - WY 2007
WATER SURFACE ELEVATION IN FEET (NGVD)
530
525
520
515
510
OCT
NOV
DEC
JAN
FEB
MAR
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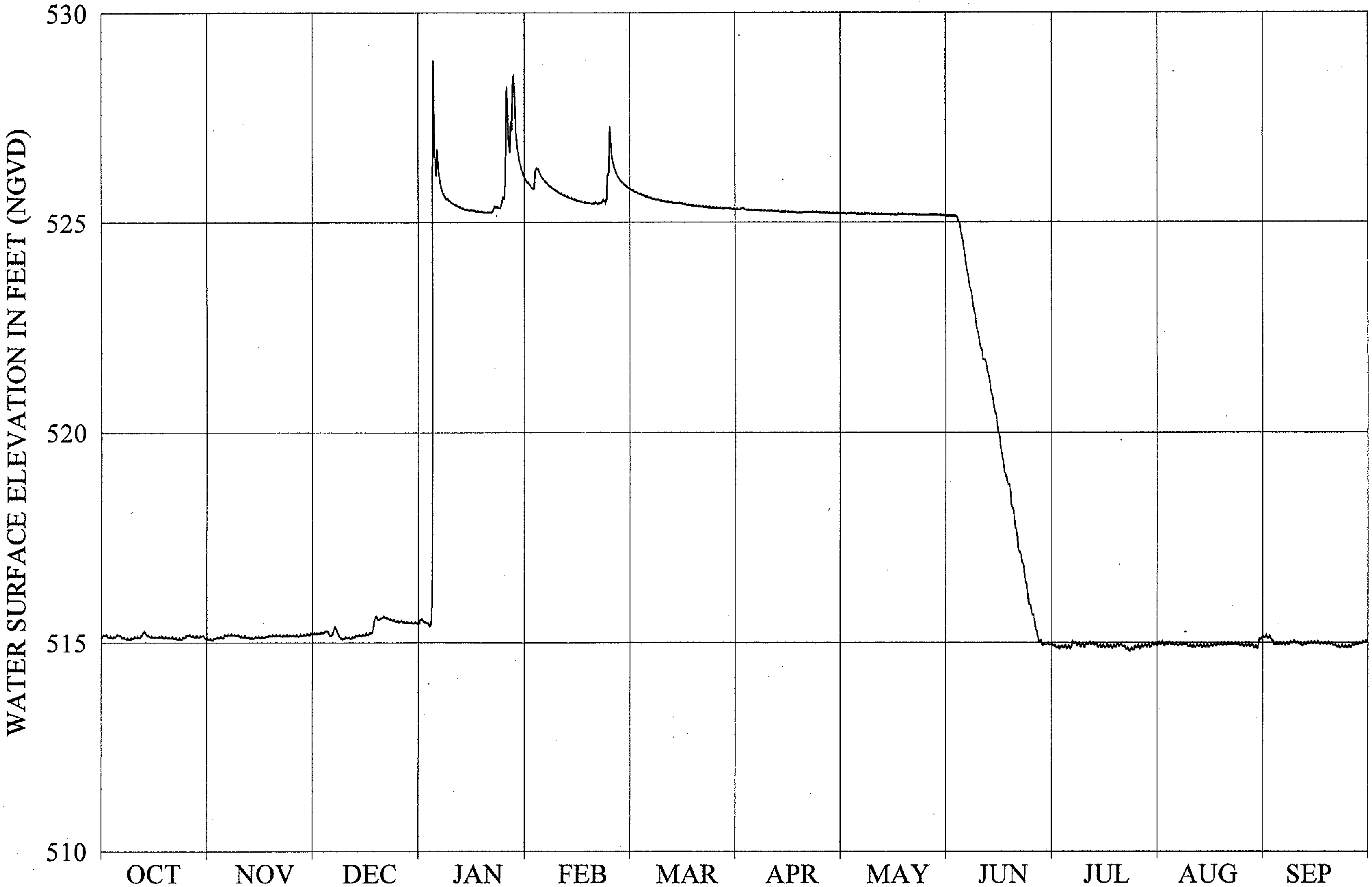
MAY
JUN
JUL
AUG
SEP

FIGURE F-10

SAN CLEMENTE RESERVOIR - WY 2008



Appendix B
WETS Tables

WETS Station : SAN CLEMENTE DAM, CA7731 Creation Date: 08/29/2002
Latitude: 3626 Longitude: 12142 Elevation: 00600
State FIPS/County(FIPS): 06053 County Name: Monterey
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	30% chance will have more than	avg # of days w/.1 or more	avg total snow fall
January	-----	-----	-----	4.54	1.69	5.49	6	0.0
February	-----	-----	-----	4.79	1.78	5.79	6	0.0
March	-----	-----	-----	3.98	1.40	4.78	6	0.0
April	-----	-----	-----	1.41	0.53	1.73	3	0.0
May	-----	-----	-----	0.43	0.06	0.49	1	0.0
June	-----	-----	-----	0.12	0.00	0.13	0	0.0
July	-----	-----	-----	0.05	0.00	0.00	0	0.0
August	-----	-----	-----	0.06	0.00	0.00	0	0.0
September	-----	-----	-----	0.24	0.00	0.23	0	0.0
October	-----	-----	-----	0.93	0.18	1.14	1	0.0
November	-----	-----	-----	2.18	0.71	2.60	3	0.0
December	-----	-----	-----	3.23	1.41	3.94	5	0.0
Annual	-----	-----	-----	------	16.08	25.32	--	----
Average	0.0	0.0	0.0	------	------	------	--	----
Total	-----	-----	-----	21.96	------	------	31	0.0

GROWING SEASON DATES

Probability	Temperature: 24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	---------- ------	---------- ------	---------- ------
70 percent *	---------- ------	---------- ------	---------- ------

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1948-2002 prcp

WETS Station : MONTEREY, CA5795 Creation Date: 08/29/2002
Latitude: 3636 Longitude: 12154 Elevation: 00380
State FIPS/County(FIPS): 06053 County Name: Monterey
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	more than	avg # of days w/.1 or more	avg total snow fall
January	60.1	43.9	52.0	4.19	1.90	5.11	7	0.0
February	61.6	45.0	53.3	3.75	1.83	4.58	7	0.0
March	62.1	45.6	53.9	3.53	1.53	4.30	7	0.0
April	64.3	46.3	55.3	1.48	0.61	1.80	3	0.0
May	64.9	48.2	56.5	0.50	0.13	0.58	1	0.0
June	67.1	50.4	58.8	0.20	0.05	0.24	0	0.0
July	68.5	52.5	60.5	0.09	0.02	0.11	0	0.0
August	69.9	53.4	61.6	0.11	0.03	0.13	0	0.0
September	71.7	53.3	62.5	0.28	0.05	0.32	0	0.0
October	70.2	51.1	60.7	1.05	0.32	1.25	2	0.0
November	64.6	47.0	55.8	2.43	0.89	2.93	4	0.0
December	60.1	43.6	51.8	2.73	1.40	3.33	5	0.0
Annual	-----	-----	-----	------	16.02	23.42	--	----
Average	65.4	48.4	56.9	------	------	------	--	----
Total	-----	-----	-----	20.34	------	------	36	0.0

GROWING SEASON DATES

Probability	Temperature: 24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	---------- > 365 days	---------- > 365 days	> 365 days > 365 days
70 percent *	---------- > 365 days	---------- > 365 days	> 365 days > 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1949-2002 prcp

WETS Station : SALINAS 2 E, CA7668 Creation Date: 08/29/2002
Latitude: 3640 Longitude: 12136 Elevation: 00080
State FIPS/County(FIPS): 06053 County Name: Monterey
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	more than	avg # of days w/.1 or more	avg total snow fall
January	62.5	41.3	51.9	2.84	1.13	3.50	5	0.0
February	64.4	43.4	53.9	2.81	1.23	3.42	6	0.0
March	65.1	44.7	54.9	2.76	1.19	3.36	5	0.0
April	67.4	45.9	56.7	1.03	0.43	1.27	2	0.0
May	68.3	49.3	58.8	0.35	0.00	0.34	1	0.0
June	70.5	51.9	61.2	0.09	0.00	0.09	0	0.0
July	71.3	54.3	62.8	0.04	0.00	0.00	0	0.0
August	72.8	55.0	63.9	0.06	0.00	0.00	0	0.0
September	74.5	53.7	64.1	0.17	0.00	0.14	0	0.0
October	73.3	49.7	61.5	0.75	0.19	0.97	1	0.0
November	67.3	44.3	55.8	1.82	0.63	2.33	4	0.0
December	62.8	40.6	51.7	2.12	1.02	2.59	4	0.0
Annual	-----	-----	-----	------	10.67	16.43	--	----
Average	68.4	47.9	58.1	------	------	------	--	----
Total	-----	-----	-----	14.85	------	------	28	0.0

GROWING SEASON DATES

Probability	Temperature 24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	---------- > 365 days	> 365 days > 365 days	1/12 to ----- 356 days
70 percent *	---------- > 365 days	> 365 days > 365 days	> 365 days > 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1958-2002 prcp

Appendix C
Photographs

Appendix C Photographs of the Study Area

San Clemente Reservoir viewed from confluence with Carmel River

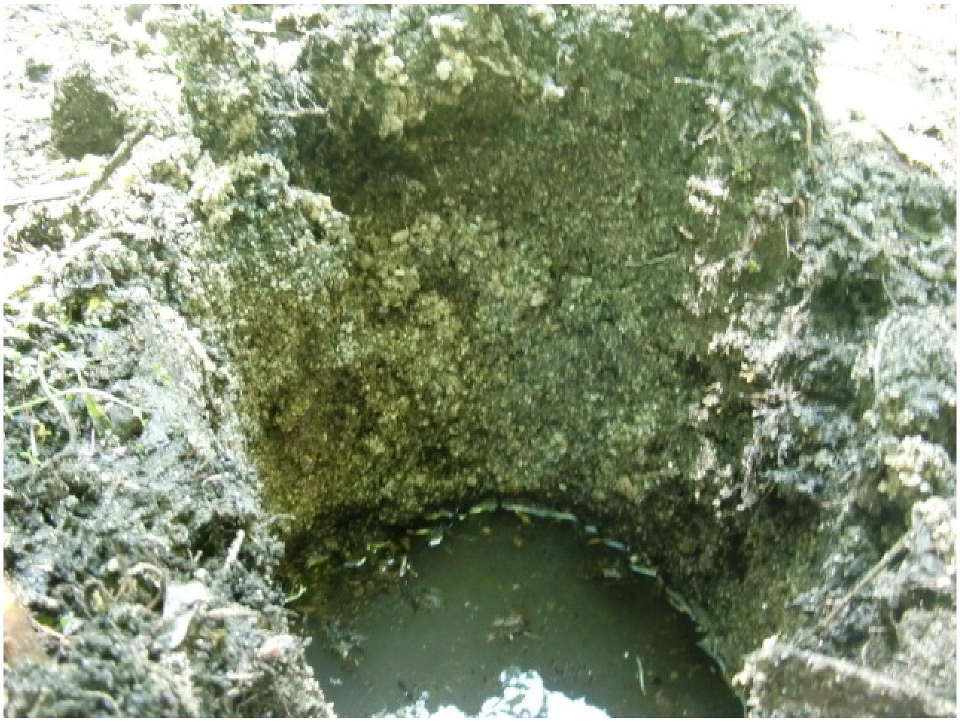
Western Tributary

Eastern Tributary

San Clemente Creek low flow channel (May 2011)

Carmel River viewing downstream near confluence with the reservoir

Carmel River floodplain along east bank upstream of the reservoir



Wetland 1a Soil Test Pit

Wetland 1b Soil Test Pit

Wetland 1c Soil Test Pit

Wetland 2a Soil Test Pit

Wetland 2b Soil Test Pit

Wetland 3a Soil Test Pit

Wetland 4a Soil Test Pit

Wetland 4b Soil Test Pit

Wetland 5a Soil Test Pit

Wetland 6a Soil Test Pit

Wetland 6b Soil Test Pit

Wetland 7a Soil Test Pit

Wetland 7b Soil Test Pit

Wetland 8a Soil Test Pit

Wetland 8-2 Soil Test Pit

Wetland 8b Soil Test Pit

Wetland 9a Soil Test Pit

Wetland 9b Soil Test Pit.

Wetland 10a Soil Test Pit

Wetland 10b Soil Test Pit

Plunge Pool Road

Plunge Pool Road: Drift Deposits

Plunge Pool Road: Upstream Endpoint

Typical Culvert (18-inch diameter corrugated metal pipe)

Appendix D
Project Plant List

Family	Scientific Name	Common Name	Status
Aceraceae	*Acer macrophyllum*	big-leaf maple	native
Aceraceae	*Acer negundo*	box elder	native
Anacardiaceae	*Toxicodendron diversilobum*	Pacific poison oak	native
Apiaceae	*Conium maculatum*	poison hemlock	Cal-IPC Moderate
Apiaceae	*Osmorhiza chilensis*	sweet cicely	native
Apiaceae	*Sanicula crassicaulis*	Pacific sanicle	native
Asteraceae	*Achillea millefolium*	common white yarrow	native
Asteraceae	*Anaphallis margaritacea*	pearly everlasting	native
Asteraceae	*Artemisia californica*	California sagebrush	native
Asteraceae	*Artemisia douglasiana*	mugwort	native
Asteraceae	*Artemisia dracunculus*	tarragon	native
Asteraceae	*Baccharis pilularis*	coyote brush	native
Asteraceae	*Baccharis salicifolia*	mulefat	native
Asteraceae	*Bellis perennis*	English daisy	non-native
Asteraceae	*Brickellia californica*	California brickellbush	native
Asteraceae	*Carduus pycnocephalus*	Italian thistle	Cal-IPC Moderate
Asteraceae	*Centaurea melitensis*	Tocalote	Cal-IPC Moderate
Asteraceae	*Chamomilla suaveolens*	pineapple weed	non-native
Asteraceae	*Cirsium occidentale* var. *venustum*	venus thistle	native
Asteraceae	*Cirsium vulgare*	bull thistle	non-native
Asteraceae	*Conyza canadensis*	Canada horseweed	native
Asteraceae	*Eriophyllum confertiflorum*	golden yarrow	native
Asteraceae	*Eriophyllum lanatum*	woolly sunflower	native
Asteraceae	*Filago gallica*	narrowleaf cottonrose	non-native
Asteraceae	*Gnaphalium californicum*	California cudweed	native
Asteraceae	*Gnaphalium luteo-album*	weedy cudweed	non-native
Asteraceae	*Hemizonia* sp.	tarplant	native
Asteraceae	*Heterotheca sessiliflora* ssp. *Echioides*	golden telegraph weed	native
Asteraceae	*Hieracium albiflorum*	white hawkweed	native
Asteraceae	*Hypochaeris radicata*	hairy cat's ear	Cal-IPC Limited
Asteraceae	*Madia sativa*	coast tarweed	native
Asteraceae	*Petasites frigidus* var. *palmatus*	western coltsfoot	native
Asteraceae	*Senecio vulgaris*	common groundsel	non-native
Asteraceae	*Sonchus asper*	spiny sowthistle	non-native
Asteraceae	*Sonchus oleraceus*	common sowthistle	non-native
Asteraceae	*Torilis arvensis*	meadow parsley	non-native
Asteraceae	*Xanthium strumarium*	rough cocklebur	native
Blechnaceae	*Woodwardia fimbriata*	giant chain fern	native
Boraginaceae	*Cryptantha* sp.	cryptantha	native
Boraginaceae	*Heliotropium curassivicum*	wild heliotrope	native
Brassicaceae	*Brassica nigra*	black mustard	Cal-IPC Moderate
Brassicaceae	*Cardamine oligosperma*	bittercress	native

Family	Scientific Name	Common Name	Status
Brassicaceae	*Lepidium nitidum*	Shining pepperweed	native
Brassicaceae	*Raphanus sativus*	charlock raddish	Cal-IPC Limited
Caprifoliaceae	*Sambucus mexicana*	blue elderberry	native
Caprifoliaceae	*Symphoricarpos mollis*	snowberry	native
Caryophyllaceae	*Cerastium glomeratum*	mousear chickweed	non-native
Caryophyllaceae	*Silene gallica*	catchfly	non-native
Caryophyllaceae	*Stellaria media*	common chickweed	non-native
Convolvulaceae	*Convolvulus arvensis*	field bindweed	non-native
Cornaceae	*Cornus glabrata*	brown dogwood	native
Cucurbitaceae	*Marah fabaceus*	California manroot	endemic
Cyperaceae	*Carex barbarae*	Santa Barbara sedge	native
Cyperaceae	*Carex* sp.	River sedge	native
Cyperaceae	*Cyperus eragrostis*	umbrella sedge	native
Cyperaceae	*Eleocharis acicularis*	least spikerush	native
Cyperaceae	*Scirpus americanus*	tule	native
Cyperaceae	*Scirpus microcarpus*	panicle bulrush	native
Datiscaceae	*Datisca glomerata*	Durango root	native
Dennstaedtiaceae	*Pteridium aquilinum*	bracken fern	native
Dryopteridaceae	*Dryopteris arguta*	wood fern	native
Dryopteridaceae	*Cystopteris fragilis*	fragile fern	native
Equisetaceae	*Equisetum arvense*	common horsetail	native
Equisetaceae	*Equisetum hyemalessp. Affine*	common scouring rush	native
Ericaceae	*Arbutus menziesii*	Pacific madrone	native
Euphorbiaceae	*Euphorbia lathyris*	Gopher plant	non-native
Euphorbiaceae	*Euphorbia peplus*	petty spurge	non-native
Fabaceae	*Genista monspessulana*	French broom	Cal-IPC High
Fabaceae	*Lathyrus vestitus*	woodland pea	native
Fabaceae	*Lotus corniculatus*	birdfoot trefoil	non-native
Fabaceae	*Lotus purshianus* var. *purshianus*	Spanish trefoil	non-native
Fabaceae	*Lotus scoparius*	California broom	native
Fabaceae	*Lupinus albifrons* var. *albifrons*	silver bush lupine	native
Fabaceae	*Lupinus bicolor*	miniature lupine	native
Fabaceae	*Medicago polymorpha*	bur clover	Cal-IPC Limited
Fabaceae	*Melilotus alba*	white sweetclover	non-native
Fabaceae	*Spartium junceum*	Spanish broom	Cal-IPC Limited
Fabaceae	*Trifolium hirtum*	rose clover	non-native
Fagaceae	*Quercus agrifolia*	coast live oak	native
Fagaceae	*Quercus lobata*	valley oak	native
Geraniaceae	*Erodium cicutarium*	redstem filaree	Cal-IPC Limited
Geraniaceae	*Geranium dissectum*	cutleaf geranium	Cal-IPC Moderate
Geraniaceae	*Geranium molle*	woodland geranium	non-native
Grossulariaceae	*Ribes californicum*	Hillside gooseberry	native
Hippocastinaceae	*Aesculus californica*	California buckeye	endemic
Hydrophyllaceae	*Eriodictyon californicum*	yerba santa	native
Hydrophyllaceae	*Nemophila heterophylla*	woodland nemophila	native
Hydrophyllaceae	*Nemophila parviflora*	small flowered nemophila	native
Hydrophyllaceae	*Phacelia cicutaria* var. *hispida*	caterpillar phacelia	native
Hydrophyllaceae	*Pholistoma auritum*	blue fiesta flower	native

Family	Scientific Name	Common Name	Status
Hydrophyllaceae	*Pholistoma membranceum*	white fiesta flower	native
Juglandaceae	*Juglans californica*	California black walnut	native
Juncaceae	*Juncus effusus*	Pacific rush	native
Juncaceae	*Juncus patens*	common rush	native
Lamiaceae	*Mentha spicata*	spearmint	non-native
Lamiaceae	*Salvia mellifera*	black sage	native
Lamiaceae	*Satureja douglasii*	yerba buena	native
Lamiaceae	*Stachys ajugoides*	hedgenettle	native
Lauraceae	*Umbellularia californica*	California bay	native
Liliaceae	*Calochortus albus*	fairy lantern	native
Liliaceae	*Dichelostemma capitatum*	blue dicks	native
Liliaceae	*Triteleia ixioides* ssp. *Ixioides*	golden brodiaea	native
Liliaceae	*Yucca whipplei*	Our Lord's candle	native
Lythraceae	*Lythrum hyssopifolium*	hyssop loosetrife	Cal-IPC Moderate
Malvaceae	*Malva nicaeensis*	bull mallow	non-native
Malvaceae	*Malva parviflora*	cheeseweed mallow	non-native
Onagraceae	*Clarkia amoena*	Farewell to Spring	native
Onagraceae	*Clarkia purpurea* ssp. *Uadrivulnera*	fourspot	native
Onagraceae	*Clarkia purpurea* ssp. *Viminea*	wine cup clarkia	native
Onagraceae	*Clarkia rhomboidea*	clarkia	native
Onagraceae	*Epilobium canum*	California fuschia	native
Onagraceae	*Epilobium ciliatum*	fireweed	native
Papaveraceae	*Eschscholzia caespitosa*	poppy	native
Papaveraceae	*Eschscholzia californica*	California golden poppy	native
Poaceae	*Poa annua*	annual bluegrass	non-native
Pinaceae	*Pinus ponderosa*	Ponderosa pine	native
Plantaginaceae	*Plantago lanceolata*	European plantain	non-native
Platanaceae	*Platanus racemosa*	California sycamore	native
Poaceae	*Aira caryophyllea*	European silver hair grass	non-native
Poaceae	*Arundo donax*	giant reedtrass	Cal-IPC high
Poaceae	*Avena barbata*	slender wild oats	Cal-IPC Moderate
Poaceae	*Briza maxima*	rattlesnake grass	non-native
Poaceae	*Briza minor*	little quaking grass	non-native
Poaceae	*Bromus carinatus*	California brome	native
Poaceae	*Bromus catharticus*	rescue grass	non-native
Poaceae	*Bromus diandrus*	ripgut brome	Cal-IPC Moderate
Poaceae	*Bromus hordeaceus*	soft brome	Cal-IPC Limited
Poaceae	*Bromus madritensis* ssp. *rubens*	redtop brome	Cal-IPC High
Poaceae	*Cortaderia jubata*	Jubata grass	Cal-IPC high
Poaceae	*Ehrharta erecta*	panic veldt grass	Cal-IPC High
Poaceae	*Festuca californica*	California fescue	native
Poaceae	*Festuca occidentalis*	western fescue	native
Poaceae	*Hordeum marinum* var. *gussoneanum*	seaside barley	Cal-IPC Moderate
Poaceae	*Hordeum murinum*	foxtail barley	Cal-IPC Moderate
Poaceae	*Lolium multiflorum*	Italian ryegrass	Cal-IPC Moderate
Poaceae	*Melica imperfecta*	purple melic	native
Poaceae	*Poa annua*	annual bluegrass	non-native

Family	Scientific Name	Common Name	Status
Poaceae	*Vulpia myuros*	rattail fescue	Cal-IPC Moderate
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat	native
Polygonaceae	*Eriogonum nudum*	naked buckwheat	native
Polygonaceae	*Polygonum amphibium* var. *emersum*	water smartweed	native
Polygonaceae	*Polygonum arenastrum*	common knotweed	non-native
Polygonaceae	*Rumex acetosella*	sheep sorrel	Cal-IPC Limited
Polygonaceae	*Rumex crispus*	curly dock	Cal-IPC Limited
Polygonaceae	*Rumex salicifolius*	willow dock	native
Polypodiaceae	*Polypodium californicum*	California polypody	native
Portulacaceae	*Calandrinia ciliata*	red maids	native
Portulacaceae	*Claytonia perfoliata*	miner's lettuce	native
Pteridaceae	*Adiantum jordanii*	maiden hair fern	native
Pteridaceae	*Pellaea andromedifolia*	coffee fern	native
Pteridaceae	*Pellaea mucronata*	birdfoot fern	native
Pteridaceae	*Pentagramma triangularis*	goldback fern	native
Primulaceae	*Anagallis arvensis*	scarlet pimpernel	non-native
Ranunculaceae	*Delphinium patens*	larkspur	native
Rhamnaceae	*Ceanothus cuneatus*	buck brush	native
Rhamnaceae	*Ceanothus thyrsiflorus*	blue blossom	native
Rhamnaceae	*Rhamnus californica*	coffeeberry	native
Rosaceae	*Adenostoma fasciculatum*	chamise	native
Rosaceae	*Heteromeles arbutifolia*	toyon	native
Rosaceae	*Prunus ilicifolia*	holly-leaf cherry	native
Rosaceae	*Rosa californica*	California rose	native
Rosaceae	*Rubus discolor*	Himalaya berry	Cal-IPC High
Rosaceae	*Rubus parviflorus*	Thimble berry	native
Rosaceae	*Rubus ursinus*	California blackberry	native
Rubiaceae	*Galium aparine*	goose grass	native
Salicaceae	*Populus balsamifera* ssp. *Trichocarpa*	black cottonwood	native
Salicaceae	*Salix exigua*	narrowleaf willow	
Salicaceae	*Salix laevigata*	red willow	native
Salicaceae	*Salix lasiolepis*	arroyo willow	native
Saxifragaceae	*Heuchera micrantha*	alum root	native
Scrophulariaceae	*Castilleja affinis*	coast buckwheat	native
Scrophulariaceae	*Collinsia heterophylla*	chinese houses	native
Scrophulariaceae	*Mimulus aurantiacus*	golden sticky monkeyflower	native
Scrophulariaceae	*Mimulus guttatus*	seep monkeyflower	native
Scrophulariaceae	*Penstemon centranthifolius*	scarlet bugler	native
Scrophulariaceae	*Scrophularia californica*	California beeplant	native
Scrophulariaceae	*Verbascum thapsus*	mullein	native
Scrophulariaceae	*Veronica anagallis-aquatica*	water speedwell	native
Taxodiaceae	*Sequoia sempervirens*	coast redwood	native
Tropaeloaceae	*Tropaeolum majus*	garden nasturtium	non-native
Urticaceae	*Hesperocnide tenella*	western dwarf nettle	native
Urticaceae	*Urtica dioica* ssp. *Holosericea*	stinging nettle	native

Appendix E
Arid West Manual Data Sheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.25.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 1A

Investigator(s): Letty Brown, Casey Stewman Section, Township, Range:

Landform (hillslope, terrace, etc.): Lower Floodplain Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): C - Mediterranean California Lat: -121.71002228000 Long: 36.43398948930 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )
Hydric Soil Present?	Yes (•)	No ( )
Wetland Hydrology Present?	Yes (•)	No ( )

Is the Sampled Area within a Wetland? Yes (•) No ( )

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	85	Yes	FACW
2.			
3.			
4.			
Total Cover:	85 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Artemisia douglasiana*	15	Yes	FACW
2. *Polygonum sp.*	2	No	
3. *Cyperus eragrostis*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 80 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	103	x 2 =	206
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	103 (A)		206 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Red willow dominated riparian forest/wetland on lower floodplain of San Clemente Creek. Within water level of San Clemente Reservoir.

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	10YR 2/1	100					mucky mineral	slightly gritty
2-16	10YR 6/2	100					sand	sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Low chroma organic loam layer on surface with saturated sand beneath. Hydrogen sulfide odor.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes (●)	No ( )	Depth (inches): 7
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): to surface

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Along inundated channel of San Clemente Creek within San Clemente Reservoir.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir | City/County: Monterey | Sampling Date: 5.25.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy | State: CA | Sampling Point: 1B

Investigator(s): Casey Stewman, Letty Brown | Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of slope | Local relief (concave, convex, none): | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: -121.71018413700 | Long: 36.43390979520 | Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex | NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(•)	( )
Hydric Soil Present?	( )	(•)
Wetland Hydrology Present?	( )	(•)

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rhombifolia*	15	No	FACW
2. *Salix laevigata*	60	Yes	FACW
3. *Quercus agrifolia*	15	No	UPL
4. *Arbutus menziesii*	5	No	UPL
Total Cover:	95 %		
Sapling/Shrub Stratum			
1. *Holodiscus discolor*	2	Yes	UPL
2. *Heteromeles arbutifolia*	2	Yes	UPL
3. *Baccharis pilularis*	3	Yes	UPL
4.			
5.			
Total Cover:	7 %		
Herb Stratum			
1. *Rubus ursinus*	10	No	FAC
2. *Artemisia douglasiana*	25	Yes	FACW
3. *Stachys bullata*	20	Yes	UPL
4. *Digitalis purpurea*	1	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	56 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 44 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	100	x 2 =	200
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species	48	x 5 =	240
Column Totals:	158 (A)		470 (B)

Prevalence Index = B/A = 2.97

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Toe of upland slope at transition from low-lying red willow wetland to upland slope wetland (Quercus agrifolia).

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-3	10YR 4/2	100					silty clay loam	w/ roots
3-16	10YR 6/6	100					clay loam	tan loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redoximorphic indicators, upland clay loam.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample point 1B ~5' vertically above point 1A at toe of slope rising our of ± flat willow forest wetland floodplain.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir   City/County: Monterey   Sampling Date: 5.25.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy   State: CA   Sampling Point: 1C

Investigator(s): Casey Stewman, Jan Novak   Section, Township, Range:

Landform (hillslope, terrace, etc.): lower flood plain   Local relief (concave, convex, none): ± flat   Slope (%):

Subregion (LRR): C - Mediterranean California   Lat: -121.71011667300   Long: 36.43400407390   Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex   NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? Yes (●) No ( )

Remarks: More interior sample point in red willow forest between channel of San Clemente Creek and Reservoir.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	85	Yes	FACW
2.			
3.			
4.			
Total Cover:	85 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Rubus ursinus*	50	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 %   % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 = 0
FACW species	85	x 2 = 170
FAC species	50	x 3 = 150
FACU species		x 4 = 0
UPL species		x 5 = 0
Column Totals:	135 (A)	320 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dominance of hydrophytic vegetation.

SOIL

Sampling Point: 1C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
4-0	10YR 2/1	100						O litter layer - leaves+ roots
0-4	10YR 2/1	100					mucky mineral	greasy/slightly gritty texture
4-16	10YR 2/2	100					sandy loam	
16+	n/a						sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ◉ No ◯

Remarks: Sapric soil material (muck) with high carbon content in A horizon. Underlain by sandy loam and sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◯	No ◉	Depth (inches):
Water Table Present?	Yes ◉	No ◯	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes ◉	No ◯	Depth (inches): 12

Wetland Hydrology Present? Yes ◉ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Meets primary indicator and three secondary indicators. Hydrology from San Clemente Creek and San Clemente Reservoir.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.25.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 2A

Investigator(s): Jan Novak, Connor Dibble Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): C - Mediterranean California Lat: -121.70951131000 Long: 36.43443487360 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area**
Wetland Hydrology Present?	Yes (•)	No ( )	**within a Wetland?** **Yes** (•) **No** ( )

Remarks: Water level manipulated by San Clemente Dam, water level currently around 525ft above sea level, drawn down 10ft during summer.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	20	Yes	FACW
2.			
3.			
4.			
Total Cover:	20 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Scirpus americanus*	10	Yes	OBL
2. *Urtica dioica ssp holosericea*	10	Yes	FACW
3. *Conium maculatum*	15	Yes	FACW
4. *Scirpus fluxiatipis*	5	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	40 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 60 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	45	x 2 =	90
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	60 (A)		105 (B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (•) **No** ( )

Remarks:

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-7	7.5YR 2.5/1	100					mucky mineral	massive structure
7-10	7.5YR 2.5/1	100					mucky mineral	granular structure
10-16	2.5YR 2.5/1	85	7.5YR 4/6	15	C	M	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [x] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [x] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes (●)	No ( )	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): 7

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Within floodplain primarily dominated by willow. Pit filled with water rapidly.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir | City/County: Monterey | Sampling Date: 5.25.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy | State: CA | Sampling Point: 2B

Investigator(s): Casey Stewman, Letty Brown | Section, Township, Range:

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): Convex | Slope (%): 15%

Subregion (LRR): C - Mediterranean California | Lat: -121.70936937500 | Long: 36.43443934080 | Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex | NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(•)
Hydric Soil Present?	( )	(•)
Wetland Hydrology Present?	( )	(•)

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	15	Yes	FACW
2. *Quercus agrifolia*	15	Yes	UPL
3.			
4.			
Total Cover:	30 %		
Sapling/Shrub Stratum			
1. *Eriophyllum lanatum*	5	No	UPL
2. *Artemisia californica*	25	Yes	UPL
3. *Mimulus aurantiacus*	10	Yes	UPL
4.			
5.			
Total Cover:	40 %		
Herb Stratum			
1. *Urtica dioica ssp. holosericea*	10	Yes	FACW
2. *Melica imperfecta*	2	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	12 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	57	x 5 =	285
Column Totals:	82	(A)	335 (B)

Prevalence Index = B/A = 4.09

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Mixture of wetland plants on adjacent floodplain wetland and upland plants on granite rocky toe slope climbing up to Coast Live Oak woodland.

SOIL

Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 3/2	100					sandy loam	40-50% granitic rock fragments

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redoximorphic indicators, sandy granitic slope with rocks.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ○ Depth (inches):

Water Table Present? Yes ○ No ○ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Toe of oak woodland slope between San Clemente Creek and "island" over to Carmel River, ~2' vertically above point 2A. No hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.26.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 3A

Investigator(s): Casey Stewman, Connor Dibble Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 36.43536771430 Long: -121.70740881300 Datum: WGS 1984

Soil Map Unit Name: Rocky Outcrop-Xerorthent Association NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )		
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area**	
Wetland Hydrology Present?	Yes (●)	No ( )	**within a Wetland?**	**Yes (●) No ( )**

Remarks: Immediately adjacent to San Clemente Reservoir

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	85	Yes	FACW
2.			
3.			
4.			
Total Cover:	85 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Carex barbarae*	10	Yes	FACW
2. *Eleocharis acicularis*	20	Yes	OBL
3. *Scirpus fluxiatilis*	5	No	OBL
4. *Juncus effusus*	2	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	37 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	95	x 2 =	190
FAC species	2	x 3 =	6
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	122 (A)		221 (B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dominance of FACW and OBL hydrophytes

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 2/2	100					mucky mineral	with roots
4-18	10YR 7/4	100					loamy sand	medium

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes (•) No ( )

Remarks: 4" thick reduced dark organic layer "muck" with fine silt within, sand below.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	( )	( )	
Water Table Present?	(•)	( )	2
Saturation Present? (includes capillary fringe)	(•)	( )	to surface

Wetland Hydrology Present? Yes (•) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated to surface, water in pit at 2" with 4"-8" of water in wetland depression between willow edge and rocky cliff face (3B).

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir | City/County: Monterey | Sampling Date: 5.26.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy | State: CA | Sampling Point: 3B

Investigator(s): Connor Dibble, Casey Stewman | Section, Township, Range:

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): convex | Slope (%): 70

Subregion (LRR): C - Mediterranean California | Lat: -121.70742383200 | Long: 36.43541338940 | Datum: WGS 1984

Soil Map Unit Name: Rocky Outcrop-Xerorthent Association | NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ( ) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (•)
Hydric Soil Present?	Yes ( )	No (•)
Wetland Hydrology Present?	Yes ( )	No (•)

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks: Wetland to toe of cliff face, loose soil above, no pit possible.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Salvia mellifera*	2		
2. *Artemisia californica*	8		
3. *Mimulus aurantiacus*	10		
4.			
5.			
Total Cover:	20 %		
Herb Stratum			
1. *Bromus diandrus*	4		UPL
2. *Bromus madritensis*	4		UPL
3. *Carduus pycnocephalus*	2		
4. *Avena barbata*	15		
5. *Pellaea andromedifolia*	2		
6. *Artemisia douglasiana*	4		FACW
7.			
8.			
Total Cover:	31 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 69 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	4	x 2 =	8
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	8	x 5 =	40
Column Totals:	12 (A)		48 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Very rocky cliff vegetation - dominance of upland species.

SOIL

Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ●

Remarks: No pit possible. Very steep rocky slope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Point ~5ft higher in elevation than wetland point, but sheer cliff. No hydrologic indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir　City/County: Monterey　Sampling Date: 5.26.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy　State: CA　Sampling Point: 4A

Investigator(s): Jan Novak, Letty Brown　Section, Township, Range:

Landform (hillslope, terrace, etc.): Alluvial deposit　Local relief (concave, convex, none): none　Slope (%): 0

Subregion (LRR): C - Mediterranean California　Lat: -121.70761070600　Long: 36.43487069490　Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex　NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [X] significantly disturbed?　Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic?　(If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(●)	( )
Hydric Soil Present?	(●)	( )
Wetland Hydrology Present?	(●)	( )
Is the Sampled Area within a Wetland?	(●)	( )

Remarks: Hydrology: within reservoir of San Clemente Dam. Above average rainfall.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lythrum hyssopifolia*	50	Yes	FACW
2. *Veronica anaphalis-aquatica*	5	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	55 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 45 %　% Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	50	x 2 =	100
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	55 (A)		105 (B)

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: 50/20 = 28/11

SOIL

Sampling Point: 4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	5Y 4/1	90	7.5YR 5/8	10	C	M	sand	
2-4	10YR2/1	100					mucky peat	
4-5.5	GLEY 2 3/1	50	7.5YR 5/8	50	C	M	loamy sand	
5.5-6.5	n/a	85	7.5YR 5/8	15	C	M	sand	sand material not colorable
6.5-8.5	5Y 3/1	95	7.5YR 5/8	5	C	M	loamy sand	
8.5-18	n/a	100					sand	sand material not colorable

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [x] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [x] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Stratification likely due to manipulated hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [x] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes (●)	No ( )	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): 4"

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Within 50ft of active reservoir.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.26.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 4B

Investigator(s): Casey Stewman, Connor Dibble Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.43464817030 Long: -121.70797810000 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ● No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●		
Hydric Soil Present?	Yes ○	No ●	Is the Sampled Area	
Wetland Hydrology Present?	Yes ●	No ○	within a Wetland?	Yes ○ No ●

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	30	Yes	FACW
2.			
3.			
4.			
Total Cover:	30 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus hordeaceus*	15	Yes	UPL
2. *Vulpia myuros*	15	Yes	UPL
3. *Brassica nigra*	5	No	UPL
4. *Bromus diandrus*	5	No	UPL
5. *Artemisia douglasiana*	5	No	FACW
6.			
7.			
8.			
Total Cover:	45 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 55 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	35	x 2 =	70
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	40	x 5 =	200
Column Totals:	75 (A)		270 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks: Herb layer dominated by upland grasses, tree layer with FACW hydrophyte.

SOIL

Sampling Point: 4B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	2.5Y 6/3	100					sand	medium-fine sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redoximorphic indicators present in tan sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Edge of upper floodplain, approximately 2ft higher than sample point 4A, no primary indicators but two secondary indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 5A

Investigator(s): Jan Novak, Letty Brown Section, Township, Range:

Landform (hillslope, terrace, etc.): River floodplain Local relief (concave, convex, none): convex Slope (%): <2%

Subregion (LRR): C - Mediterranean California Lat: -121.70963839500 Long: 36.43132590780 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(•)	( )
Hydric Soil Present?	( )	(•)
Wetland Hydrology Present?	(•)	( )

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks: Water level manipulated by upstream/downstream dams. Soils too sandy/too drained for wetland criteria.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	60	Yes	FACW
2. *Alnus rhombifolia*	15	No	FACW
3. *Populus balsamifera*	5	No	FACW
4.			
Total Cover:	80 %		
Sapling/Shrub Stratum			
1. *Rubus ursinus*	2	Yes	FACW
2. *Salix laevigata*	10	Yes	FACW
3.			
4.			
5.			
Total Cover:	12 %		
Herb Stratum			
1. *Artemisia douglasiana*	40	Yes	FACW
2. *Gallium aparine*	2	No	FACU
3. *Bromus diandrus*	5	No	NI
4. *Anagallis arvensis*	5	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	52 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	132	x 2 =	264
FAC species	5	x 3 =	15
FACU species	2	x 4 =	8
UPL species	5	x 5 =	25
Column Totals:	144 (A)		312 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: 5A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	10YR 2/1	100					loamy sand	Approx. 10% organic matter
2-15	Brown sand	100					sand	
5-16	Light sand	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Along bank of Carmel River. Insufficient saturation for reduced soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir | City/County: Monterey | Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy | State: CA | Sampling Point: 6A

Investigator(s): Connor Dibble, Casey Stewman | Section, Township, Range:

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: -121.70715320700 | Long: 36.43215647560 | Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex | NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )
Hydric Soil Present?	Yes (•)	No ( )
Wetland Hydrology Present?	Yes (•)	No ( )

Is the Sampled Area within a Wetland? **Yes** (•) **No** ( )

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	35	Yes	FACW
2. *Populus balsamifera ssp. trichocorpa*	5		FACW
3.			
4.			
Total Cover:	40 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Carex barbarae*	30	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 70 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	70	x 2 =	140
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	70 (A)		140 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (•) **No** ( )

Remarks: Dominance of facultative hydrophytes in ground and canopy layer.

SOIL

Sampling Point: 6A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0.5-0	10YR 2/1	100						organic layer: leaf litter
0-2	10YR 2/1	100					clay loam	
2-8	10YR 6/4	100					sand	medium coarse
8-18	10YR 4/6	88	Gley 1 4/N	2	C	M	loamy sand	some clay present
"	"	"	7.5YR 5/8	10	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ◉	No ○	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 10

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation @ ~10in

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 6B

Investigator(s): Connor Dibble, Casey Stewman Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: -121.70721004600 Long: 36.43217480260 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )
Hydric Soil Present?	Yes ( )	No (•)
Wetland Hydrology Present?	Yes (•)	No ( )

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	25	Yes	FACW
2. *Populus balsamifera ssp. trichocarpa*	10	Yes	FACW
3.			
4.			
Total Cover:	35 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Carduus pycnocephalus*	4	No	UPL
2. *Artemisia douglasiana*	15	Yes	FACW
3. *Vulpia myuros*	20	Yes	UPL
4. *Artemisia dracunculus*	3	No	UPL
5. *Carex barbarae*	5	No	FACW
6.			
7.			
8.			
Total Cover:	47 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	55	x 2 =	110
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	27	x 5 =	135
Column Totals:	82 (A)		245 (B)

Prevalence Index = B/A = 2.99

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Dominance of facultative wetland hydrophytes: red willow forest with black cottonwood.

SOIL

Sampling Point: 6B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	10YR 2/2	100					sandy loam	with roots
2-18	10YR 6/4	100					sand	medium

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks: No redoximorphic features, organic layter on top of loam but well-drained. Not mucky, no reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Drift deposits (wrack lines of leaves and debris), drainage patterns and other secondary indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 7A

Investigator(s): Jan Novak, Letty Brown Section, Township, Range:

Landform (hillslope, terrace, etc.): riverbank Local relief (concave, convex, none): convex Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: -121.70904754300 Long: 36.43255473880 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(•)	( )
Hydric Soil Present?	(•)	( )
Wetland Hydrology Present?	(•)	( )
Is the Sampled Area within a Wetland?	(•)	( )

Remarks: 3ft from river's edge, wetland area is 250 sq.ft. 25ftx10ft in area.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rhombifolia*	15	Yes	FACW
2. *Salix laevigata*	35	Yes	FACW
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Scirpus americana*	60	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	50	x 2 =	100
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	110 (A)		160 (B)

Prevalence Index = B/A = 1.45

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: 7A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	GLEY 3/1	100					sand	75% organic matter, mainly decomposed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [x] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes (●)	No ( )	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): 9

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 7B

Investigator(s): Jan Novak, Letty Brown Section, Township, Range:

Landform (hillslope, terrace, etc.): riverbank upsolpe Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: -121.70905652500 Long: 36.43259373520 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )
Hydric Soil Present?	Yes ( )	No (•)
Wetland Hydrology Present?	Yes (•)	No ( )

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks: Boundary is 250 sqft. 25ftx10ft in area.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rhombifolia*	20	Yes	FACW
2. *Salix laevigata*	30	Yes	FACW
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Urtica californica*	20	Yes	FACW
2. *Scirpus americana*	10	Yes	OBL
3. *Carex barbarae*	20	Yes	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: 7B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
2-0								organic matter
0-13	10YR 3/1	100					sandy loam	
13+	shovel refusal							shovel refusal - roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ( ) No (•)

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ( ) No ( ) Depth (inches):

Water Table Present? Yes ( ) No ( ) Depth (inches):

Saturation Present? (includes capillary fringe) Yes ( ) No ( ) Depth (inches):

Wetland Hydrology Present? Yes (•) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir — City/County: Monterey — Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy — State: CA — Sampling Point: 8A/8A-2

Investigator(s): Connor Dibble, Casey Stewman — Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain — Local relief (concave, convex, none): concave — Slope (%): 0

Subregion (LRR): C - Mediterranean California — Lat: -121.70707155200 — Long: 36.43293704400 — Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex — NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? Yes (●) No ( )

Remarks: Paired points taken for WL 8 were also applied to WL 8-2, which is separated by a small berm that is approximately 2 feet higher in elevation than the two wetlands. WL 8 and WL 8-2 have identical vegetation, hydric soil indicators and hydrological indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	20	Yes	FACW
2. *Populus balsamifera*	5	No	FACW
3.			
4.			
Total Cover:	25 %		
Sapling/Shrub Stratum			
1. *Eleocharis acicularis*	45	Yes	OBL
2. *Carex barbarae*	2	No	FACW
3. *Rumex crispus*	2	No	FACW
4.			
5.			
Total Cover:	49 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % — % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	29	x 2 =	58
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	74 (A)		103 (B)

Prevalence Index = B/A = 1.39

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dominance of hydrophytes in canopy and herb layer

SOIL

Sampling Point: 8A/8A-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-1	10YR 3/1	100					sand	
1-18	10YR 6/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes (●)	No ( )	Depth (inches): 6
Water Table Present?	Yes (●)	No ( )	Depth (inches): to surface
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches):

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Elliptical shallow pool - wetlands within pool and surrounding. Appears to be fed as backwater to the reservoir.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir   City/County: Monterey   Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy   State: CA   Sampling Point: 8B

Investigator(s): Connor Dibble, Casey Stewman   Section, Township, Range:

Landform (hillslope, terrace, etc.): Alluvial floodplain   Local relief (concave, convex, none): convex   Slope (%): 2

Subregion (LRR): C - Mediterranean California   Lat: -121.70711920400   Long: 36.43293173940   Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex   NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes ( )	No (●)	Is the Sampled Area
Wetland Hydrology Present?	Yes (●)	No ( )	**within a Wetland?** Yes ( ) No (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	40	Yes	FACW
2. *Populus balsamifera ssp. trichocarpa*	10	Yes	FACW
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Eleocharis acicularis*	45	Yes	OBL
2. *Artemisia dracunculus*	2	No	UPL
3. *Carex barbarae*	5	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	52 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ %   % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	45	x 1 =	45	
FACW species	55	x 2 =	110	
FAC species		x 3 =	0	
FACU species		x 4 =	0	
UPL species	2	x 5 =	10	
Column Totals:	102	(A)	165	(B)

Prevalence Index = B/A = 1.62

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dominance of hydrophytes.

SOIL

Sampling Point: 8B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	10YR 7/3	100					sand	medium

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: No redoximorphic indicators or muck layer present. No sulfidic odor or hydrogen sulfide. Well drained sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	○	◉	
Water Table Present?	◉	○	14
Saturation Present? (includes capillary fringe)	◉	○	12

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 8B is 2ft higher than 8A

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 9A

Investigator(s): Jan Novak, Letty Brown Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): ±flat Slope (%): 2%

Subregion (LRR): C - Mediterranean California Lat: -121.70845526800 Long: 36.43369911870 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	Is the Sampled Area
Wetland Hydrology Present?	Yes (●)	No ( )	within a Wetland? Yes (●) No ( )

Remarks: Many woodrat nests present.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	15	Yes	FACW
2.			
3.			
4.			
Total Cover:	15 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Carex barbarae*	60	Yes	FACW
2. *Urtica californica*	15	No	FACW
3. *Artemisia douglasiana*	15	No	FACW
4. *Scirpus americana*	5	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	105	x 2 = 210
FAC species		x 3 = 0
FACU species		x 4 = 0
UPL species		x 5 = 0
Column Totals:	110 (A)	215 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: 95/2 = 47.5 = 50%
95/5 = 19 = 20%

SOIL

Sampling Point: 9A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
1-0								organic matter
0-2	10YR 3/2	100					loamy sand	
2-8	10YR 3/1		7.5YR 5/8	5	C	PL	loam	mainly oxidized rhizospheres
8-16	light sand	90	7.5YR 5/8	10	C	M	sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 9B

Investigator(s): Letty Brown, Jan Novak Section, Township, Range:

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): ±flat Slope (%): 6%

Subregion (LRR): C - Mediterranean California Lat: -121.70851530400 Long: 36.43368399740 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Plantanus racemosa*	5	No	FACW
2. *Quercus agrifolia*	15	Yes	UPL
3. *Salix laevigata*	20	Yes	FACW
4.			
Total Cover:	40 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Juncus effusus*	5	No	FACW
2. *Urtica californica*	20	Yes	FACW
3. *Bromus diandrus*	2	No	UPL
4. *Carex barbarae*	3	No	FACW
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 70 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	53	x 2 =	106
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	17	x 5 =	85
Column Totals:	70 (A)		191 (B)

Prevalence Index = B/A = 2.73

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☒ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (●) **No** ( )

Remarks:

SOIL

Sampling Point: 9B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
5-0								organic matter- leaf litter
0-4	10YR 3/2	100					gravelly loam	granular texture
4-10	10YR 3/2	100					gravelly loam	less organic matter than 0-4
10+								granitic material, sandy

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: n/a

Depth (inches):

Hydric Soil Present? Yes ◯ No ◉

Remarks: well drained soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◉ Depth (inches):

Water Table Present? Yes ◯ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ◯ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◯ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Toe slope.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 10A

Investigator(s): Connor Dibble, Casey Stewman Section, Township, Range:

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: 36.43400041320 Long: -121.70723779300 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area**
Wetland Hydrology Present?	Yes (•)	No ( )	**within a Wetland?** Yes ( ) No ( )

Remarks: Small terrace near edge of reservoir.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	30	Yes	FACW
2.			
3.			
4.			
Total Cover:	30 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Veronica anagallis-aquatica*	15	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	15 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 85 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	45 (A)		75 (B)

Prevalence Index = B/A = 1.67

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: 10A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-3	10YR 2/2	100					mucky mineral	
3-18	n/a	90	10YR 2/1	10	C	M	sand	sand not colorable

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [x] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (•) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	( )	(•)	
Water Table Present?	(•)	( )	3
Saturation Present? (includes capillary fringe)	(•)	( )	surface

Wetland Hydrology Present? Yes (•) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Clemente Dam/Reservoir City/County: Monterey Sampling Date: 5.27.11

Applicant/Owner: Cal-Am Water/Coastal Conservancy State: CA Sampling Point: 10B

Investigator(s): Connor Dibble, Casey Stewman Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.43396458960 Long: -121.70722375000 Datum: WGS 1984

Soil Map Unit Name: Junipero-Sur Complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes (●)	No ( )	Is the Sampled Area
Wetland Hydrology Present?	Yes (●)	No ( )	within a Wetland? Yes ( ) No (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Geranium dissectum*	50	Yes	Not Listed
2. *Vulpia myuros*	15	Yes	UPL
3. *Bromus hordeaceous*	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	70 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70	(A)	350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 10B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	10YR2/1	100					sandy loam	
2-18	n/a	95	7.5YR5/6	5	C	M	sand	sand could not be colored

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [x] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: n/a
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes ( )	No (●)	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): 2

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix F
Jurisdictional Determination Forms

Approved Jurisdictional Determination Form

U.S. Army Corps of Engineers

Carmel River

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Monterey City: Carmel Valley
Center coordinates of site (lat/long in degree decimal format): Lat. 36.43132590780° N, Long. -121.70963839500° W.
Universal Transverse Mercator:
Name of nearest waterbody: Carmel River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Carmel River/Pacific Ocean
Name of watershed or Hydrologic Unit Code (HUC): Carmel River Watershed (HUC: 18060012)

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): May 24 through May 27, 2011

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☒ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: Commercial activities on the Carmel River relate to fishing, recreation, and water sale.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☒ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or 24.64 acres.
      Wetlands: 1.00 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known): approximately 527 feet.

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **There are some areas where emergent hydrophytic vegetation is supported and wetland hydrology is evident but that lack indicators of hydric soils. These areas were determined to be not jurisdictional as they did not meet all three required criteria**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: **Carmel River**.

Summarize rationale supporting determination: The Carmel River has long been used to supply water for irrigation and municipal consumption. It has historically supported commercial waterborne recreation (e.g. kayaking, rafting, fishing) though low flow and a struggling steelhead population have reduced these activities at present. If natural conditions were restored, the Carmel River would likely support commercial activity to a greater degree.

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": Wetlands identified were either immediately abutting the river, within the highest high water mark, or abutting the highest high water mark. None of the wetlands identified were separated from the river by a topographic feature or otherwise.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):

☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

---

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately (   ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☒ TNWs: linear feet width (ft), Or, 24.64acres.
   ☒ Wetlands adjacent to TNWs: 1.00 acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☒ Tributary waters: **955.58** linear feet**avg 5**width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from “waters of the U.S.,” or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain: .

☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA ***Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:URS Corporation.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name: .
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Cook, TD. 1972. Soil Survey for Monterey County, California. United States Department of Agriculture, Soil Conservation Service. U.S. Gov't Printing Off.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

Approved Jurisdictional Determination Form

U.S. Army Corps of Engineers

San Clemente Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:California County/parish/borough: Monterey City: Carmel Valley
Center coordinates of site (lat/long in degree decimal format): Lat. 36.43398948930° N, Long. -121.71002228000° W.
Universal Transverse Mercator:
Name of nearest waterbody: San Clemente Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Carmel River
Name of watershed or Hydrologic Unit Code (HUC): Carmel River Watershed (HUC: 18060012)

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 2147.37linear feet: approx. 20 feet average width (ft) and/or 3.23 acres.
      Wetlands: 1.95 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known):approximately 527 feet.

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **Some areas contained two of three wetland parameters but were determined to be non-jurisdictional (e.g., Wetland Test Pit 5)**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 163638.90**acres**
Drainage area: 6323.33 **acres**
Average annual rainfall: 17.49 inches
Average annual snowfall: 0.1 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☒ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **1 (or less)** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **1 (or less)** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: Confluence with Carmel River (TNW) is within the Project Area.
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☒ Natural
☐ Artificial (man-made). Explain: .
☒ Manipulated (man-altered). Explain: Subject to hydrological alterations due to San Clemente Dam and Reservoir.

Tributary properties with respect to top of bank (estimate):
Average width: 15-20 feet
Average depth: 4 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):

☒ Silts ☒ Sands ☐ Concrete
☒ Cobbles ☐ Gravel ☒ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Most of San Clemente Creek has stable banks within the Project Area, though some areas are eroded/undercut at the banks. Near San Clemente Reservoir, there are sediment deposits on the banks and in the Creek itself.

Presence of run/riffle/pool complexes. Explain: There are run/riffle/pool complexes within the Project Area, but they are exclusively at the far-upstream end of the feature (within the Project Area).

Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**

Describe flow regime: San Clemente Creek is regularly inundated and flows throughout the rainy season and into the dry season. In some years, it dries up late in the dry season.

Other information on duration and volume: .

Surface flow is: **Discrete.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank ☒ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☒ shelving ☒ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☒ leaf litter disturbed or washed away ☒ scour
☒ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: Water is generally clear, though substantial fine sediments flow thorugh and likely cause high turbidity during rain/high-flow events.

Identify specific pollutants, if known: none known.

(iv) Biological Characteristics. Channel supports (check all that apply):

☒ Riparian corridor. Characteristics (type, average width): Dominated by red willow, arroyo willow, black alder. Average width is approximately 15 feet.

☒ Wetland fringe. Characteristics: Some wetlands abut San Clemente Creek.

☒ Habitat for:

☒ Federally Listed species. Explain findings: California red-legged frog (CRF), steelhead trout .

☒ Fish/spawn areas. Explain findings: steelhead trout spawning habitat is presently and has historically been present in the Project Area.

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size:1.95acres

Wetland type. Explain:Riverine Unconsolidated Bottom.

Wetland quality. Explain:Wetlands exist on sediment deposited by San Clemente Creek and Carmel River due to the San Clemente Dam. Alluvial plain and much of the wetland/river bottom is unnatural. Wetlands are otherwise of high quality. Plant species are predominantly native and wetlands and surrounding habitat are utilized by native wildlife, including California red-legged frog.

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Intermittent flow**. Explain: Water is typically not present year-round. Flow is limited to rain events associated with the Carmel River Watershed. In long period between rain events, flow is likely minimal to absent.

Surface flow is**: Overland sheetflow**

Characteristics: Wetlands receive some overland flow when San Clemente Creek and/or San Clemente Reservoir overflow during major rain events. Water levels reach relatively high levels more regularly than would occur under natural conditions due to the presence of the dam. Some sheetflow also occurs from runoff during lighter, local rain events.

Subsurface flow: **Unknown**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☒ Directly abutting

☐ Not directly abutting

☐ Discrete wetland hydrologic connection. Explain: .

☐ Ecological connection. Explain: .

☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **1 (or less)** river miles from TNW.

Project waters are **1 (or less)** aerial (straight) miles from TNW.

Flow is from: **Wetland to/from navigable waters.**

Estimate approximate location of wetland as within the **2-year or less** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Water is generally turbid due to high sediment load in adjacent waterbodies. Water quality appears otherwise excellent.

Identify specific pollutants, if known: none known.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☒ Riparian buffer. Characteristics (type, average width): Dominated by red willow, arroyo willow, black alder. Average width is approximately 15 feet .

☒ Vegetation type/percent cover. Explain:Dominance of hydrophytic vegetation in both herb and tree strata. Cover is approximately XX in the herb stratum and XX in the tree stratum.

☒ Habitat for:

☒ Federally Listed species. Explain findings:Wetlands may support CRF. CRF has been observed nearby.

☐ Fish/spawn areas. Explain findings: .

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately (   ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☒ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: San Clemente Creek flows year-round in some years and dries up in late summer most years. Flow rates have been documented and data is available upon request.

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **2147.37** linear feet **approximately 20** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☒ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: Field determination was conducted. Wetland indicators are present up to the top of bank of the RPW.

Provide acreage estimates for jurisdictional wetlands in the review area: **1.95**acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: URS Corporation.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name: .
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Cook, TD. 1972. Soil Survey for Monterey County, California. United States Department of Agriculture, Soil Conservation Service. U.S. Gov't Printing Off.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

Appendix BB Supplemental Noise Analysis

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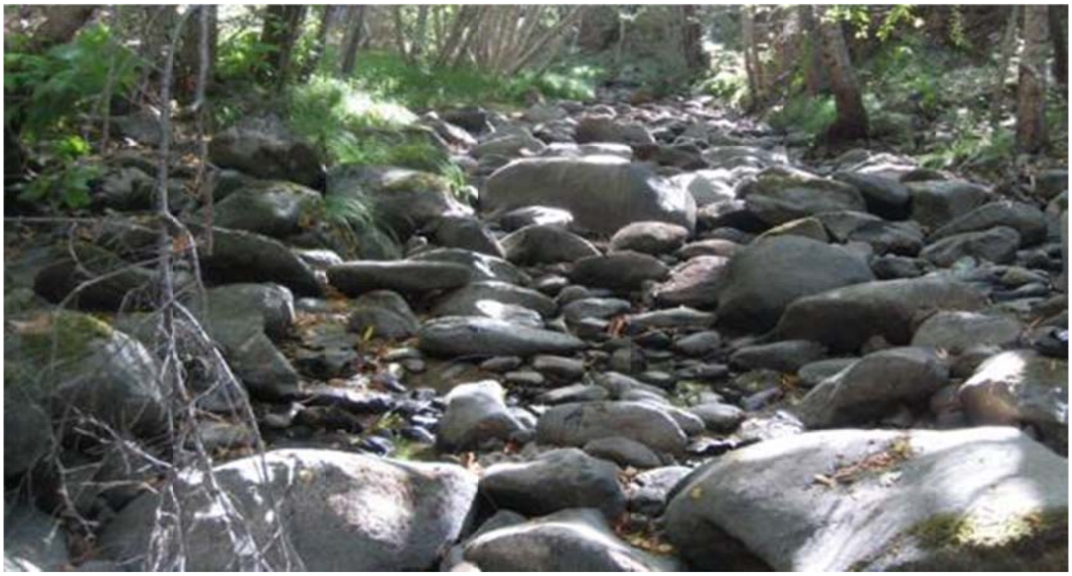
Carmel River Reroute & San Clemente Dam Removal Project Environmental Permitting



Task 6: SUPPLEMENTAL NOISE ANALYSIS

Prepared for:

State Coastal Conservancy
California American Water

URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

Table of Contents

Tables

Figures

List of Acronyms

CRRDR	Carmel River Reroute and Dam Removal
dB	decibels
dBA	decibel – A-Weighted
DNL	day-night sound level
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
L_{XX}	percentile-exceeded sound level
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LT	long-term measurement site
SCC	State Coastal Conservancy
SLM	sound level meter

1.0 Introduction

An Environmental Impact Report/Statement was prepared for the Carmel River Reroute and San Clemente Dam Removal Project. Though the noise impact analysis indicated that noise generated from the sediment excavation at the site would not be significant, it contained a mitigation measure prohibiting night time construction activities. The purpose of this Supplemental Noise Analysis is to analyze noise exposure and potential noise impacts specifically from potential nighttime construction activity.

The Project area is located in Carmel Valley, which is an unincorporated area of Monterey County California. The focus of this Supplemental Noise Analysis is to analyze the noise levels generated by construction activities during nighttime hours at noise-sensitive receivers within the Sleepy Hollow residential community located approximately 5,800 feet north of the San Clemente Dam and at a single noise-sensitive receiver known as the "Stone Cabin" located approximately 5,000 feet south of San Clemente Dam. The potential nighttime construction activities are limited to specific construction needs and include sediment excavation, placement of the sediment into the Sediment Stockpile, Reroute Channel excavation, and soil improvement work.

2.0 Fundamentals of Acoustics

Noise is defined as unwanted sound. Sound levels are measured on a logarithmic scale in decibels (dB). The most common descriptor of sound and noise associated with community noise measurements is the A-weighted sound pressure level (dBA). It is defined as the sound pressure level in decibels as measured on a sound meter using the A-weighting filter network. The A-weighted frequency filter de-emphasizes the very low and very high frequency components of sound in a manner that simulates the frequency response of human hearing, and correlates well with people's group reactions to sound and environmental noise. All sound levels in this report are A-weighted. A-weighted sound pressure levels of typical sources of noise are shown in Table 1.

The ambient sound level is the existing sound level resulting from natural and mechanical sources and human activity considered normally present in a particular area. The ambient noise level is composed of the cumulative sum of all noise sources, both near and far. The background noise level generally describes the mixture of indistinguishable sounds from many sources without any one dominating sound. It is the noise level that exists in the absence of identifiable, sporadic, individual noise events such as those caused by individual automobile pass-bys, aircraft overflights, intermittent dog barking, etc.

Humans are better able to perceive changes in noise level than to absolute noise levels. Potential responses of persons to changes in the noise environment are usually assessed by evaluating differences between the existing and total predicted future noise environments. The following relationships of perception and response to quantifiable noise changes are used as a basis for assessing potential effects of these changes in environmental noise level:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a 3 dBA change is considered just perceptible.

- An increase of 5 dBA is considered readily perceptible and would generally result in a change in community response.
- A 10 dBA increase is perceived as a doubling in loudness and would likely result in a widespread community response.

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a given distance)	Scale of dBA Sound Levels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 dBs*)
Commercial Jet Take-off (200 ft.)	120		Threshold of pain *32 times as loud
Pile Driver (50 ft.)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft.) Newspaper Press (5 ft.) Power Lawn Mower (3 ft.)	100		Very loud *8 times as loud
Motorcycle (25 ft.) Propeller Plane Flyover (1000 ft.) Diesel Truck, 40 mph (50 ft.)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft.)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft.) Vacuum Cleaner (10 ft.)	70		Moderately loud *70 decibels (Reference loudness)
Normal Conversation (5 ft.) Air Conditioning Unit (100 ft.)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft.)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft. Whisper (5 ft.)	30	Quiet Bedroom	
	20	Recording Studio	Very quiet
	0		Threshold of hearing

Source: Compiled by URS Corporation.

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB. However, it requires about a 10 dB increase to double the perceived intensity of a sound.

Because environmental noise varies with time, it is beneficial to define certain measurement terms that are used to characterize this fluctuating quantity. The energy-average level over a specific period is defined as the Equivalent Sound Level. The Equivalent Sound Level (L_{eq}) is the sound pressure level over a time interval that is equivalent to a perfectly constant sound pressure level containing the same acoustic energy over the same interval. Thus, L_{eq} includes all sporadic or transient events occurring during the given event.

In addition to the L_{eq} metric, the statistical distribution of measured sound levels is used to describe the range of noise levels measured during a given period. This metric is presented as $L_{N,}$ which is the sound level exceeded N percent of the time during a given measurement interval. For example,

L_{10} (in dBA) is the sound level exceeded 10 percent of the time and this level is commonly used to represent the peak noise levels of the measurement. L_{50} is the sound level that is exceeded 50 percent of the time and represents the median sound level. L_{90} is the sound level exceeded 90 percent of the time and this level represents the background noise levels of the measurement.

Other descriptors of noise are also commonly used to identify noise/land use compatibility guidelines and assist in the prediction of community reaction to adverse effects of environmental noise, including traffic-generated and industrial noise. These descriptors include the Day-Night Noise Level (DNL or L_{dn}); in California, the Community Noise Equivalent Level (CNEL) descriptor is used. The maximum A-weighted noise level recorded for a single event is defined as L_{max}. Each of these descriptors uses units of dBA. Both L_{dn} and CNEL noise metrics represent 24-hour periods and both apply a time-weighted factor designed to penalize noise events that occur during evening or nighttime hours, when relaxation and sleep disturbance is of more concern. The time-weighting adds a 10 dBA penalty to the hourly L_{eq} noise levels from 10:00 p.m. to 7:00 a.m. (nighttime period) and a 5 dBA penalty from 7:00 p.m. to 10:00 p.m. (evening period). For CNEL, daytime is defined as the time between 7:00 a.m. to 7:00 p.m., and for L_{dn} daytime is defined as the time between 7:00 a.m. to 10:00 p.m. The use of either the CNEL or L_{dn} noise metrics are mandated by state guideline for noise/land use compatibility planning purposes (State of California, General Plan Guidelines, November 1990) and are the predominant metrics used by local governments to describe noise environments within their jurisdictions.

3.0 Local Regulatory Settings

Monterey County's Noise Control Code states, "No person shall, within the unincorporated limits of the County of Monterey, operate any machine, mechanism, device, or contrivance which produces a noise level exceeding 85 dBA measured fifty feet therefrom", but goes on to say "The prohibition in this Section shall not apply to aircraft nor to any such machine, mechanism, device or contrivance which is operated in excess of 2,500 feet from any occupied dwelling unit." Noise-sensitive receivers located further than 2,500 feet away from proposed construction activities will not be subject to the noise standard found in the County of Monterey Noise Control Code.

4.0 Environmental Setting

The existing noise environment was quantified by a noise measurement survey conducted on August 3 and 4, 2011 at noise-sensitive receivers located near the Project site. Ambient noise measurements were conducted at three locations within the Sleepy Hollow community north of the San Clemente Dam and at the stone cabin noise-sensitive receiver south of the San Clemente Dam. These locations are shown in Figures 1 through 3. The purpose of the measurements was to quantify noise exposure in the project environs, with emphasis on locations of noise-sensitive receivers that may be impacted by Project operations. Nighttime measurements (10:00 p.m. to 7:00 a.m.) were conducted at each of the four measurement locations. During the noise measurements, the temperature was near 65º Fahrenheit with relative humidity at 55 percent. Winds ranged from calm to light and were rarely at speeds over 5 mph. The sky ranged from clear to partly cloudy throughout the entire noise measurement period. These weather conditions were optimum for obtaining accurate noise measurements.

All sound level meters were configured to measure dBA noise levels at the slow meter response setting. The sound level meters (SLMs) were placed in key locations that represented the ambient noise levels at nearby noise-sensitive receivers. The calibration of each meter was verified in the field before and after each measurement period.

Ambient noise levels for the noise measurement sites are presented below. Certificates of certification for the ambient noise survey equipment and field measurement data sheets are in Appendices A and B, respectively.

LT-1: The noise-sensitive receiver located at LT-1 is a stone cabin located approximately 2,600 feet south of the southern extent of the Project area. The sound level meter was placed on a tripod at an elevation of five feet above existing ground. This stone cabin is a recreational area with the potential for overnight camping and use of the cabin. The dominant noise source during the measurement was noise generated by the Carmel River. Table 2 lists the results of the nighttime ambient noise measured at site LT-1. The nighttime L_{eq} was 39.0 dBA.

Table 2. Nighttime Ambient Noise Level Measurement at LT-1 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
8/3/2011 22:00	39.1	42.9	39.1	39.0	38.9	38.8
8/3/2011 23:00	39.0	40.3	39.1	39.0	38.9	38.8
8/4/2011 0:00	39.0	43.4	39.1	39.0	38.9	38.7
8/4/2011 1:00	39.0	40.6	39.1	38.9	38.8	38.7
8/4/2011 2:00	39.0	40.1	39.1	39.0	38.9	38.7
8/4/2011 3:00	38.9	40.2	39.0	38.9	38.9	38.7
8/4/2011 4:00	38.9	39.7	39.0	38.9	38.8	38.6
8/4/2011 5:00	38.9	40.0	39.0	38.9	38.7	38.6
8/4/2011 6:00	39.0	45.4	39.2	38.9	38.8	38.5

Source: URS Corporation, 2011.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on August 3 and 4, 2011.
Measurement Location: N 36° 25' 18.5", W 121° 42' 41.1."
Nighttime L_{eq} = 39.0 dBA

LT-2: The ambient noise level measurement site LT-2 was located in the southwestern part of the Sleepy Hollow community, approximately 6,900 feet north of the northern extent of the Project area. The sound level meter was placed across the street from Lot 3, which is located along San Clemente Drive. The sound level meter was placed in a metal utility box, affixed to a tree, and located at an elevation of five feet above existing ground. LT-2,, LT-3 and LT-4 were selected to be representative of the ambient noise level conditions in the Sleepy Hollow community. Table 3 lists the results of the nighttime measurement at site LT-2. The nighttime L_{eq} was 29.7 dBA.

Table 3. Nighttime Ambient Noise Level Measurement at LT-2 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
8/3/2011 22:00	33.3	61.0	29.1	25.6	24.3	23.7
8/3/2011 23:00	25.8	39.8	27.6	24.8	23.7	23.3
8/4/2011 0:00	26.5	40.6	28.6	24.0	23.5	23.3
8/4/2011 1:00	26.7	49.9	26.4	23.6	23.3	23.0
8/4/2011 2:00	25.6	44.1	27.0	23.7	23.2	23.0
8/4/2011 3:00	25.0	46.5	25.7	23.6	23.3	23.0
8/4/2011 4:00	24.5	40.2	25.1	23.6	23.3	23.1
8/4/2011 5:00	28.7	55.1	28.7	23.9	23.4	23.1
8/4/2011 6:00	35.1	61.5	34.7	28.0	25.4	24.0

Source: URS Corporation, 2011.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on August 3 and 4, 2011.
Measurement Location: N 36º 27' 14.0", W 121º 42' 55.2."
Nighttime L_{eq} = 29.7 dBA

LT-3: The ambient noise level measurement site LT-3 was located in the southwestern part of the Sleepy Hollow community, approximately 5,900 feet north of the northern extent of the Project area. The sound level meter was located near a water storage tank at the end of Lot 16. Lot 16 is an empty lot. The sound level meter was placed in a metal utility box and attached to the fence surrounding the water storage tank at an elevation of five feet above existing ground surface using plastic ties. LT-3 is one of three sites selected to be representative of the ambient noise level conditions in the Sleepy Hollow community. Table 4 lists the results of the nighttime measurement conducted at measurement site LT-3. The nighttime L_{eq} was 25.9 dBA.

Table 4. Nighttime Ambient Noise Level Measurement at LT-3 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
8/3/2011 22:00	26.6	44.2	29.4	24.1	21.8	20.7
8/3/2011 23:00	25.2	40.1	27.5	23.0	20.8	20.0
8/4/2011 0:00	25.1	42.0	27.7	21.2	20.1	19.6
8/4/2011 1:00	24.1	34.5	26.4	22.2	20.2	19.6
8/4/2011 2:00	23.8	36.0	25.7	22.3	20.3	19.5
8/4/2011 3:00	23.4	40.6	25.4	21.7	19.9	19.5
8/4/2011 4:00	24.3	44.5	26.5	22.4	20.0	19.3
8/4/2011 5:00	25.6	38.0	28.5	23.4	20.6	19.7
8/4/2011 6:00	30.1	41.0	33.3	28.2	24.6	21.4

Source: URS Corporation, 2011.
Notes:
dBA = A-weighted decibel

L_{eq} = equivalent sound level
Measurements conducted on August 3 and 4, 2011.
Measurement Location: N 36º 27' 06.8", W 121º 42' 22.7."
Nighttime L_{eq} = 25.9 dBA

LT-4: The ambient noise level measurement site LT-4 was located in the northern part of the Sleepy Hollow community approximately 8,300 feet north of the northern extent of the Project area. The sound level meter was located across the street from Lot 11, which is located along San Clemente Drive. The sound level meter was placed in a metal utility box, screwed into a tree, and located at an elevation of five feet above existing ground surface. LT-4 is one of three Sleepy Hollow measurement locations. Table 5 lists the results of the nighttime measurement conducted at measurement site LT-4. The nighttime L_{eq} was 35.4 dBA.

Table 5. Nighttime Ambient Noise Level Measurement at LT-4 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
8/3/2011 22:00	37.0	54.8	39.8	34.4	25.8	25.0
8/3/2011 23:00	39.6	66.7	37.6	33.8	26.4	24.8
8/4/2011 0:00	29.2	38.9	32.5	27.2	24.5	23.1
8/4/2011 1:00	29.2	38.9	32.0	27.0	24.8	23.4
8/4/2011 2:00	29.2	40.9	31.4	27.0	23.8	22.0
8/4/2011 3:00	28.6	39.0	31.8	25.9	23.7	22.0
8/4/2011 4:00	34.0	60.2	33.4	28.7	26.1	24.9
8/4/2011 5:00	35.1	60.7	34.3	30.9	27.4	26.0
8/4/2011 6:00	39.1	61.1	39.4	31.8	26.3	24.2

Source: URS Corporation, 2011.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on August 3 and 4, 2011.
Measurement Location: N 36º 27' 31.4", W 121º 42' 35.3."
Nighttime L_{eq} = 35.4 dBA

Figure 1. Project Area Extents and Ambient Noise Level Measurement Locations

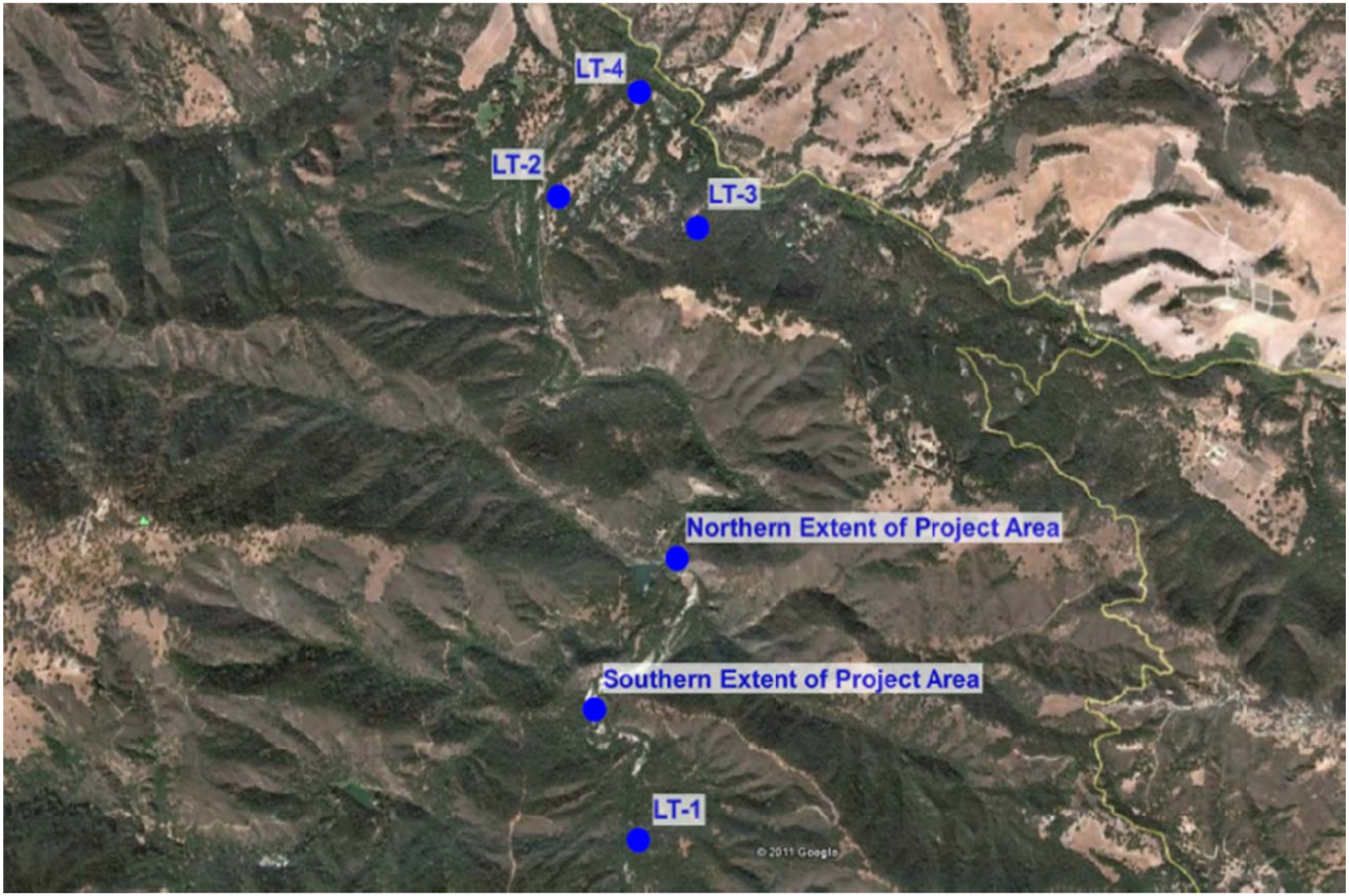


Figure 2. Project Area Extents and Ambient Noise Level Measurement Location near the Stone Cabin (LT-1)

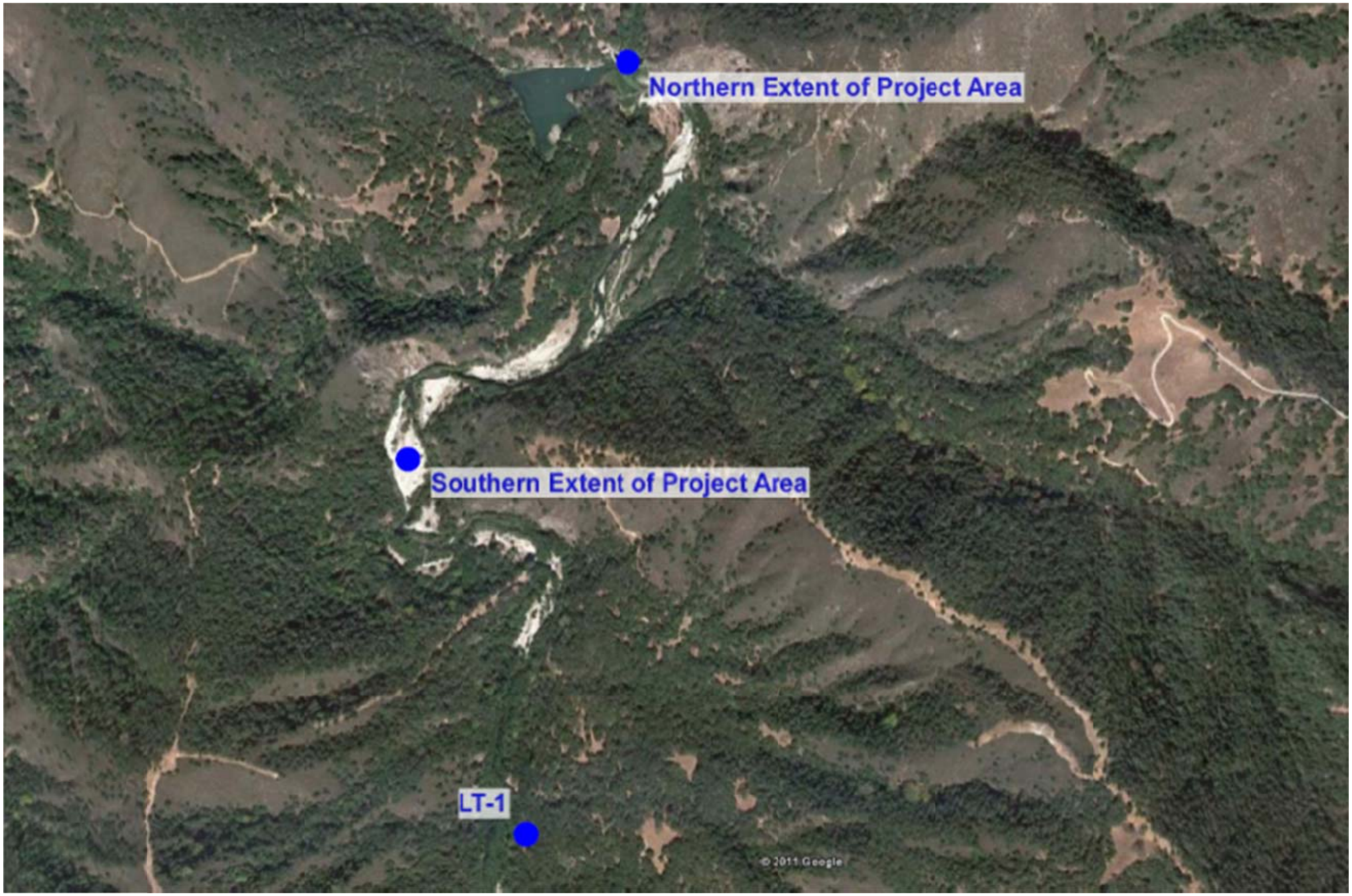
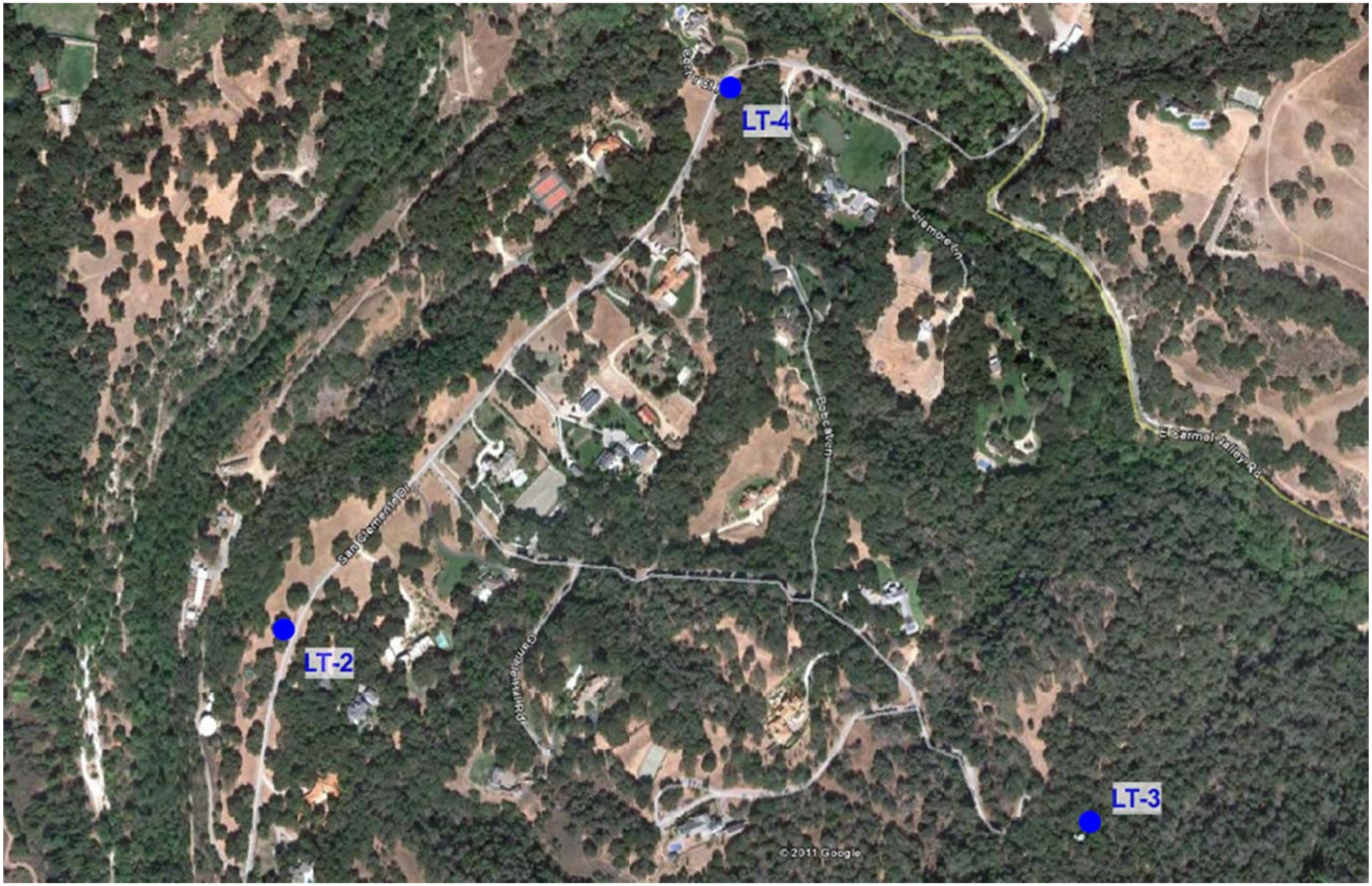


Figure 3. Ambient Noise Level Measurement Locations in Sleepy Hollow Community



5.0 Construction Noise Model

Noise generated by proposed CRRDR construction activities was modeled using Cadna/A®. Cadna/A® is a three-dimensional (3-D) software program designed to predict and assess noise levels in the vicinity of industrial and construction noise sources. The program uses internationally recognized algorithms (ISO 9613-2) for the propagation of sound outdoors to calculate noise levels, and presents the resultant noise levels in an easy to understand, graphically-oriented or tabular format. The program allows for input of all pertinent features (such as terrain or structures) that affect noise and the result is a highly accurate estimate of existing and future noise levels (DataKustik, 2009).

Cadna/A® was used to create a virtual model of construction activities in the Project area, the locations of the noise-sensitive receivers and the surrounding environs. Digital Terrain Modeling was used to account for elevation and terrain features. Noise emission levels for construction equipment was obtained from previously modeled similar projects and industry-standard estimated sound power levels (Diehl, 1973). This data was input into the noise model using octave band levels to accurately estimate noise propagation and attenuation effects. Cadna/A® accounts for topography and barrier effects – including intervening structures, atmospheric attenuation, and attenuation due to sound wave divergence in order to produce accurate results.

The list of construction equipment that may be used during nighttime hours for the Project was provided by the Project design engineers, Table 6. Conservative assumptions were made regarding the elevation of equipment and sound power levels for equipment where detailed data could not be obtained from the Project design engineers. By making conservative assumptions regarding sound power levels and elevations of equipment, worst case scenarios for sound levels generated by construction activities are obtained. In a worst-scenario for construction, there will be three excavators, nine dump trucks and two auger drill rigs operating at the same time. The total A-Weighted sound pressure level from all of the equipment operating at the same time is 95.8 dBA from a distance of 50 feet, Table 6.

Table 6. Noise Levels for Construction Equipment

Equipment	Quantity	SPL @ 50 Feet (dBA)	Total SPL from Equipment @ 50 Feet (dBA)
Excavator	3	85.0	89.8
Dump Truck	9	84.0	93.5
Auger Drill Rig	2	85.0	88.0

6.0 Construction Noise Impacts

Worst-case scenario noise models were developed in Cadna/A® for the purpose of analyzing construction noise levels at nearby noise-sensitive land uses. The models assumed there will be two crews, each one comprised of one excavator and three dump trucks simultaneously excavating sediment and placing it in the Sediment Stockpile. There will also be another crew excavating the

Reroute Channel comprised of one excavator and three dump trucks. Two auger drill rigs may also be used for soil improvement work during the nighttime hours.

In order to generate worst-case scenario noise levels, two noise models were designed. All of the construction equipment was input into the first noise model at the northern extent of the Project area and closer to the homes in the Sleepy Hollow community while the second noise model had all of the construction equipment input at the southern extent of the Project area and closer to the Stone Cabin. All major noise sources from the construction equipment were input into the noise models. Table 7 presents the results from construction activities being conducted at the northern extent of the Project area and Table 8 presents the results from construction activities being conducted at the southern extent of the Project area. The tables list the distances to the receivers, measured nighttime ambient L_{eq}, L_{eq} from construction activities based on the noise models, and the cumulative noise levels in terms of L_{eq} that result from combining the ambient and construction L_{eq} values.

Table 7. Noise Levels at Noise-Sensitive Receivers Due to Construction Activities Being Conducted at the Northern Extent of the Project Area

Receiver Site	Distance to Project Site (feet)	Measured Nighttime L_{eq} (dBA)	Modeled L_{eq} due to Construction Activities (dBA)	Cumulative L_{eq} (dBA)	Change in L_{eq} at Receiver Due to Construction Activities (dBA)
LT-1	5,000	39.0	4.0	39.0	0
LT-2	6,900	29.7	0	29.7	0
LT-3	5,900	25.9	0	25.9	0
LT-4	8,300	35.4	0	35.4	0

Table 8. Noise Levels at Noise-Sensitive Receivers Due to Construction Activities Being Conducted at the Southern Extent of the Project Area

Receiver Site	Distance to Project Site (feet)	Measured Nighttime L_{eq} (dBA)	Modeled L_{eq} due to Construction Activities (dBA)	Cumulative L_{eq} at Receiver (dBA)	Change in L_{eq} at Receiver Due to Construction Activities (dBA)
LT-1	2,600	39.0	13.8	39.0	0
LT-2	9,100	29.7	0	29.7	0
LT-3	8,600	25.9	0	25.9	0
LT-4	10,900	35.4	0	35.4	0

The County of Monterey's Noise Control Code limits noise levels from construction equipment to 85 dBA at a distance of 50 feet if there are noise-sensitive land uses within a distance of 2,500 feet of the operating construction equipment. There are no noise-sensitive receivers within 2,500 feet of construction activities and, therefore, the noise-sensitive receivers are not subject to this Monterey County construction noise standard. However, if the limit were applicable, the change in L_{eq} at all four noise-sensitive receivers due to construction activities at both the northern and southern extents of the Project area is not expected to be perceptible. Figures 4 and 5 illustrate the worst-case scenario construction noise contours generated by the Cadna/A® models if construction activities are being conducted at the northern and southern extents of the Project area, respectively.

As stated in Section 2.0 of this report, sound levels cannot be added or subtracted directly because the dB unit is measured on a logarithmic scale. An increase in the noise level of 3 dB at a noise-sensitive receiver is just perceptible. For example, as shown in Table 8, the measured nighttime L_{eq} at LT-1 was 39 dBA. The modeled L_{eq} at LT-1 due to construction activities at the southern extent of the Project area is 13.8 dBA. If the noise level at LT-1 due to construction alone (13.8 dBA) is added to the existing measured nighttime ambient noise level (39 dBA) at LT-1, then the resulting, or cumulative, noise level at LT-1 remains 39 dBA. The change in noise level is 0 dBA and there would be no perceptible change. In order for there to be a perceptible change in noise at LT-1, the L_{eq} due to construction activities at LT-1 would need to be 39 dBA or greater (39 dB +39 dB = 42 dB). If the modeled construction noise level at a noise-sensitive receiver is less than the measured existing ambient nighttime L_{eq}, then the change in noise level will be less than 3 dBA. Since the modeled construction noise level is less than the measured existing ambient nighttime L_{eq} at all four noise-sensitive receivers, there is expected to be no perceptible increase in noise levels at the Stone Cabin and the Sleepy Hollow community due to construction activities being conducted during nighttime hours.

The cumulative L_{eq} at each noise sensitive receiver is expected to be unchanged from the measured nighttime ambient noise conditions. Construction activities near the Project site during nighttime hours are not expected to generate any significant noise impacts at nearby noise-sensitive receivers.

Figure 4. Noise Level Contours for Construction Activities Being Conducted at the Northern Extent of the Project Area

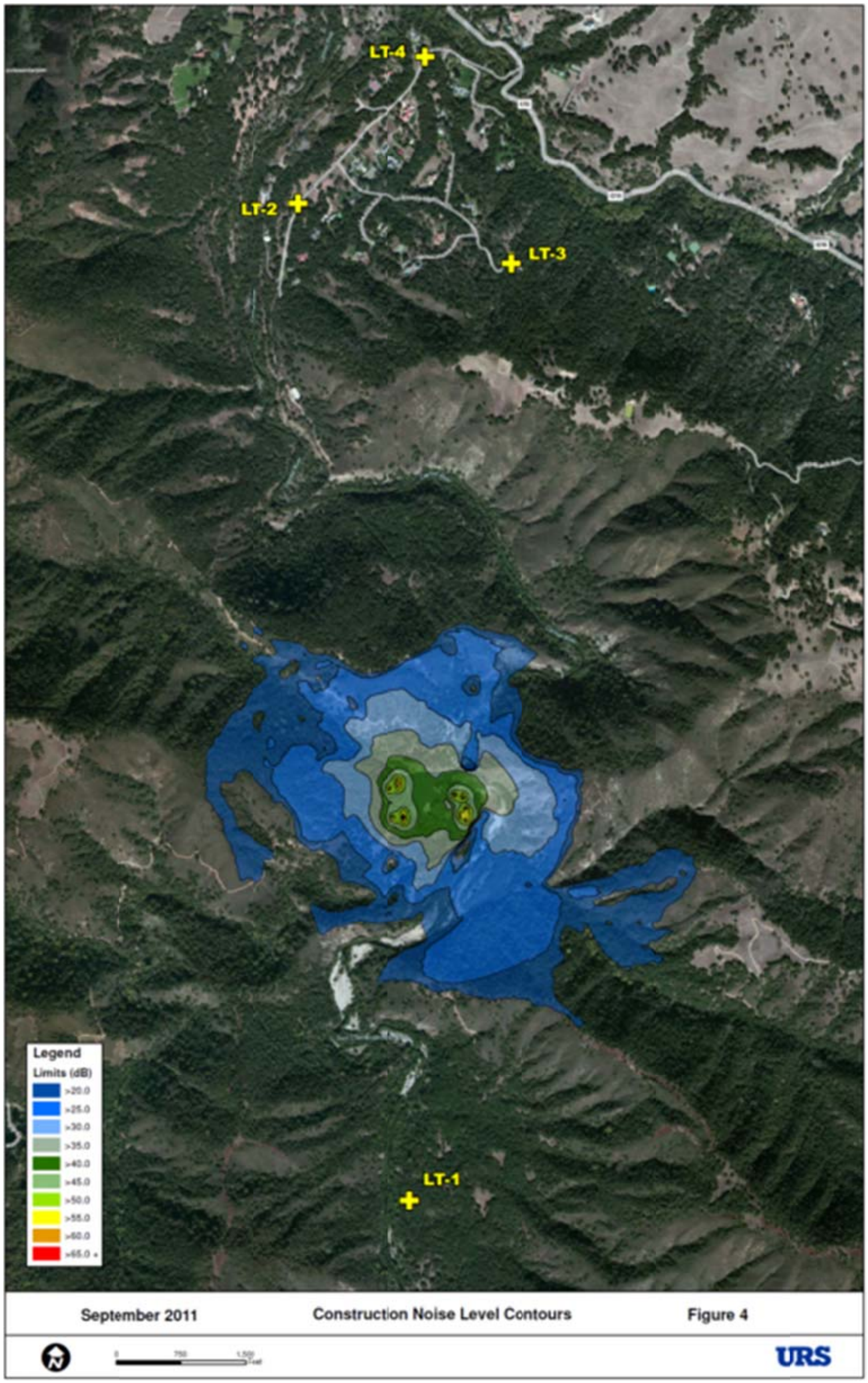
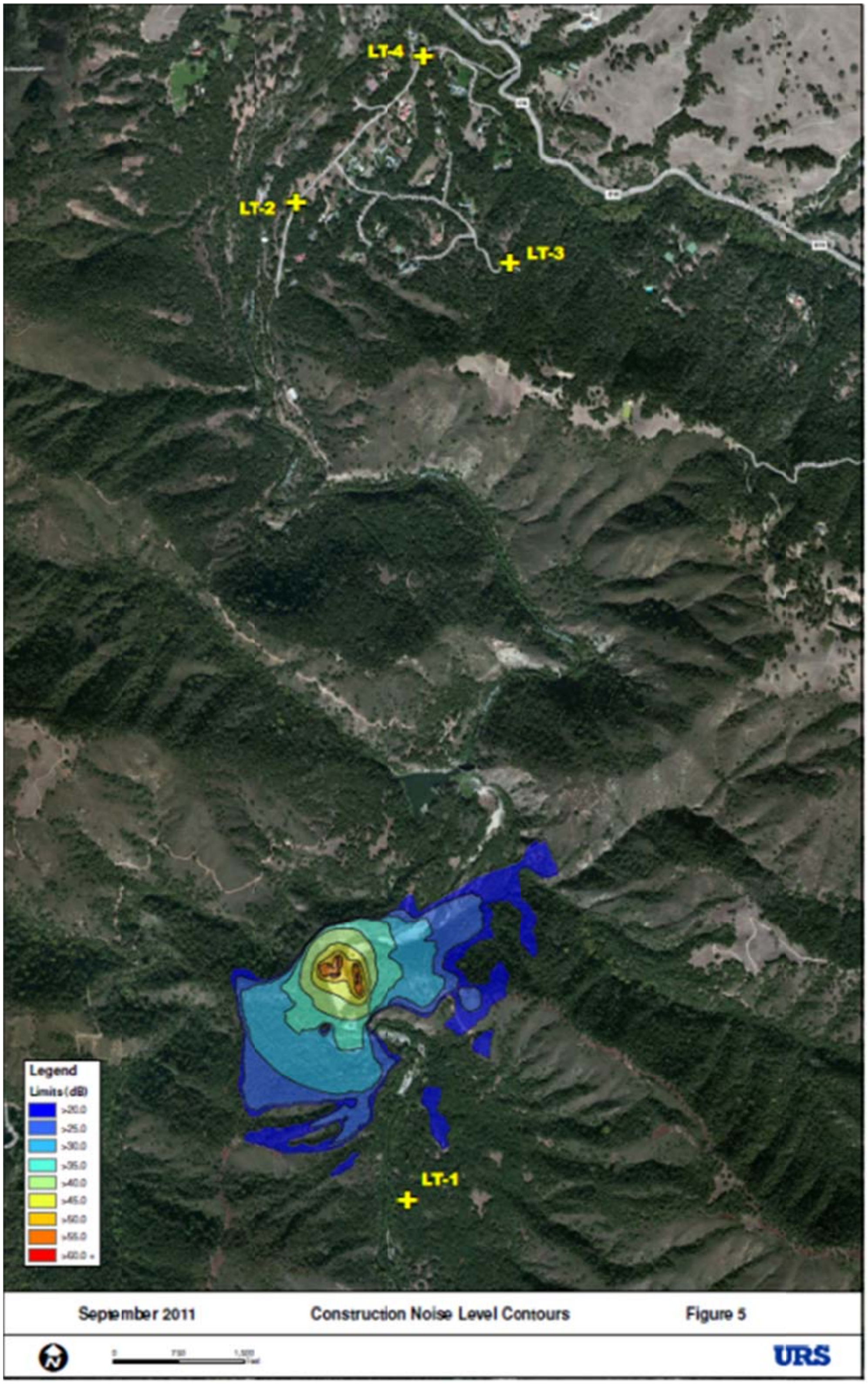


Figure 5. Noise Level Contours for Construction Activities Being Conducted at the Southern Extent of the Project Area



7.0 References

County of Monterey. 1993. County of Monterey Code of Ordinance, Chapter 10.60 – Noise Control.

DataKustik GmbH. 2009. Cadna/A® Manual. Version 4.0. Greifenberg, Germany.

Diehl, George M., ed. 1973. Machinery Acoustics. John Wiley & Sons, Inc. New York, NY.

Appendix A

Certification of Calibration for Ambient Noise Survey Equipment

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2010-135879

Instrument Model CAL200, Serial Number 2794, was calibrated on 01NOV2010. The instrument meets factory specifications per Procedure D0001.8190.

Instrument found to be in calibration as received: YES
Date Calibrated: 01NOV2010
Calibration due:

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
PCB	1502B02FJ15PSIA	1342	12 Months	23NOV2010	3341845067
Larson Davis	2900	0661	12 Months	02APR2011	2010-128279
Larson Davis	2559	2506	12 Months	10MAY2011	17414-1
Hewlett Packard	34401A	3146A10352	12 Months	12AUG2011	4877885
Larson Davis	PRM915	0112	12 Months	09SEP2011	2010-133976
Larson Davis	PRM902	0480	12 Months	09SEP2011	2010-133975
Larson Davis	MTS1000/2201	0111	12 Months	09SEP2011	SM090910

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as shown on calibration report.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"As Received" data is the same as shipped data.

Signed: Scott Montgomery
Technician: Scott Montgomery

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2010-131844

Instrument Model 820, Serial Number 1470, was calibrated on 19JUL2010. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 19JUL2010
Calibration due: 19JUL2012

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	20JAN2011	2010-125871

Reference Standards are traceable to the Natonal Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 34 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data same as shipped data.
Tested with 828-917

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2010-129872

Instrument Model 820, Serial Number 1528, was calibrated on 18MAY2010. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 18MAY2010
Calibration due: 18MAY2012

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	24MAR2011	2010-127832

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 29 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data is the same as shipped data.
Tested with 828-2437

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2009-124205

Instrument Model 820, Serial Number 1768, was calibrated on 19NOV2009. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

New Instrument
Date Calibrated: 19NOV2009
Calibration due:

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	25MAR2010	2009-116756

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 22 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM828-2751

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2010-131816

Instrument Model 820, Serial Number 1597, was calibrated on 16JUL2010. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 16JUL2010
Calibration due: 16JUL2012

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	24MAR2011	2010-127832

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 33 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"As Received" data is the same as shipped data.
Tested with 828-2491

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

Appendix B

Ambient Noise Level Field Measurement Data Sheets

46.6
45.7

FIELD MEASUREMENT DATA SHEET

URS Project Name: San Clemente Dam Job #

SITE IDENTIFICATION: LT-1 OBSERVER(s): BV. RM
START DATE & TIME: 8-3-11 7:20 pm END DATE & TIME: 8/4 7:00 AM
ADDRESS: STONE CABIN
GPS coordinates: N 36° 25' 18.5" W 121° 42' 41.1"

ID

TEMP: 63 °F HUMIDITY: 55 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: — MPH DIR: N NE E SE S SW W NW STEADY GUSTY ____ MPH
SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other:

Weather

INSTRUMENT: LD 820 yellow TYPE: 1 2 SERIAL #: 1470
CALIBRATOR: CAL 200 SERIAL #: 2744
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

Rec #	Start Time / End Time	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
1	7:20 pm /							
	10:00 pm / 7:00 am	39.0	45.4	38.5	38.8	39.0	39.1	
	/							
	/							

COMMENTS:

Acoustic Measurements

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER
ROADWAY TYPE:
COUNT DURATION: ____-MINUTE

	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:

Description / Sketch

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD MEASUREMENT DATA SHEET

URS **Project Name:** San Clemente Dam **Job #**

SITE IDENTIFICATION: LT-2 **OBSERVER(s):** RM + BV
START DATE & TIME: 8/3 8:20 **END DATE & TIME:** 8/4 7:00
ADDRESS: 3 San Clemente Dr.

GPS coordinates: N 36° 27 14.0 W 121° 42' 55.2"

ID

TEMP: 63 °F HUMIDITY: 55 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: — MPH DIR: N NE E SE S SW W NW STEADY GUSTY ___ MPH
SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other: ___

Weather

INSTRUMENT: LD 820 (green) **TYPE:** 1 2 **SERIAL #:** 1597
CALIBRATOR: CAL 200 **SERIAL #:** 2794
CALIBRATION CHECK: ~~PRE-TEST~~ 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: ___

Rec #	~~Start Time~~	~~End Time~~							
1	8:20		L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	
	10:00 pm	7:00 am	L_{eq} 29.7	L_{max} 61.5	L_{min} 23.0	L_{90} 23.4	L_{50} 24.2	L_{10} 28.8	
			L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	
			L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	

COMMENTS:

Acoustic Measurements

PRIMARY NOISE(S): **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER**
ROADWAY TYPE:

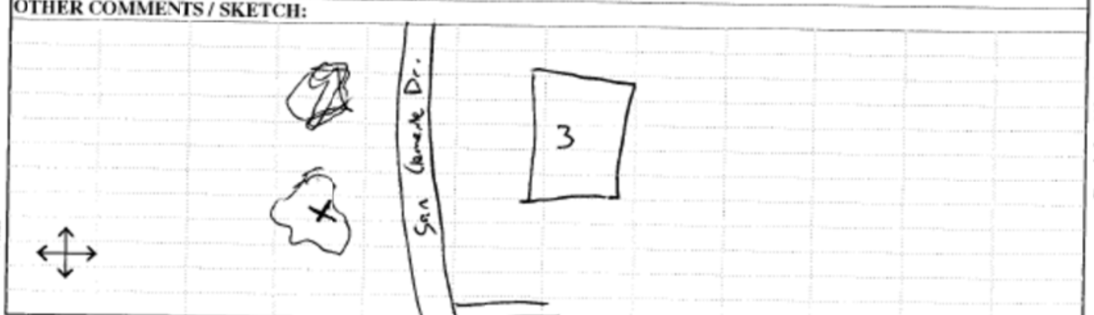
COUNT DURATION: ___-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



Description / Sketch

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD MEASUREMENT DATA SHEET

URS **Project Name:** San Clemente Dam **Job #** ______

SITE IDENTIFICATION: LT-3 **OBSERVER(s):** RM + BV
START DATE & TIME: 8/3 8:35 **END DATE & TIME:** 8/4 7:00 AM
ADDRESS: end of Lot 17/16

GPS coordinates: N 36° 27' 06.8 W 121° 42' 22.7"

ID

TEMP: 60 °F HUMIDITY: 55 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: ______ MPH DIR: N NE E SE S SW W NW STEADY GUSTY ____ MPH
SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other: ______

Weather

INSTRUMENT: LD 820 cal **TYPE:** 1 2 **SERIAL #:** 1528
CALIBRATOR: CAL 200 **SERIAL #:** 2794
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: ______

Rec #	Start Time	End Time	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	10:00 PM	7:00 AM	25.9	44.5	19.3	20.3	23.2	28.8	

COMMENTS:

Acoustic Measurements

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER
ROADWAY TYPE:
COUNT DURATION: ______ -MINUTE

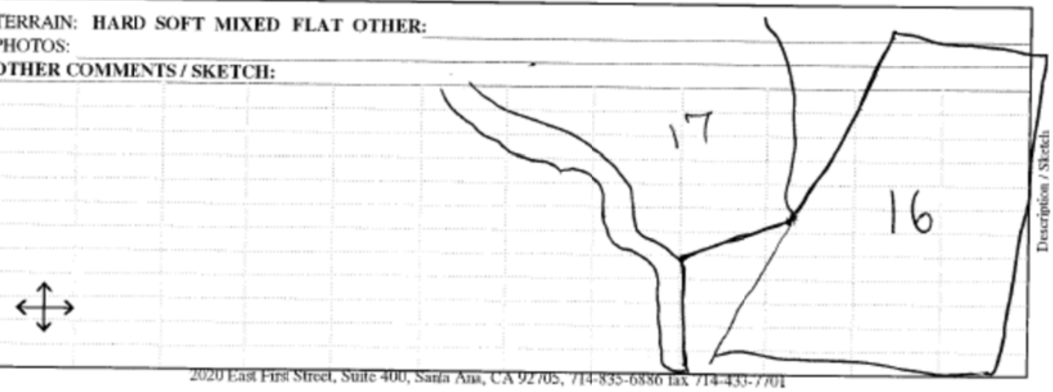
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:



Description / Sketch

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD MEASUREMENT DATA SHEET

URS **Project Name:** San Clemente Dam **Job #** ____________

SITE IDENTIFICATION: LT-4	**OBSERVER(s):** Rm + BV
START DATE & TIME: 8/3 8:50	**END DATE & TIME:** 8/4 7:00 AM
ADDRESS: across from Lot 11 (San Clemente Dr.)	
GPS coordinates: N 36° 27' 31.4	W 121° 42' 35.3"

ID

TEMP: 60 °F HUMIDITY: 55 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: — MPH DIR: N NE E SE S SW W NW STEADY GUSTY____MPH
SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other: ________

Weather

INSTRUMENT: LD 820 Blue TYPE: 1 2 **SERIAL #:** 1768
CALIBRATOR: CAL 200 **SERIAL #:** 2794

CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN X

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: ____________

Rec # / Start Time / End Time	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
~~1 / 8:50~~							
~~/ 10:00pm / 7:00AM~~			~~22.0~~	~~35.5~~	~~30.1~~	~~24.8~~	
/ 10:00pm / 7:00AM	35.4	66.7	22.0	24.8	30.1	35.7	
/ /							

COMMENTS:

Acoustic Measurements

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER
ROADWAY TYPE:

COUNT DURATION:______-MINUTE

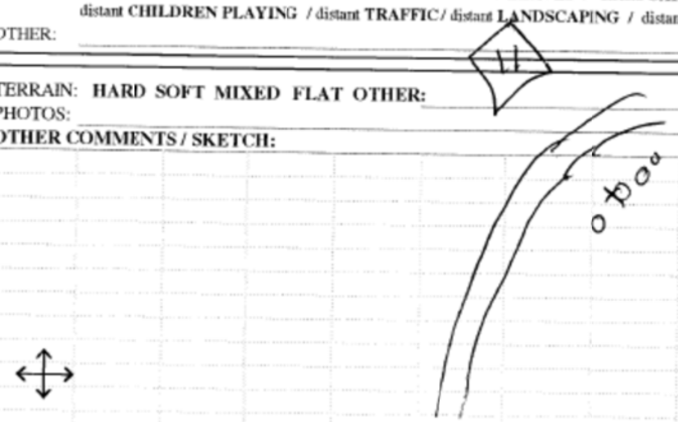
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:

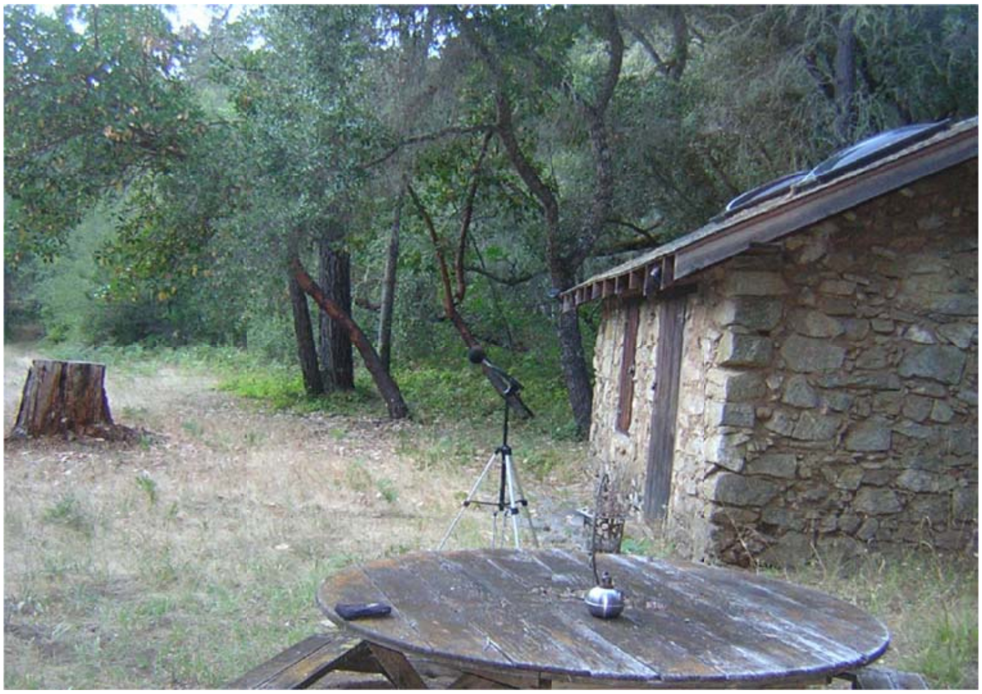


Description / Sketch

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

Appendix C

Ambient Noise Level Field Measurement Site Photographs

	LT-1
	LT-2

	LT-3
	LT-4

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Appendix CC

WRITTEN COMMENTS AND RESPONSES ON THE DRAFT SEIR

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MONTEREY COUNTY

PLANNING AND BUILDING INSPECTION DEPARTMENT

68 W. ALISAL ST. 2nd FLOOR, SALINAS, CA 93901

PERMIT CENTER LOCATIONS:

☑SALINAS OFFICE: 168 WEST ALISAL ST., 2nd FLOOR, SALINAS, CA 93901 FAX: (831) 755-9516; PHONE: (831) 755-5025

☐COASTAL OFFICE: 2620 FIRST AVE., MARINA, CALIFORNIA 93933: FAX: (831) 384-3261; PHONE: (831) 883-7500 (Building only)

☐KING CITY OFFICE: 522 – NORTH SECOND ST., KING CITY, CA 93930 FAX: (831) 385-8387; PHONE: (831) 385-8315

http://www.co.monterey.ca.us/pbi/

June 7, 2012

Mr. Richard Olebe
Department of Water Resources
Division of Safety of Dams
2200 X Street, Suite 200
Sacramento, CA 95818

Subject: San Clemente Dam Seismic Safety Project SEIR (PLN110373)

Dear Mr. Olebe:

Thank you for the opportunity to comment on the Draft SEIR for the San Clemente Dam Seismic Safety Project. Monterey County is a responsible agency and is currently processing a Combined Development Permit (CDP) for the project. The CDP consists of: 1) Use Permit for the removal of the San Clemente Dam and related improvements; 2) Use Permit for the removal of the Old Carmel River Dam and related improvements; 3) Use Permit for development on 25% slopes; and 4) Use Permit for the removal of protected trees. The Monterey County RMA-Planning Department has reviewed the Draft SEIR and provides the following comments:

General Comments

Global comments about the SEIR are provided below.

- As noted above, the CDP the applicant is requesting from the County includes Use Permits for removal of both the San Clemente Dam and the Old Carmel River Dam. However, the SEIR does not specifically analyze removal of the Old Carmel River Dam. The project, as analyzed in the CEQA document, would cut a notch into the Old Carmel River Dam in order to provide adequate fish passage. It should be noted that the County cannot approve a Use Permit for removal of the Old Carmel River Dam without the appropriate level of CEQA review of this component of the project. MC-1

- It is recommended that the cover and/or a title page for the SEIR indicate the firm or firms who prepared the document. MC-2

- It is recommended that a summary table indicating changes to Alternative 3 and why they were made be added to the introductory section of the SEIR. This table would help the reader better understand the context of the SEIR. MC-3

- Throughout the SEIR, references to the "Monterey County Planning and Building Inspection Department" should be changed to the "Monterey County RMA – Planning Department." MC-4

- The majority of mitigation measures in the SEIR lack the information that is necessary to ensure that they will be effective. Each mitigation measure in the SEIR should include the following information:

    1) *Identify the agency, organization or individual who is responsible for implementing the measure;*
    2) *Identify the agency, organization or individual responsible for monitoring implementation of the measure and whether any reporting is required; and*
    3) *Indicate when the measure must be implemented.*

    MC-5

    Of particular concern is the fact that it is unclear what roles the lead and responsible agencies (including the County, State Department of Fish and Game, USFWS, etc.) will play in monitoring the implementation of the various mitigation measures. Such interagency coordination should have occurred during the preparation of the Draft EIR/S. MC-6 Furthermore, many of the mitigation measures use non-binding language like "will" or "would." It is recommended that the SEIR use "shall" instead, as this denotes a requisite obligation placed on the project application. The revised mitigation measures should be included in the Final SEIR as a Mitigation Monitoring and Reporting Program (MMPR).

    Examples of mitigation measures that need to be revised in order to be effective include the following:

    - Mitigation for Issue GS-2 on page 4.1-13 of the SEIR states that "Prior to conducting access road improvements, a qualified geotechnical engineer or engineering geologist would survey all road rights-of-way to provide construction design specification. To ensure slope stability, BMPs developed during design specifications will be implemented in addition to the applicable ones identified in the SWPPP (Appendix K) that would avoid any potential for landslides." Please specify to whom the geotechnical engineer would submit their survey information, and who would be responsible for construction design and review. Please also specify the timing of these designs, and to what extent these designs could differ from what has been analyzed in the SEIR. As written, this portion of the measure appears to improperly defer the final mitigation action to be taken, without an adequate performance standard to ensure compliance. In addition, each BMP that would be "applicable" to this impact should be specified. For each, please specify the timing, responsibility, and monitoring requirements. MC-7

    - Mitigation for Issue GS-4 on pages 4.1-15 and 4.1-16 of the SEIR requires that "Additional erosion control measures would be employed at the sediment disposal area to minimize soil erosion during construction and post-construction periods to a less than significant." Although example measures and a cross-reference to the SWPPP are provided, this measure does not specify the timing of mitigation MC-8 implementation, responsibility, or monitoring requirements. These details are required to ensure mitigation effectiveness.

- Mitigation for Issue GS-5 on page 4.1-19 of the SEIR states that "The applicant will require the contractor to submit BMPs that meet measures specified in the SWPPP." The measure does not indicate to whom these BMPs would be submitted. In addition, timing, responsibility, and monitoring requirements must be outlined for each BMP. MC-9

- The mitigation discussion for Issue WQ-2 on page 4.3-38 notes that the impact is less than significant and does not require mitigation, but then states that "A water quality monitoring program will be finalized and implemented as part of the SWPPP (Appendix K) to ensure no adverse effects to water quality will occur due to the construction activities. The monitoring program will be reviewed and approved by the CCRWQCB and other appropriate permitting agencies." Please clarify why a water quality monitoring program is required if the impact is less than significant. Please also identify "other" permitting agencies, and the timing and responsibility of this monitoring program. MC-10

- Mitigation for Issue WQ-5 on page 4.3-38 states that "The bypass pipeline would be appropriately sized and designed to minimize heating and provide rapid transport of water around the construction site…" Please specify what would be considered "appropriate" and who would make this determination. Please also indicate timing of bypass pipeline design. MC-11

- Mitigation for Issue WQ-5 on page 4.3-38 of the SEIR states that "The SWPPP will be reviewed and finalized during consultation with the CCRWQCB and other appropriate permitting agencies." Please specify what "other" agencies would be involved in SWPPP preparation, and their role in approving measures contained therein. In addition, please indicate specific measures intended to reduce Impact WQ-5, performance standards for compliance, and the timing, responsibility, and monitoring requirements for each. MC-12

- The same mitigation discussion referenced above (page 4.3-38) states that "As part of the onsite biological monitoring, bypass water temperatures, dissolved oxygen, and turbidity would be monitored daily." Please indicate the agency, organization, or individual responsible for both the daily monitoring and to whom they would report. MC-13

- Mitigation for Issue WQ-16 on page 4.3-53 of the SEIR states that "Appropriate BMPs incorporated in the SWPPP (Appendix K) will be implemented by contractor with approval by the Project Engineer and the RWQCB and other appropriate regulatory agencies." Please specify what "other" agencies would be involved in SWPPP preparation, and their role in approving measures contained therein. This mitigation discussion later states that "The effectiveness of erosion protection measures in the bypassed arm of the Carmel River…would be monitored annually by CAW for a period of 10 years at the end of each rainy MC-14 season." Please clarify who the monitoring reports would be submitted to, and the timing of annual monitoring.

- Mitigation for Issue FI-2 on pages 4.4-60 and 4.4-61 describes fish rescue measures to capture fish from affected reaches and relocate them to sections of the Carmel River that would support their growth and development. Please indicate who would be responsible for monitoring the implementation of these measures, and how effectiveness would be determined. MC-15

- Mitigation for Issue FI-4 on page 4.4-88 states that "Implementation of these mitigation measures, combined with any measures required by NMFS for the benefit of steelhead, will reduce the overall impact to that species to less than significant." Specific measures that may be required by NMFS should be identified, and the timing, responsibility, and reporting requirements of these measures should be outlined. MC-16

- Mitigation for Issue CR-1 on page 4.10-32 notes that "In order to complete the Section 106 process, mitigation measures, including those described below for Issue CR-4, will be incorporated into a Memorandum of Agreement (MOA). The MOA will include details about when the work would be done and the responsible parties. The agencies involved in the development of the MOA may include the USACE, the SHPO, CAW, and any tribes that may request to be involved in the MOA process." This language appears to improperly defer the final mitigation action to be taken, without an adequate performance standard to ensure compliance. Details regarding the mitigation measures to be implemented, their timing, and responsibility must be described in the SEIR. MC-17

- Page 4.10-30 of the SEIR notes that impacts and mitigation measures for Issues CR-2, CR-3, CR-5, and CR-6 "would be the same as described for the Proponent's Proposed Project; except that the Chemical Building/Instrument Hut (HR-6) and the San Clemente Dam and Associated Fish Ladder (HR-7) would be removed." Please analyze the impacts of removing HR-6 and HR-7 and clarify how existing mitigation measures cover these additional resources. Please also revise all mitigation measures for Issues CR-2, CR-3, CR-5, and CR-6 to include timing, responsibility, and monitoring requirements. MC-18

- Issue VQ-2 is determined to be significant and unavoidable; however, no mitigation measures are provided. Please mitigate to the extent possible, or explain why mitigation is not feasible. MC-19

- Mitigation for Issue REC-5 is vague and non-binding. When is peak traffic expected, and how would these times be avoided? MC-20

Please note that the above measures are examples; every mitigation measure that will apply to the proposed project (revised Alternative 3) must be revisited and revised to include timing, responsibility, and monitoring requirements. MC-21

Section-Specific Comments

The following comments are submitted on specific sections of the SEIR. Sections 4.2, Hydrology and Water Resources, 4.13, Land Use, and 4.14, Environmental Justice, were not included in the SEIR. Therefore, no comments are provided on these sections.

Section 3.5, Project Description

- Page 3.5-18 of the SEIR states that "Sediment removal will occur over at least two construction seasons two construction seasons." The repeated phrase should be removed. MC-22

- The revised project would include nighttime excavation work. Please indicate the number of nighttime workers, the anticipated hours of nighttime work, whether nighttime workers would stay on-site after working during the day or comprise a separate crew, the number and timing of trips required for nighttime worker access, the types and level of intensity of the night lighting, and where the night lighting would occur in relation to nearby residences. MC-23

- MC-24 Page 3.5-50 of the SEIR indicates that construction crews "could" be transported to work in car pools to minimize construction-related traffic. The CDP application package submitted to the County on April 23, 2012 indicated that on-site parking would be provided for field offices and management staff, while laborers would be expected to use park-and-ride bus systems to reduce the daily vehicle trips to and from the construction sites within the project area. The SEIR project description should be consistent with the application proposal. In addition, please indicate the location of off-site construction worker parking. If improvements to this parking area are required, the impacts must be analyzed in the SEIR. MC-25

Section 4.1, Geology and Soils

Revisions to the Geology and Soils section were made to reflect the increased amount of excavated sediment that will be deposited in the sediment disposal area. Revisions also describe stabilization of the sediment slopes in the disposal area.

- Page 4.1-17 of the SEIR states that impacts and mitigation for Issue GS-2 (Access Route Landslides and Slope Stability) would be the same as the Proponent's Project (dam strengthening). However, Alternative 3 (as revised) would utilize Tassajara Road and the southern portion of Cachagua Road for larger construction traffic. Utilizing these roadways would require widening of five curves and improvement of one bridge to handle the heavy construction equipment loads. These roadway improvements were not analyzed as part of the Proponent's Proposed Project in the Final EIR/S, and are not analyzed as part of Alternative 3 in the SEIR. These improvements should be specifically analyzed in the Geology and Soils section. MC-26

Section 4.3, Water Quality

Revisions to the Water Quality section were made to disclose the increase in reservoir drawdown rate, and the increase in affected instream, streambank, and stream margin habitat.

- Page 4.3-49 of the SEIR notes that water quality impacts and mitigation for Issue WQ-1 (Road Construction and Improvement Activities) would be the same as described for the Proponent's Project (dam strengthening), "plus road improvement activities for the Cachagua Route, including Tassajara Road, the Jeep Trail, and the Reservoir Access Road." Numerous improvements along these routes would be required as part of the revised project. These activities are not analyzed as part of the Proponent's Project. All road improvements required under the revised Alternative 3 should be specifically analyzed in the Water Quality section. MC-27

- Mitigation for Issue WQ-2 states that "the erosion control measures will be monitored for effectiveness." Please indicate the person responsible for monitoring, how often such monitoring would occur, and how effectiveness will be determined. MC-28

- Issue WQ-9 notes that turbidity levels in the pool below the dam could temporarily exceed 400 NTUs and dissolved oxygen levels would decrease as a result of reservoir drawdown. While this is declared a significant and unavoidable short-term impact, it is not clear what threshold is used to determine said impact. MC-29

- Please clarify why the recommended settling pond method would fail to reduce water quality impacts from reservoir drawdown below significance thresholds. MC-30

Section 4.4, Fisheries

Revisions to the Fisheries section were made to disclose impacts to fisheries associated with the additional access route, and impacts related to the increased reservoir drawdown rate.

- Page 4.4-15 of the SEIR, lines 5-6 in the "Kelts" paragraph, contains erroneous grammar/punctuation in the citation. Revision is recommended. MC-31

- Page 4.4-23, first paragraph, line 8 of the SEIR states that "The migration appears to mostly over by the end of May." Revisions/grammar modification should be considered to clarify this statement. MC-32

- On Page 4.4-56 of the SEIR, under the "Impacts and Mitigation" subsection, the word "describes" should be struck out. MC-33

- Mitigation for Issue FI-2 on page 4.4-87, Issue FI-5 on page 4.4-89, and Issue FI-13 on page 4.4-92 of the SEIR state that "Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant." The phrase "will probably" should be changed to "may," as the measures to be implemented are not known at this time to include non-listed species. MC-34

- Throughout Section 4.4, strikeouts appear to be missing. Revision to insert strikeouts as appropriate is recommended. MC-35

Section 4.5, Vegetation and Wildlife

Revisions to the Vegetation and Wildlife section were made to disclose and analyze potential impacts associated with access road improvements, nighttime excavation work at the dam site, and to incorporate updated state species listing statuses and species protection measures.

- In the last paragraph on page 4.5-19 of the SEIR and thereafter throughout section, non-listed special-status plants should be referenced as those plants recognized with a California Rare Plant Rank (CRPR) instead of the California Native Plant Society list. Refer to http://www.cnps.org/cnps/rareplants/ranking.php. MC-36

- In the last paragraph on page 4.5-24, lit is recommended that "CTS" be added after "California tiger salamander." MC-37

- Figure 4.5-2 on page 4.5-26 of the SEIR contains the phrase "Potential CTS Estivation Habitat" in the legend. This should be revised to "Potential CTS Aestivation Habitat." MC-38

- The "Golden eagle" paragraph on page 4.5-29 should contain a sentence about the species' protection under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. MC-39

- The first line on page 4.5-67 of the SEIR contains the phrase "Impact VE-1." For consistency with other SEIR sections, this should be revised to "Issue VE-1." MC-40

- Mitigation for Issue VE-1 on page 4.5-67 of the SEIR should include measures to be implemented if impacts to Lewis's clarkia cannot be avoided. MC-41

- The word "show" under Issue VE-3 on page 4.5-67 of the SEIR (line two of second paragraph) should be revised to "shown." MC-42

- On page 4.5-69 of the SEIR, mitigation for Issue WI-8 should specify/cite protocol for pre-construction surveys for breeding birds. MC-43

- Mitigation for Issue WI-8 on page 4.5-69 states that "nests will be protected by a one-half mile no disturbance buffer." Consistent with the comment in General Comments above, it is recommended that language in these measures be revised to replace "will" with "shall." In addition, please clarify whether this no disturbance buffer applies only to listed species. MC-44

- Mitigation for Issue WI-9 on page 4.5-70 of the SEIR states "This could result in short-term disturbance to special-status species such as CRLF, steelhead, western pond turtle, two-striped garter snake." The word "and" should be added between western pond turtle and two-striped garter snake. MC-45

- The last sentence of the first paragraph under "Mitigation" on page 4.5-71 of the SEIR contains a repeat sentence. This should be deleted. MC-46

- Mitigation for Issue WI-9 on page 4.5-71 of the SEIR should include a measure for a qualified and/or approved biologist to conduct clearance survey at Bridge 529 and other drainage crossings prior to start of each day's construction activities during wet weather conditions. This is the period when CRLFs and other semi-aquatic special status herpetofauna are most likely to traverse upland areas. MC-47

- Mitigation for Issue WI-9 on pages 4.5-71 to 4.5-72 of the SEIR should include a measure that if surveys are not conducted, a qualified and/or approved biologist shall oversee installation of exclusion fencing (fence materials and other specifications to be approved by USFWS and CDFG) adjacent to road improvement areas within potential CTS aestivation habitat, as depicted on Figure 4.5-2. MC-48

- On page 4.5-74 of the SEIR, mitigation for Issue WI-15 should specify/cite protocol for pre-construction surveys for breeding birds. MC-49

Section 4.6, Wetlands

Revisions to the Wetlands section were made to identify resources not delineated in the Final EIR/S, to analyze impacts to wetlands and Other Waters of the U.S. not previously addressed, and to disclose potential impacts associated with access road improvements.

- In the last paragraph on Page 4.6-1 of the SEIR, it is recommended that "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (2008)" be added after the 1987 Manual reference, if used. If this reference was not used, please explain the why. MC-50

Section 4.7, Air Quality

Revisions to the Air Quality section were made to analyze impacts to air quality that are specifically associated with improvement of access routes, increase in the estimated amount of excavated sediment, operation of a screening plant, and the import of boulder and other rock materials for channel reconstruction.

- For additional diesel-powered on-road trucks, including the estimated 160 one-way truck trips needed to import boulder and other rock materials for channel reconstruction, the on-road haul trucks were assumed to be travelling at a speed of 15 mph. Please clarify if this is an assumption, or if the posted speed limit will be 15 mph. If an assumption, please note the basis for the assumption. MC-51

- Additional off-road construction equipment exhaust emissions for increase in sediment excavation, screening plant operation, and the import of boulder and other materials, it is noted that the OFFROAD model assumes that post-2007 engines are subject to the 2008 procedures for new off-road diesel engines and are certified to Tier 2, Tier 3, or Tier 4 interim emission standards. Please clarify how this will this be monitored and enforced. MC-52

- Issue AQ-1 (Dam Site Activities) was revised to account for an additional 314,000 cubic yards of sediment material. Table 4.7-33 indicates that daily construction emissions of NO_X increased 12.2%, CO increased 5.2%, PM_{10} increased 7.4%, ROC increased 5.9%, and PM_{10F} increased 9.1%. As with the previous analysis, these emissions continue to result in a Class I, significant and unavoidable impact. However, the impact is worsened substantially, and yet no additional mitigation has been added. The MBUAPCD should be consulted to determine if any additional mitigation measures are available to reduce the impact to the maximum extent feasible. MC-53

MC-54

- Issue AQ-1a was added to analyze the air quality impacts of the newly proposed screening plant. This impact is considered less than significant and short-term when considered in isolation, and significant and unavoidable when combined with all construction emissions. The screening plant would not be constructed or used in isolation. Therefore, the purpose of analyzing the plant individually is unclear. In practice, the impact will be Class I and not Class III. In addition, although the impact was determined to be significant and unavoidable when combined with all construction emissions, no mitigation is identified for this impact. Please identify mitigation measures that would reduce this impact to the extent feasible. MC-55

- The screening plant would occupy 0.22 acres, and construction of the plant would require grading. It is unclear if grading required for this plant is included in the construction emissions in Issue AQ-1. Please clarify. MC-56

- The screening plant would be removed (demolished) after construction is complete. It is unclear if the emissions from demolition of this facility have been analyzed. Please clarify. MC-57

<u>Section 4.7a, Greenhouse Gas Emissions</u>

Revisions to the SEIR were made to analyze potential impacts from greenhouse gas (GHG) emissions. Because the project was initiated in 2005 (prior to the enactment of AB 32 and SB 75), the Final EIR/S air quality impact evaluation for the project did not quantify GHG emissions.

MC-58

- The SEIR notes that the Department of Water Resources has not established a quantitative significance threshold for GHG emissions. On page 4.7a-13 of the SEIR, the criteria used to determine the significance of the project include a comparison of project GHG emissions to the amount of GHG emissions for stationary source facilities that are required to report their GHG emissions (25,000 metric tons of CO_2E per year) to the U.S. Environmental Protection Agency (USEPA). CEQA explicitly gives lead agencies the authority to choose thresholds of significance, and defers to lead agency discretion when choosing thresholds. However, the 25,000 MT/CO_2E/year mandatory reporting threshold is intended to be applied to stationary sources, such as fossil fuel suppliers, industrial gas suppliers, direct greenhouse gas emitters, and manufacturers of heavy-duty and off-road vehicles and engines . Please clarify how the proposed project fits this characterization as a major stationary source facility. Page 4.7a-17 of the SEIR notes that the project's GHG emissions would be approximately 8,000 metric tons of CO_2E, and notes that this is "well MC-59 below" the 25,000 MT/CO_2E/year emissions level for major facilities that are required to report GHG emissions. Note that the project's 8,000 metric tons of CO_2E is also higher than some of the quantitative emissions thresholds discussed in Section 4.7a (refer to page 4.7a-12). It is recommended that the lead agency provide substantial evidence justifying the use of the identified threshold to determine the significance of project GHG emissions.

- Page 4.7a-9 of the SEIR states that the Monterey Bay Unified Air Pollution Control District's (MBUAPCD) document considering various GHG thresholds does not consider significance thresholds for construction projects. It is recommended that construction-related GHG emissions be amortized over the project's lifetime in order to compare these emissions to quantitative GHG thresholds, which are generally expressed in terms of metric tons of CO_2E per year. A common default project lifetime is 30 years. MC-60

1C-61

- Pages 4.7a-15 through 4.7a-16 of the SEIR address project CO_2 emissions. Combustion of diesel fuel, which is the primary source of GHG emissions from the project, results in CO_2, as well as CH_4 and N_2O, which are also common GHGs. Note that, CO_2 emissions make up approximately 76.7% of worldwide GHG emissions, methane emissions account for approximately 14.3% of worldwide GHG emissions, and N_2O emissions account for approximately 7.9% of worldwide GHG emissions (IPCC, 2007). Collectively, these three GHGs make up approximately 98.9% of worldwide GHG emissions; therefore an inventory which accounts for all three of these GHGs would provide a more complete estimate of total project GHG emissions. It is recommended that the SEIR also include emissions of CH_4 and N_2O in the GHG emissions inventory, in order to avoid underestimating the project's GHG emissions. MC-62

- Page 4.7a-17 of the SEIR explains that wherever feasible and practicable, the contractor would implement AB 32 GHG reduction measures, such as the use of low carbon fuels, construction recycling and reuse, and the proper use and maintenance of off-road construction equipment. The Page 4.7a-18 of the SEIR concludes that the project's GHG emissions would have a less than significant impact on the environment, based on its consistency with AB 32. It is recommended that implementation of the aforementioned AB 32 GHG reduction measures be mandatory and enforceable if their implementation is a prerequisite for a determination that GHG impacts would be less than significant. MC-63

Section 4.8, Noise

Revisions to the Noise section were made to evaluate potential noise impacts resulting from additional access road improvements, increased traffic using Tassajara Road and the southern portion of Cachagua Road, and work at night at the Dam and reservoir sites.

- The noise setting lists a number of residences in proximity to the project site. It should be noted that these sensitive receptors were not included in the application package to the County. They should be added to Item 7.4 in the application package, or shown on a separate map, along with any receptors within approximately 500 feet of the access roads. MC-64

- Table 4.8-1 on page 4.8-2 of the SEIR is not from the Monterey County 2010 General Plan. Please delete this table and insert Table 5-2 (Community Noise Exposure) on page S-17 of the 2010 General Plan. MC-65

- Page 4.8-4 of the SEIR notes that sound level meters (SLMs) were placed in locations that "represented the ambient noise levels at nearby noise-sensitive receptors." Please clarify the criteria used to determine that the locations were representative. MC-66

- The August 2011 noise measurement locations are shown on Figure 4.8-2. This figure provides no frame of reference regarding proximity to sensitive receptors or specific project features. It is suggested that measurement locations be shown on Figure 4.8-1 instead, as this would provide the reader with a better understanding of their location. MC-67

- It is unclear if the August 2011 measurements were taken in the same locations as the October 1997 measurements, or in different locations. Please clarify. If they differ, please explain the reasoning for the change. MC-68

- The analysis under Issue NO-2 for Alternative 3 states that noise-related impacts from access road upgrades would be the same as those described for the Proponent's Proposed Project (dam strengthening). However, the location of the impacts would change. This analysis is ambiguous, and fails to acknowledge whether additional sensitive receptors located along Tassajara Road and southern arm of Cachagua Road would be impacted. Furthermore, if additional road improvements are required, noise impacts would increase (albeit remain temporary). Such impacts should be quantified to the extent feasible. MC-69

- Mitigation for Issue NO-2 cross-references to mitigation for the Proponent's Project. This mitigation states that "standard measures such as limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near sensitive receptors." Please clarify the precise hours of construction limitations, and how this would apply to a project that proposes night-time construction activity. In addition, if these restrictions are to be applied only near sensitive receptors, please indicate the location of these receptors and the distance from which construction activity would be limited. MC-70

- Page 4.8-23 of the SEIR notes that no material delivery trucks or heavy construction equipment would be moved in or out of the site at night. However, construction workers would still need to access the site for nighttime work. The discussion under Issue NO-3 does not appear to analyze the impact of trips for nighttime worker transportation. MC-71

- Issues NO-2 and NO-3 cross-reference mitigation for the Proponent's Project (dam strengthening). This mitigation includes limiting passenger vehicle (including van pools) access for construction workers to between 7 a.m. and 7 p.m. However, the proposed project would include nighttime construction. Please clarify how this mitigation measure could be implemented for the project, given proposed nighttime construction activities. MC-72

Section 4.9, Traffic and Circulation

Revisions to the Traffic and Circulation section were made to disclose and analyze potential impacts associated with use of Tassajara Road and the southern portion of Cachagua Road for heavy equipment access and construction deliveries, including additional pavement loadings and potential delays in emergency response.

- At the top of page 4.9-53, the SEIR states that worker access would be the same as identified in the Final EIR/S. However, the revised project would include nighttime construction activities. Impacts related to nighttime worker access should be clarified and discussed. MC-73

- Please clarify whether the traffic analysis assumed that construction workers would access the site independently or utilize a park-and-ride system. If they would utilize a park-and-ride system, please indicate the location of the park-and-ride lot. MC-74

- Page 4.9-53 of the SEIR states: "The 20-foot wide sections of the Jeep Trail between Cachagua Road and the new access road to the reservoir would be adequate for two-way travel. Turnouts would be provided along the sections of the Jeep Trail that would be limited to one-way travel." However, the project description states that the Jeep Trail is currently 12 feet wide, and would be widened to 18 feet (page 3.5-42). MC-75

- Page 4.9-55 of the SEIR states that "all trucks were assumed to travel between the project site via Carmel Valley Road and Highway 1." However, in the Air Quality section it is stated that "boulder and other channel restoration materials would likely come from suppliers in the Salinas area" and in the GHG section it is stated that "haul trucks were estimated to be traveling from Salinas to the project site." Please clarify what route trucks would take from Salinas to the project site. MC-76

- Additional mitigation was added for Issue TC-1, TC-3a, TC-7, and TC-8. Consistent with the comment in General Comments above, it is recommended that language in these measures be revised to replace "would" or "will" with "shall." MC-77

Section 4.10, Cultural Resources

Revisions to the Cultural Resources section were made to identify updated cultural resource studies, and to disclose and analyze potential impacts to cultural resources not identified in the Final EIR/S. The addition of potentially affected cultural resources is primarily due to changes in the Area of Potential Effects (APE) due to the use of Tassajara Road and additional Cachagua Road segments for equipment access (requiring road improvements).

- Table 4.10-2 (Inventoried Historical Structures) was revised to alter the "Relevant NRHP/CRHR Criteria or Reason for Omission" column for historic structure HR-3 and to add HR-10, which was listed as having a "general lack of significance" in the "Relevant NRHP/CRHR Criteria or Reason for Omission" column. All other historic structures listed in Table 4.10-2 reference specific NRHP and CRHR criterion in this column. Are criteria not available for HR-3 and HR-10? MC-78

- The text description of resource HR-3 was not revised. Please clarify the reasoning for the revision in Table 4.10-2. MC-79

- Page 4.10-30 of the SEIR states that "impacts and mitigation measures for Issues CR-2 (Damage to Historic Structures from Construction-Related Vibration), CR-3 (Introduction of Temporary Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surround Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as described for the Proponent's Project; except that the Chemical Building/Instrument Hut and the San Clemente Dam and Associated Fish Ladder would be removed." It is unclear how the revised Alternative 3 qualifies as having the same impact as dam strengthening. In particular, the current proposed project would include removal of 830,000 cubic yards of accumulated sediment, blasting, and other effects that would create construction-related vibration, create an accumulation of dirt, and alter the existing setting. MC-80

<u>Section 4.11, Aesthetics</u>

Revisions to the Aesthetics section were made to disclose and analyze potential impacts associated with night work conducted at the Dam and reservoir site, and to identify additional improvements to, and use of, the Cachagua Access Route and the Jeep Trail for heavy equipment and construction use.

- MC-81 At the top of page 4.11-26, the SEIR states that "After construction, the viewshed would return to the condition it was prior to construction." Given that "dam operations and maintenance activities are routine features of the landscape" (page 4.11-25) for residences in this area, it is unclear how the proposed project would return the viewshed to its current condition after construction. The project includes removal of two dams, relocation of 830,000 cubic yards of sediment, and re-routing of the Carmel River. These activities would permanently alter the viewshed in this area. MC-82

- The revised analysis includes the addition of a new Impact VQ-5a, which analyzes changes to viewsheds near or on the Jeep Trail. The analysis focuses on construction activities and construction-related uses. According to the analysis, impacts would be significant and unavoidable, but short-term. The project proposes to widen the Jeep Trail from 12 feet to 18 feet, which would require the removal of a substantial number of trees. These activities would permanently alter the landscape in this location. Therefore, long-term impacts to this viewshed should also be analyzed. MC-83

- Mitigation for Issue VQ-6 (Light and Glare from Night-time Construction Activities) states that "lighting would be directed down toward the work areas to the extent possible, and would be shielded to reduce sky glow and spillover." Additional detail should be provided for this mitigation to be measurable and enforceable. Please indicate specific types of lighting that would be acceptable, and whether these would be indicated on a lighting plan subject to agency review. MC-84

Section 4.12, Recreation

Revisions to the Recreation section were made to disclose and analyze potential recreational impacts associated with additional improvements to, and use of, the Cachagua Access Route and the Jeep Trail for heavy equipment and construction use, and to address impacts to recreational motorists traveling to Los Padres National Forest.

- New Issue REC-5 should be added to the list of issues on page 4.12-10. MC-85

MC-86
- Mitigation for Issue REC-2 should change "would" to "shall," and should define "working hours." In addition, attempt should be made to mitigate the impact by providing alternate access, cutouts, or communicating access issues with owners of the stone cabin. MC-87

- Please clarify the threshold(s) used for Issue REC-2 and REC-5. MC-88

Thank you in advance for considering our comments. Please do not hesitate to contact me at (831) 755-5183 or schubertbj@co.monterey.ca.us if you have questions about this comment letter or need additional information.

Sincerely,

Robert Schubert

Robert Schubert, AICP
Senior Planner

Comment MC-1: ***As noted above, the CDP the applicant is requesting from the County includes Use Permits for removal of both the San Clemente Dam and the Old Carmel River Dam. However, the SEIR does not specifically analyze removal of the Old Carmel River Dam. The project, as analyzed in the CEQA document, would cut a notch into the Old Carmel River Dam in order to provide adequate fish passage. It should be noted that the County cannot approve a Use Permit for removal of the Old Carmel River Dam without the appropriate level of CEQA review of this component of the project.***

Response MC-1: Comment noted.

Comment MC-2: ***It is recommended that the cover and/or title page for the SEIR indicate the firm or firms who prepared the document.***

Response MC-2: Several firms contributed to preparation of the EIR/EIS and SEIR. Sections 21083, 21104, and 21153 of the Public Resources Code require that the agencies and organizations involved in preparation of the CEQA document be identified. Lists of the EIR/EIS and SEIR preparers, and of the agencies and organizations consulted, are found in Chapter 6 of the EIR/EIS and the SEIR.

Comment MC-3: ***It is recommended that a summary table indicating changes to Alternative 3 and why they were made be added to the introductory section of the SEIR. This table would help the reader better understand the context of the SEIR.***

Response MC-3: Please see Introduction, page 1-7 in the Draft SEIR. The *Draft Supplement to the San Clemente Dam Seismic Safety Project Final EIR* (SEIR) only includes pages that contain revisions to the Final EIR/EIS, or that are necessary to understand the discussion. In order to identify project changes, text that has been added to the final EIR for the SEIR is recognized by **bold and underline**. Text that has been deleted from the Final EIR/EIS for the SEIR can be recognized by ~~strikethrough~~. Text that is the same as that in the Final EIR/EIS remains unchanged. The Impacts and Mitigation Matrix for the Proponent's Proposed Project and Alternatives (Table 2-1) was similarly updated for the SEIR.

Comment MC-4: ***Throughout the SEIR, references to the "Monterey County Planning and Building Inspection Department" should be changed to the "Monterey County RMA – Planning Department."***

Response MC-4: In the Final SEIR, references to the Monterey County Planning and Building Inspection Department have been changed to the Monterey County Resource Management Agency (RMA)-Planning Department.

Comment MC-5: ***The majority of the mitigation measures in the SEIR lack the information that is necessary to ensure that they will be effective. Each mitigation measure in the SEIR should include the following information:***

1) ***Identify the agency, organization or individual who is responsible for implementing the measure;***
2) ***Identify the agency, organization or individual responsible for monitoring implementation of the measure and whether any reporting is required; and***
3) ***Indicate when the measure must be implemented.***

Of particular concern is the fact that it is unclear what roles the lead and responsible agencies (including the County, State Department of Fish and Game, USFWS, etc.) will play in monitoring the implementation of the various mitigation measures. Such interagency coordination should have occurred during preparation of the Draft EIR/S…The revised mitigation measures should be included in the Final SEIR as a Mitigation Monitoring and Reporting Program (MMPR).

Response MC-5: In order to ensure that "the mitigation measures and project revisions identified in the EIR or negative declaration are implemented," Sections 21083, 21081.6, and 21081.7 of the Public Resources Code require that the lead agency adopt a program for monitoring or reporting (MMRP) at the same time it makes written findings for the project.

In March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

The MMRP will be updated for the Final SEIR and will be adopted when findings are made. As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities.

Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed. Federal, state, and local requirements and agency coordination is described in Section 1.5 of the Final EIR/EIS.

Comment MC-6: ***Furthermore, many of the mitigation measures use non-binding language like "will" or "would." It is recommended that the SEIR use "shall" instead, as this denotes a requisite obligation placed on the project application.***

Response MC-6: Any mitigation measures that incorporate the words "will" or "would" in the SEIR are mandatory measures.

Comment MC-7: ***Mitigation for Issue GS-2 on page 4.1-13 of the SEIR states that "Prior to conducting access road improvements, a qualified geotechnical engineer or engineering***

geologist would survey all road rights-of-way to provide construction design specification. To ensure slope stability, BMPs developed during design specifications will be implemented in addition to the applicable ones identified in the SWPPP (Appendix K) that would avoid any potential for landslides." Please specify to whom the geotechnical engineer would submit their survey information, and who would be responsible for construction design and review. Please also specify the timing of these designs, and to what extent these designs could differ from what has been analyzed in the SEIR. As written, this portion of the measure appears to improperly defer the final mitigation action to be taken, without an adequate performance standard to ensure compliance. In addition, each BMP that would be "applicable" to this impact should be specified. For each, please specify the timing, responsibility, and monitoring requirements.

Response MC-7: Mitigation for Issue GS-2 on page 4.1-13 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, in March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-8: ***Mitigation for Issue GS-4 on pages 4.1-15 and 4.1-16 of the SEIR requires that "Additional erosion control measures would be employed at the sediment disposal area to minimize soil erosion during construction and post-construction periods to a less than significant." Although example measures and a cross-reference to the SWPPP are provided, this measure does not specify the timing of mitigation implementation, responsibility, or monitoring requirements. These details are required to ensure mitigation effectiveness.***

Response MC-8: Mitigation for Issue GS-4 on pages 4.1-15 and 4.1-16 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, in March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-9: ***Mitigation for Issue GS-5 on page 4.1-19 of the SEIR states that "The applicant will require the contractor to submit BMPs that meet measures specified in the SWPPP." The measure does not include to whom these BMPs would be submitted. In addition, timing, responsibility, and monitoring requirements must be outlined for each BMP.***

Response MC-9: Mitigation for Issue GS-5 on page 4.1-1**8** of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, in March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-10: ***The mitigation discussion for Issue WQ-2 on page 4.3-38 notes that the impact is less than significant and does not require mitigation, but then states that "A water quality monitoring program will be finalized and implemented as part of the SWPPP (Appendix K) to ensure no adverse effects to water quality will occur due to the construction activities. The monitoring program will be reviewed and approved by the CCRWQCB and other appropriate permitting agencies." Please clarify why a water quality monitoring program is required if the impact is less than significant. Please also identify "other" permitting agencies, and the timing and responsibility of this monitoring program.***

Response MC-10: Mitigation for Issue WQ-**4** on page 4.3-38 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, while the construction of stream diversions, sheet pile cutoff walls and cofferdams will not cause significant water quality effects, and therefore require no mitigation, a water quality monitoring program for the **overall** construction project will be implemented. In March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-11: ***Mitigation for Issue WQ-5 on page 4.3-38 states that "The bypass pipeline would be appropriately sized and designed to minimize heating and provide rapid transport of water around the construction site…" Please specify what would be considered "appropriate" and who would make this determination. Please also indicate timing of bypass pipeline design.***

Response MC-11: Mitigation for Issue WQ-5 on page 4.3-38 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, in March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-12: ***Mitigation for Issue WQ-5 on page 4.3-38 of the SEIR states that "The SWPPP will be reviewed and finalized during consultation with the CCRWQCB and other appropriate permitting agencies." Please specify what "other" agencies would be involved in SWPPP preparation, and their role in approving measures contained therein. In addition, please indicate specific measures intended to reduce Impact WQ-5, performance standards for compliance, and the timing, responsibility, and monitoring requirements for each.***

Response MC-12: Mitigation for Issue WQ-5 on page 4.3-38 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, in March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in

August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-13: ***The same mitigation discussion referenced above (page 4.3-38) states that "As part of the onsite biological monitoring, bypass water temperatures, dissolved oxygen, and turbidity would be monitored daily." Please indicate the agency, organization, or individual responsible for both the daily monitoring and to whom they would report.***

Response MC-13: Mitigation for Issue WQ-5 on page 4.3-38 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, In March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-14: ***Mitigation for Issue WQ-16 on page 4.3-53 of the SEIR states that "Appropriate BMPs incorporated in the SWPPP (Appendix K) will be implemented by contractor with approval by the Project Engineer and the RWQCB and other appropriate regulatory agencies." Please specify what "other" agencies would be involved in***

SWPPP preparation, and their role in approving measures contained therein. This mitigation discussion later states that "The effectiveness of erosion protection measures in the bypassed arm of the Carmel River…would be monitored annually by CAW for a period of 10 years at the end of each rainy season." Please clarify who the monitoring reports would be submitted to, and the timing of annual monitoring.

Response MC-14: Mitigation for Issue WQ-16 on page 4.3-53 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, In March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-15: ***Mitigation for Issue FI-2 on pages 4.4-60 and 4.4-61 describes fish rescue measures to capture fish from affected reaches and relocate them to sections of the Carmel River that would support their growth and development. Please indicate who would be responsible for monitoring the implementation of these measures, and how effectiveness would be determined.***

Response MC-15: Mitigation for Issue FI-2 on pages 4.4-60 and 4.4-61 of the SEIR is the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

However, as a point of clarification, In March 2011, DWR adopted findings, overriding considerations, and a MMRP for the *San Clemente Dam Seismic Safety Project Final EIR/EIS*. Copies of these documents were sent to the Monterey County RMA-Planning Department in August 2011. An email message from Mr. Bob Schubert dated August 4, 2011 confirmed that Monterey County RMA-Planning Department received these documents.

As in the MMRP for the Final EIR/EIS, the MMRP for the SEIR will identify mitigation measures, the monitoring or reporting action, the entity responsible for monitoring or reporting, the timing of the monitoring or reporting action, and will identify the enforcement entities. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department, and other responsible agencies, after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-16: ***Mitigation for Issue FI-4 on page 4.4-88 states that "Implementation of these mitigation measures, combined with any measures required by NMFS for the benefit of steelhead, will reduce the overall impact to that species to less than significant." Specific measures that may be required by NMFS should be identified, and the timing, responsibility, and reporting requirements of these measures should be outlined.***

Response MC-16: As stated on page 4.4-88 of the Draft SEIR, under Alternative 3, mitigation for Issue FI-4 would be the same as under Alternative 2. However, as required under the Endangered Species Act, any further measures identified by NMFS during the permitting process or under project conditions must also be implemented. The MMRP for the Final SEIR will reflect the timing, responsibility, monitoring, and reporting requirements for Issue FI-4; the timing of any additional measures would be at the discretion of NMFS.

Comment MC-17: ***Mitigation for Issue CR-1 on page 4.10-32 notes that "In order to complete the Section 106 process, mitigation measures, including those described below for Issue CR-4, will be incorporated into a Memorandum of Agreement (MOA). The MOA will include details about when the work would be done and the responsible parties. The agencies involved in the development of the MOA may include the USACE, the SHPO, CAW, and any tribes that may request to be involved in the MOA process." This language appears to improperly defer the final mitigation action to be taken, without an adequate performance standard to ensure compliance. Details regarding the mitigation measures to be implemented, their timing, and responsibility must be described in the SEIR.***

Response MC-17: Under Section 106 of the National Historic Preservation Act (NHPA), federal agencies must consider effects on historic properties. The USACE, as the federal partner, initiated the 106 process during preparation of the EIR/EIS.

As discussed in the Draft SEIR on pages 4.10-6 and 4.10-19 and under Issue CR-1, archaeological surveys conducted in 2011 revealed there are no known eligible archaeological resources present within the Area of Potential Effects (APE) for the revised Alternative 3, and no areas of sensitivity for buried archaeological resources were identified. Potential impacts associated with Impact CR-1 (Ground Disturbance) will be mitigated by protecting site CA-MNT-1253 (AR-4) in the "saddle" area of the SCD reservoir with exclusion fencing, by providing pre-construction cultural resource training to all construction personnel, and by complying with 36 CFR 800.13 in the event historic resources are discovered after the 106 process is complete. Implementation of these measures will reduce impacts under Issue CR-1 to less than significant. For detailed information, please refer to Issue CR-1 for Alternative 3.

Mitigation measures to minimize the impacts associated with Issue CR-4 (Demolition or Alteration to Historic Properties) include recordation of the resources prior to the start of any construction activities, and may also include development of interpretative displays, an educational program, and preparation of a publication on historic resources. However, even with implementation of these measures, the impacts associated with Issue CR-4 will remain significant, unavoidable, and long-term. For further information, please refer to Issue CR-4.

In the Draft SEIR, mitigation for Issue CR-1 and Issue CR-4 are adequately addressed. However, the USACE must complete the Section 106 process. As with other project permits, if the MOA includes mitigation measures beyond those identified in the SEIR, such measures would also become required project components. The 106 process is expected to be complete in the fall of 2012.

In the Final SEIR, the last paragraph under mitigation for Alternative 3 Issue CR-1 has been revised to say:

> **In order to complete the Section 106 process, mitigation measures, including those described below for Issues CR-4, will be incorporated into a Memorandum of Agreement (MOA). The MOA will include details about when the work would be done and the responsible parties. The agencies involved in the development of the MOA may include the USACE, the SHPO, CAW, and any tribes that may request to be involved in the MOA process.** *As with other project permits, if the MOA includes mitigation measures beyond those identified in the SEIR, such measures would also become required project components. The 106 process is expected to be complete in the fall of 2012.*

Comment MC-18: ***Page 4.10-30 of the SEIR notes that impacts and mitigation measures for Issues CR-2, CR-3, CR-5, and CR-6 "would be the same as described for the Proponent's Proposed Project; except that the Chemical Building/Instrument Hut (HR-6) and the San Clemente Dam and Associated Fish Ladder (HR-7) would be removed. Please analyze the impacts of removing HR-6 and HR-7 and clarify how existing mitigation measures cover these additional resources. Please also revise all mitigation measures for Issues CR-2, CR-3, CR-5, and CR-6 to*** **include timing, responsibility, and monitoring requirements.**

Response MC-18: Issues CR-2, CR-3, CR-5, and CR-6 all relate to various impacts to cultural resources from the dam thickening alternative that were evaluated in the Final EIR (see FEIR 4.10-22 - 4.10-24).

The Final EIR identifies the Chemical Building (HR-6, variously referred to as the Quonset hut or instrument hut) as being eligible for the National Register of Historic Places and California Register of Historical Resources as a contributing resource to the SCD Historic District (see FEIR 4.10-9).

In the Final EIR, the dam thickening alternative was determined to have potential impacts to the Chemical Building (HR-6) due to construction related vibration (CR-2) and construction/demolition related accumulation of dirt (CR-3) (see FEIR 4.10-22 - 4.10-23). Mitigation measures described in the FEIR were determined to reduce the identified impacts to less than significant. No impacts to the Chemical Building were identified for CR-5 (Alteration to the Setting of Surrounding Environment) or CR-6 (Introduction of Visual Obstructions) (see FEIR 4.10-24).

The Final EIR considers the San Clemente Dam and associated fish ladder as a single historical resource that is eligible for the National Register of Historic Places and California Register of Historical Resources as a contributing resource to the SCD Historic District (see FEIR 4.10-9 - 4.10-10).

In the Final EIR, the dam thickening alternative was determined to have potential impacts to the SCD and Associated Fish Ladder (HR-7) due to construction related vibration (CR-2), construction/demolition related accumulation of dirt (CR-3), and by altering the character of the setting for the SCD Historic District (CR-5) (see FEIR 4.10-22 - 4.10-24). No impacts to the SCD and Associated Fish Ladder were identified for CR-6 (Introduction of Visual Obstructions) (see FEIR 4.10-24).

The Final EIR states that the impacts and mitigation measures for Issues CR-2, CR-3, CR-5, and CR-6 would be the same for the Carmel River Reroute and Dam Removal (Alternative 3 in the FEIR) as for Dam Thickening (the Proponent's Proposed Project in the FEIR) (see FEIR 4.10-26).

The Final EIR states that Alternative 2 (Dam Removal) would result in demolition of the SCD and Associated Fish Ladder (see FEIR 4.10-26). Issue CR-4 (Demolition or Alteration to Historic Properties) identifies impacts to the SCD and Associated Fish Ladder under the Dam Removal alternative as significant, unavoidable, long-term impacts (see FEIR 4.10-26).

The Final EIR states that the impacts and mitigation measures for Issue CR-4 would be the same for the Carmel River Reroute and Dam Removal (Alternative 3 in the FEIR) as for Dam Removal (Alternative 2) (see FEIR 4.10-26).

The Draft SEIR proposed to amend the description of Alternative 3 (Carmel River Reroute and Dam Removal) to note that the impacts and mitigation measures for Issues CR-2 (Damage to Historic Structures from Construction-Related Vibration), CR-3 (Introduction of Temporary Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surround Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as described for the Proponent's Proposed Project (Dam Thickening) except that the Chemical Building/Instrument Hut and the San Clemente Dam and Associated Fish Ladder would be removed.

Because removal of the fish ladder was described in the FEIR, this is not information that is new to the SEIR, and so no change to the SEIR is required in relation to removal of the fish ladder.

In the Final EIR Chapter 3.4, the dam removal alternative (Alternative 2) states that the instrument hut near the left abutment would be removed. References to the instrument hut and Chemical Building describe the same thing, as there is only one building near the left abutment of the dam. The building is described on page 4.0-10 and in Table 4.10-2 of the Final EIR/EIS. The Final EIR/EIS depicts the location of the Chemical Building/Instrument Hut in Figure 4.10-2, and in the Draft SEIR, the Chemical Building/Instrument Hut is depicted on Figure 4.10-2A. The description and location of the Chemical Building/Instrument Hut in the Draft SEIR are the same as described in the Final EIR/EIS.

Removal of the Chemical Building/Instrument was anticipated under Alternatives 2 and 3 in the Final EIR/EIS, and will be removed under Alternative 3 in the SEIR. Mitigation measures described in the Final EIR/EIS under Issue CR-4 for Alternative 2 would also reduce the impacts to demolition of the Chemical Building/Instrument Hut, but as with the other demolished resources, the impact would remain significant and unavoidable, long-term.

DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required. However, for the purposes of clarification, Issue CR-4 under Alternative 2 of the Final SEIR will say:

> Issue CR-4: Demolition or Alteration to Historic Properties
> Alterations to OCRD and associated fish ladder and to San Clemente Dam
> Determination: significant, unavoidable, long-term
>
> IMPACT
>
> The OCRD and Associated Fish Ladder (HR-4) could undergo alteration of property due to proposed improvements to access roads to SCD. Structural improvements would be made to the existing bridge that is placed on top of the embankment dam. Existing

piers would be replaced with stronger and more deeply set piers, which could damage the OCRD. The *Chemical Building/Instrument Hut (HR-6) and* SCD and Associated Fish Ladder (HR-7) would be demolished under this alternative. This would be a significant and unavoidable long-term impact.

MITIGATION

Mitigation measures for long-term impacts would include recordation of the resources OCRD and associated Fish Ladder (HR-4), the SCD and associated Fish Ladder (HR-7), *and the Chemical Building/Instrument Hut (HR-6).* Recordation would be completed prior to any construction, in the form of HABS/HAER level documentation, which follows NPS regulations. Additional mitigation could include interpretive displays, development of an educational program on the Dam and associated facilities, and professional publications on the historic resources. All mitigation would be outlined in a MOA and approved by SHPO. However, this mitigation would not reduce the impact to a less than significant level.

Comment MC-19: ***Issue VQ-2 is determined to be significant and unavoidable; however, no mitigation measures are provided. Please mitigate to the extent possible, or explain why mitigation is not feasible.***

Response MC-19: Issue VQ-2 (Changes to the Viewsheds from Residences Adjacent to the CVFP and the San Clemente Dam) evaluates the visual impacts of construction activities within the viewshed. Because of the close proximity of the residence to the dam site, and because construction activities occur could both day and night, there is no feasible way to reduce the impacts to the viewshed at this location. Issue VQ-2 for Alternative 3 in the Final SEIR will be revised to say:

Issue VQ-2: Changes to the Viewsheds from Residences Adjacent to the CVFP and the San Clemente Dam
Construction activities within the viewshed
Determination: significant and unavoidable

IMPACT
The residences located adjacent to the CVFP would not be impacted because no improvements to the CVFP access road would be needed under Alternative 3. However, residents near the Dam would have views of the construction activities during normal working hours and at night.

Due to the location of the residences, construction activities at the dam would be in full view of the residence located adjacent to the SCD. Because of the close proximity of the residence to the dam site, and because construction activities occur could both day and night, there is no feasible way to reduce the impacts to the viewshed at this location.

~~***Due to the location of the residences, dam operations and maintenance activities are routine features of the landscape, however, short-term impacts are considered significant and unavoidable because construction activities would***~~

~~***occur both during normal working hours and at night.***~~

~~***After construction, the viewshed would return to the condition it was prior to the construction. Therefore, no long-term impacts are anticipated, however the shortterm viewshed impacts to residents cannot be minimized and would remain significant and unavoidable during project construction.***~~

Comment MC-20: ***Mitigation for Issue REC-5 is vague and non-binding. When is peak traffic expected, and how would these times be avoided?***

Response MC-20: In the Final SEIR, mitigation for Issue REC-5 will be revised to say:

MITIGATION
To minimize the impact, mobilization of trailer-trucks and heavy equipment would be coordinated to avoid peak traffic *hours between 6:00 am to 8:30 am and from 3:30 pm to 6:00 pm (B. Villanueva, Department of Public Works County of Monterey,pers. comm.). The Project Applicant will prepare a Trip Reduction Plan, Traffic Coordination and Communication Plan, and a Traffic Safety Plan (see mitigation for Issue TC-1). These plans will be submitted to, and approved by Monterey County, prior to the start of construction. Requirements for avoiding peak traffic hours will be incorporated into the Traffic Coordination and Safety Plan, and into the MMRP for the Final SEIR. Even with these measures,* ~~***but***~~ **the impact would remain significant and unavoidable.**

Comment MC-21: ***Please note that the above measures are examples; every mitigation measure that will apply to the proposed project (revised Alternative 3) must be revisited and revised to include timing, responsibility, and monitoring requirements.***

Response MC-21: Please see Response MC-5, above.

Comment MC-22: ***Page 3.5-18 of the SEIR states that "Sediment removal will occur over at least two construction seasons two construction seasons." The repeated phrase should be removed.***

Response MC-22: This sentence in the Final SEIR has revised as:

Sediment removal will occur over at least ~~***two construction seasons***~~ **two construction seasons.**

Comment MC-23: ***The revised project would include nighttime excavation work. Please indicate the number of nighttime workers, the anticipated hours of nighttime work, whether nighttime workers would stay on-site after working during the day or comprise a separate crew, the number and timing of trips required for nighttime worker access, the***

types and level of intensity of the night lighting, and where the night lighting would occur in relation to nearby residences.

Response MC-23: In the Final SEIR, nighttime activities for Issue NO-I have been revised as:

> **<u>Nighttime Activities –</u>**
>
> **<u>Construction activities at the Dam and reservoir sites may occur at night. Night work would be restricted to sediment excavation in the San Clemente Creek arm and placement of materials in the Sediment Disposal Area. No material delivery trucks or heavy construction equipment would be moved in or out of the site at night and no blasting would be permitted at night.</u>**
>
> *<u>Night work would be restricted to sediment excavation activities at the dam site. Night crews would consist of approximately 20 personnel. A typical night shift would be from 5 pm to 4 am. About 8 vehicles would transport night shift workers to the project site at the end of the day shift. Most workers would be transported to and from the site using a van pool, but cars and pickup trucks may be used as well. After a night shift, 1 or 2 vans and 4 to 6 personal vehicles would leave the project site. Access would be via Cachagua Road and the Jeep Trail.</u>*
>
> **<u>To assess the potential impact, noise modeling was conducted and compared to the measured ambient nighttime noise levels (see Appendix BB). The modeling assumed simultaneous use of up to 3 excavators, 9 dump trucks, and 2 auger drill rigs. Noise was calculated for work being conducted at the northern end of the (near SCD) and the southern end of the site (near the Reroute Channel and Diversion Dike). Results are summarized in Tables 4.8-11 and 4.8-12. Noise level contours for nighttime work are depicted in Figures 4.8-3 and 4.8-4.</u>**

Night lighting would consist of standard halogen type flood lights. As described in Issue VQ-6, lighting would be directed down toward the work area and would be shielded to reduce sky glow and spillover. The only residence near the dam site is the Dam Keeper's cottage, which is owned by California American Water Company and possibly may not be occupied during construction.

Comment MC-24: ***Page 3.5-50 of the SEIR indicates that construction crews "could" be transported to work in car pools to minimize construction-related traffic. The CDP application package submitted to the County on April 23, 2012 indicated that on-site parking would be provided for field offices and management staff, while laborers would be expected to use park-and ride bus systems to reduce the daily vehicle trips to and from the construction sites within the project area. The SEIR project description should be consistent with the application proposal.***

Response MC-24: Comment noted. Reference to the possibility that construction crews "could be transported to work in car pools to minimize construction-related traffic" is contained within an informational discussion of “Construction Crews” on pages 3.5-49 to 3.5-50, under Section 3.5.7 Construction and Operations. In this context car pooling is discussed as a possibility, but not as mitigation for any particular impact.

Comment MC-25: ***In addition, please indicate the location of off-site construction worker parking. If improvements to this parking area are required, the impacts must be analyzed in the SEIR.***

Response MC-25: Access road construction personnel will use the public park and ride area at the intersection of Highway 68 and Laureles Grade. Construction personnel for the remaining project activities would need a larger park and ride area, which will be constructed at the intersection of the Cachagua Road and the Jeep Trail. This will be coordinated by CAW and Monterey County. CAW will obtain a Use Permit for use of the new park-and-ride facility.

Comment MC-26: ***Page 4.1-17 of the SEIR states that impacts and mitigation for Issue GS-2 (Access Route Landslides and Slope Stability) would be the same as the Proponent’s Proposed Project (dam strengthening). However, Alternative 3 (as revised) would utilize Tassajara Road and the southern portion of Cachagua Road for larger construction traffic. Utilizing these roadways would require widening of five curves and improvement of one bridge to handle the heavy construction equipment loads. These roadway improvements were not analyzed as part of the Proponent’s Proposed Project in the Final EIR/S, and are not part of Alternative 3 in the SEIR. These improvements should be specifically analyzed in the Geology and Soils section.***

Response MC-26: Issue GS-2 (Access Route Landslides/Slope Stability) deals with the possibility that landslides could be triggered during the construction or operation of the Proponent’s Proposed Project by oversteepening hillsides during the improvement of access routes. This issue would arise regardless of the route selected in the hilly terrain near the Project. To mitigate this risk to less than significant, the Final EIR/EIS and SEIR require that a qualified geotechnical engineer or engineering geologist conduct surveys of the road rights-of-way and provide construction design specifications, and that BMPs developed during design specifications be implemented in addition to applicable measures identified in the Stormwater Pollution Prevention Plan. The same mitigation would apply regardless of the route selected, and would mitigate this potential impact to less than significant.

Comment MC-27: ***Page 4.3-49 of the SEIR notes that water quality impacts and mitigation for Issue WQ-1 (Road Construction and Improvement Activities) would be the same as described for the Proponent’s Project (dam strengthening), “plus road improvement activities for the Cachagua Route, including Tassajara Road, the Jeep Trail, and the Reservoir Access Road.” Numerous improvements along these routes would be required as part of the revised project. These activities are not analyzed as part of the***

Proponent's Project. All road improvements required under the revised Alternative 3 should be specifically analyzed in the Water Quality section.

Response MC-27: Road improvements are described in the Final EIR/EIS in Section 3.2.5 and Section 3.5.5, and in the Draft SEIR in Section in Section 3.5.5. Issue WQ-1 (Road Construction and Improvement Activities) evaluates sediment discharge to watercourses and increased turbidity as a result of road improvements. The Final EIR/EIS describes how potential water quality impacts would be mitigated to a less than significant level through the use of erosion control methods, BMPs, and associated water quality monitoring measures (see Final EIR/EIS page 4.3-33). The described mitigation measures apply as needed wherever road improvements will be made. With this mitigation, the project would have a less than significant effect on sediment discharge to watercourses and increased turbidity.

Comment MC-28: ***Mitigation for Issue WQ-2 states that "the erosion control measures will be monitored for effectiveness." Please indicate the person responsible for monitoring, how often such monitoring would occur, and how effectiveness will be determined.***

Response MC-28: Please see Response MC-5, above.

Comment MC-29: ***Issue WQ-9 notes that turbidity levels in the pool below the dam could temporarily exceed 400 NTUs and dissolved oxygen levels would decrease as a result of reservoir drawdown. While this is declared a significant and unavoidable short-term impact, it is not clear what threshold is used to determine said impact.***

Response MC-29: For clarification, in the Final SEIR, the following information has been added to the impact discussion for Issue WQ-9:

> **The EIR/EIS identified that the impacts of reservoir drawdown under Alternative 3 would be the same as impacts described under Alternative 2 and the Proponent's Proposed Project. However, due to the need to conduct a faster drawdown to reduce the reservoir water surface elevation to levels lower than those previously described, the resultant turbidity levels in the pool below the dam could temporarily exceed 400 NTUs, and dissolved oxygen levels would decrease.**
>
> *Water Quality Objectives for turbidity cited in the Water Quality Control Plan for the Central Coastal Basin June 2011 are as follows:*
>
> *Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits:*
>
> 1. *Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent.*

2. *Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU.*
3. *Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.*

Allowable zones of dilution within which higher concentrations will be tolerated will be defined for each discharge in discharge permits.

Jackson Turbidity Units are roughly equivalent to a Nephelometric Turbidity Unit (NTU).

The highest turbidity levels would likely occur during the final stages of drawdown when surface and ground water depths behind the dam are minimal and bottom sediments are more vulnerable to disturbance. The potential water quality effects of on fisheries and aquatic habitats are discussed in section 4.4.

Comment MC-30: ***Please clarify why the recommended settling pond method would fail to reduce water quality impacts from reservoir drawdown below significance thresholds.***

Response MC-30: In the Final SEIR, the mitigation for Issue WQ-9 has been revised to say:

Water quality degradation resulting from drawdown of reservoir water level would not be mitigable to a less than significant level. To minimize the impact, the ground and surface water pumped from behind the dam will be discharged into a settling pond constructed downstream of the dam before the water is pumped into the Carmel River (see WQ-8, above, and section 3.3.4). ~~***However, the impact would remain significant and unavoidable.***~~

While it is anticipated that implementation of Mitigation Measure WQ-9 would lessen the impact on water quality created by reservoir drawdown, turbidity thresholds may still be exceeded. In the event that it becomes necessary to discharge water that exceeds the turbidity threshold in order to ensure project safety, the resulting discharge of turbid water would be unavoidable. Therefore, the potential to degrade water quality during reservoir drawdown would be significant and unavoidable.

Comment MC-31: ***Page 4.4-15 of the SEIR, lines 5-6 in the "Kelts" paragraph, contains erroneous grammar/punctuation in the citation. Revision is recommended.***

Response MC-31: The text on page 4.4-15 of the SEIR is the same as the text provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

Comment MC-32: ***Page 4.4-23, first paragraph, line 8 of the SEIR states that "The migration appears to mostly over by the end of May." Revisions/grammar modification should be considered to clarify this statement.***

Response MC-32: The text on page 4.4-23 of the SEIR is the same as the text provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

Comment MC-33: ***On Page 4.4-56 of the SEIR, under the "Impacts and Mitigation" subsection, the word "describes" should be struck out.***

Response MC-33: There were two errors in this sentence; in the Final SEIR it has been revised as:

> ~~***This***~~ *The* Final EIR/EIS analysis ~~*describes*~~ **described** the impacts or benefits associated with the Proponent's Proposed Project, and each alternative, relative to existing conditions.

Comment MC-34: ***Mitigation for Issue FI-2 on page 4.4-87, Issue FI-5 on page 4.4-89, and Issue FI-13 on page 4.4-92 of the SEIR state that "Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant." The phrase "will probably" should be changed to "may," as the measures to be implemented are not known at this time to include non-listed species.***

Response-34: The phrase "will probably" adequately conveys the fact that the mitigation measures may also reduce impacts to non-listed fish species.

Comment MC-35: ***Throughout Section 4.4, strikeouts appear to be missing. Revision to insert strikeouts as appropriate is recommended.***

Response MC-35: Corrections to Section 4.4 have been made in the Final SEIR as noted below.

Draft SEIR page 4.4-1 has been revised to say:

> **Text that has been added to the Final EIR/EIS for this supplement can be recognized by bold and underline. Text that has been deleted from the Final**

EIR/EIS for this supplement can be recognized by ~~*strikeout*~~. Text that is the same as that in the Final EIR/EIS remains unchanged.

Draft SEIR page 4.4-56 has been revised to say:

~~*The*~~ **Impacts to listed species will be mitigated to less than significant by adoption of measures described in this document.**

Draft SEIR page 4.4-85 has been revised to say:

Aquatics and fisheries impacts and mitigation for Issues FI-3 (Operation of a Trap and Truck Facility at ORCD), FI-6 (Water Quality Effects on Fish), FI-7 (Fish Ladder Closure), FI-11 (Fish Screen Installation), F-14 (Notching Old Carmel River Dam) and FI-15 (Sleepy Hollow Steelhead Rearing Facility), would be the same as the Proponent's Proposed Project **except as noted**. ~~*Impacts and mitigation for Issues FI-1 (Access Route Improvements) and*~~ Impact FI-10 (Relocate CAW Water Diversion Upstream) would be the same as Alternative 1 except that it would relocate the diversion upstream 2,900 feet. Impact Issues ~~***FI-2 (Dewatering River Channels for Construction Purposes) and***~~ FI-8 (Upstream Fish Passage), would be the same as Alternative 2**.** ~~*except FI-2 would occur during CY 4.*~~ Impact Issues FI-9b (Impacts to Fish from Excavation or Dredging of Sediment for Fish Passage), and FI-12 (Downstream fish passage over SCD) would not apply to this alternative.

Draft SEIR page 4.4-87, Issue FI-4, has been revised to say:

Short-term loss of aquatic habitat

Determination: ***less than significant with mitigation*** ~~***significant, unavoidable***~~ **short-term**

IMPACT

Impacts would be similar to those described for Alternative 2 Issue FI-4 except the Carmel River would be diverted out of its channel for about 3,300 feet upstream of the Dam and about 1,350 feet for San Clemente Creek. Both stream channels would be out of production for two years. This would be a **potentially** significant~~*, unavoidable*~~ impact because of the loss of seasonal rearing habitat.

MITIGATION

Except as described otherwise below ~~*M*~~ **m**itigation for Issue FI-4 would be the same as Alternative 2 except it would occur for about 3,300 feet in the Carmel River for 1,350 feet of San Clemente Creek and would occur for two years during the construction season.

Implementation of these mitigation measures, combined with any measures required by NMFS for the benefit of steelhead, will reduce the overall impact to that species to less than significant.

~~*While it is difficult to determine whether the loss of fish that are not rescued or that are injured or die during the rescue and relocation operations is significant, the losses along*~~

~~*with the short-term loss of habitat for steelhead for two construction year cannot be fully mitigated and would be significant.*~~

Draft SEIR page 4.4-88, Issue FI-5, has been revised to say:

Issue FI-5: Reservoir Dewatering

Short-term loss of aquatic habitat
Determination: less than significant with mitigation short-term

IMPACT

The reservoir surface and ground water levels must be drawn down each construction season for Project construction at the dam site. Reservoir dewatering would be conducted in the first, second, and third construction seasons. During the first construction season, reservoir surface and water levels would be drawn down at about 0.5 feet or less per day, which is similar to the rate currently used for the annual drawdown. However, during the subsequent construction seasons, the contactor will need to draw down the surface and ground water in the reservoir more quickly so construction equipment can excavate the sediment behind the dam and transport it to the sediment disposal area. Drawdown will be accelerated to a rate great enough to ensure that the water level in the reservoir remains 2 feet or more below the excavated sediment surface to prevent equipment from sinking into the sediment. The estimated drawdown rate could exceed 4 feet per day, and would be achieved by pumping the reservoir water from well points installed in the sediment or from the reservoir water surface. The pumped water will be discharged into a settling pond constructed downstream of the dam before the water is pumped into the Carmel River.

Reservoir surface and ground water drawdown would be required each construction season until construction is complete. This would be a potentially significant, short-term impact because of the loss of seasonal rearing habitat in the reservoir as it is dewatered and the potential for stranding fish during the dewatering process.

MITIGATION

Except as described otherwise below, mitigation measures would be the same as for the Proponent's Proposed Project Mitigation Measure FI-5, but they would occur for three construction years. Operating traps at the inflowing channels to the reservoir would mitigate downstream passage.

Nets would be installed across the channels leading into the reservoir to prevent fish from swimming downstream into the Carmel River and San Clemente Creek. A fish rescue would occur in the reservoir during drawdown. Large and small seines, dip nets, fyke nets or other NMFS

approved methods would be utilized to capture as many fish as feasible from the isolated waters of the reservoir. Backpack electrofishing units would be used if needed. Electrofishing would follow guidelines established by NMFS. Rescued fish will be relocated to other suitable habitat downstream of OCRD in the Carmel River or at a another release point designated by NMFS.

Although implementation of these measures cannot guarantee the survival of all fish, adoption of measures approved by NMFS for the benefit of steelhead will reduce the overall impact to that species to less than significant. Adoption of measures that will avoid significant impacts to steelhead will probably also reduce the overall impact to any non-listed species to less than significant.

~~***Issue FI-5: Reservoir Dewatering***~~

~~*Short-term loss of aquatic habitat*~~
~~*Determination:* ***significant, unavoidable, short-term***~~

~~*IMPACT*~~
~~*Reservoir dewatering in CY 4 and 5 would be similar to the Proponent's Proposed Project Issue FI-5, except that the sediments would be dewatered to near the original elevation of the river bed of the river to allow for complete sediment removal in the San Clemente Creek arm of the reservoir and in the Carmel River immediately upstream of the Dam. Dewatering would occur for two construction seasons. This would be a significant, short-term impact.*~~

~~*MITIGATION*~~
~~*Mitigation measures would be the same as for the Proponent's Proposed Project Mitigation Measure FI-5, except they would occur for three construction years. Operating traps at the inflowing channels to the reservoir would mitigate downstream passage.*~~

Draft SEIR page 4.4-90, Issue FI-9a has been revised to say:

Alternative 3 would remove the Dam and the sediment in the San Clemente Arm of the reservoir. Fish in the river downstream of the Dam would be exposed to some sedimentation during the winter following ~~*CY 4 and 5*~~ **construction**.

Draft SEIR page 4.4-90, Issue FI-13 has been revised to say:

Long-term reduction of aquatic habitat, short-term alteration of aquatic habitat
Determination: ***less than significant with mitigation*** ~~***significant, unavoidable***~~ **in the short-term; beneficial in the long-term**

IMPACT
Rock material from the diversion channel cut through the ridge separating the Carmel River from San Clemente Creek would be used to construct a cutoff wall across the

Carmel River arm upstream of the diversion channel. Excess rock and concrete blocks from dam removal would be used to buttress the toe of the sediment storage area on the Carmel River arm. The Carmel River and San Clemente Creek would not support conditions for rearing steelhead ~~*during*~~ **throughout project construction.** ~~*CY 4.*~~

Comment MC-36: ***In the last paragraph on page 4.5-19 of the SEIR and thereafter throughout section, non-listed special-status plants should be referenced as those plants should be referenced as those plants recognized with a California Rare Plant Rank (CRPR) instead of the California Native Plant Society list. Refer to http://www.cnps.org/cnps/rareplants/ranking.php.***

Response MC-36: The text on page 4.5-19 of the SEIR is the same as the text provided in the Final EIR/EIS, no additional plant species were included in the SEIR, and no changes to the document are necessary.

Comment MC-37: ***In the last paragraph on page 4.5-24, lit is recommended that "CTS" be added after "California tiger salamander."***

Response MC-37: In the Final SEIR, the first sentence in the section about California Tiger Salamander has been revised to say:

> ***California tiger salamander (Ambystoma californiense)***. The California tiger salamander ~~*(Ambystoma californiense)*~~ (CTS) is listed as threatened under the Federal ESA and **under the California Endangered Species Act (CESA).**

Comment MC-38: ***Figure 4.5-2 on page 4.5-26 of the SEIR contains the phrase "Potential CTS Estivation Habitat" in the legend. This should be revised to "Potential CTS Aestivation Habitat."***

Response MC-38: The words "Aestivation" and "Estivation" mean the same thing.

Comment MC-39: ***The "Golden eagle" paragraph on page 4.5-29 should contain a sentence about the species' protection under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.***

Response MC-39: In the Final SEIR, the information on golden eagle has been revised to say:

> **The golden eagle is listed as a fully protected species in California** *and is protected under federal law by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act*…

Comment MC-40: ***The first line on page 4.5-67 of the SEIR contains the phrase "Impact VE-1." For consistency with other SEIR sections, this should be revised to "Issue VE-1."***

Response MC-40: The following correction has been made in the Final SEIR:

~~*Impact*~~ *Issue* VE-1: Special –Status Plant Species

Comment MC-41: ***Mitigation for Issue VE-1 on page 4.5-67 of the SEIR should include measures to be implemented if impacts to Lewis's clarkia cannot be avoided.***

Response MC-41: As stated in the Final EIR/EIS and in the Draft SEIR, Lewis's clarkia is on the CNPS (CRPR) List 4, and does not fall under specific state or federal authority. Avoiding populations during construction, to the extent possible, provides sufficient mitigation for this species.

Comment MC-42: ***The word "show" under Issue VE-3 on page 4.5-67 of the SEIR (line two of second paragraph) should be revised to "shown."***

Response MC-42: In the Final SEIR, this sentence has been corrected to say:

These impacts are also shown on Figures 4.5-1a and 4.5-1b.

Comment MC-43: ***On page 4.5-69 of the SEIR, mitigation for Issue WI-8 should specify/cite protocol for pre-construction surveys for breeding birds.***

Response MC-43: Information on page 4.5-69 of the Draft SEIR was revised during preparation of the document based on input from CDFG. Specific details of the protocols for the nesting bird surveys will be coordinated by the Applicant with CDFG and the USFWS before any vegetation removal or construction occurs.

The Final SEIR has been revised to state:

> **Vegetation removal would be accomplished outside of the nesting season between September 15 and February 1. If any vegetation removal must be conducted between February 1 and September 15, protocol-level pre-construction surveys for breeding birds would be conducted by a qualified wildlife biologist.** *The project applicant and the qualified wildlife biologist will coordinate specific survey details with CDFG and the USFWS before any vegetation removal or construction occurs.* **If active nests are found, CDFG, and the USFWS will be contacted. Nests will be protected by a one-half mile no disturbance buffer and the nests will be monitored by a qualified wildlife biologist until the young have fledged and are no longer dependent on parental care for survival.**

Comment MC-44: ***Mitigation for Issue WI-8 on page 4.5-69 states that "nests will be protected by a one-half mile no disturbance buffer." Consistent with the comment in General Comments above, it is recommended that language in these measures be***

revised to replace "will" with "shall." In addition, please clarify whether this no disturbance buffer applies only to listed species.

Response MC-44: Please see Response MC-6, above. Also, as stated on page 4.5-69, special-status bird species include those listed as fully protected, endangered, threatened, species of special concern, or those protected under the Migratory Bird Treaty Act. Nests of any bird species in one of those categories would be protected by no disturbance buffers.

Comment MC-45: ***Mitigation for Issue on WI-9 on page 4.5-70 of the SEIR states "This could result in short-term disturbance to special-status species such as CRLF, steelhead, western pond turtle, two-striped garter snake." The word "and" should be added between western pond turtle and two-striped garter snake.***

Response MC-45: In the Final SEIR, the sentence now reads:

> **This could result in a short-term disturbance to special-status species such as CRLF, steelhead, western pond turtle,** *and* **two-striped garter snake.**

Comment MC-46: ***The last sentence of the first paragraph under "Mitigation" on page 4.5-71 of the SEIR contains a repeat sentence. This should be deleted.***

Response MC-46: This correction has been made in the Final SEIR.

Comment MC-47: ***Mitigation for Issue WI-9 on page 4.5-71 of the SEIR should include a measure for a qualified and/or approved biologist to conduct clearance survey at Bridge 529 and other drainage crossings prior to start of each day's construction activities during wet weather conditions. This is the period when CRLFs and other semi-aquatic special status herpetofauna are most likely to traverse upland areas.***

Response MC-47: In the Final SEIR, mitigation for Issue WI-9 has been revised to say:

> **In addition, a USFWS, NMFS, and CDFG approved biologist will conduct pre-construction surveys of the area prior to the start of work at Bridge 529 on Cachagua Creek to assess the site for potentially impacted wildlife species.** *During wet weather conditions, prior to the start of work each day, clearance surveys will be conducted at Bridge 529 and at all other drainage crossings.* **Any identified CRLF or other sensitive species will be moved to a suitable location outside of the construction area. Fish will also be relocated from the dewatered area to suitable habitat outside of the construction area (see FI-2). Rescue and relocation will be conducted in accordance with preapproved agency protocols.**

Comment MC-48: ***Mitigation for Issue WI-9 on pages 4.5-71 to 4.5-72 of the SEIR should include a measure that if surveys are not conducted, a qualified and/or approved***

biologist shall oversee installation of exclusion fencing (fence materials and other specifications to be approved by USFWS and CDFG) adjacent to road improvement areas within potential CTS aestivation habitat, as depicted on Figure 4.5-2.

Response MC-48: The mitigation language on pages 4.5-71 and 4.5-72 in the Draft SEIR was provided by CDFG during preparation of the Draft SEIR. Since CDFG did not include installation of exclusion fencing as a measure, and because neither CDFG nor USFWS commented on this Draft SEIR, DWR cannot presume that installation of exclusion fencing would be required, or desired, by these agencies with regulatory authority over CTS. However, as stated on page 4.5-72, "In addition to these mitigation measures, additional mitigation and monitoring measures may be required by CDFG and USFWS for the protection of special status species that may be affected by the project. All such measures will be incorporated into the project as required by the agencies with regulatory authority over the species."

Comment MC-49: ***On page 4.5-74 of the SEIR, mitigation for Issue WI-15 should specify/cite protocol for pre-construction surveys for breeding birds.***

Response MC-49: Please see Response MC-43, above.

Comment MC-50: ***In the last paragraph on Page 4.6-1 of the SEIR, it is recommended that "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (2008)" be added after the 1987 Manual reference, if used. If this reference was not used, please explain the why.***

Response MC-50: In the SEIR, references to the Arid West Region manual are made on page 4.6-1, and in Appendix AA (Jurisdictional Delineation of Waters of the U.S. including Wetlands).

Comment MC-51: ***For additional diesel-powered on-road trucks, including the estimated 160 one-way truck trips needed to import boulder and other rock materials for channel reconstruction, the on-road haul trucks were assumed to be travelling at a speed of 15 mph. Please clarify if this is an assumption, or if the posted speed limit will be 15 mph. If an assumption, please note the basis.***

Response MC-51: The information on page 4.7-13 in the Final SEIR has been revised as:

> **For additional diesel-powered on-road trucks, including the estimated 160 one-way truck trips needed to import boulder and other rock materials for channel reconstruction, CARB EMFAC2011 emission factors were used to estimate criteria pollutant emission rates (NOX, SOX, CO, PM10, and ROC) for the truck trips in 2014 associated with Alternative 3. The on-road haul trucks** ~~***are assumed to be***~~ *will be* travelling at ~~***a speed***~~ *the posted speed limit* **of 15 mph. The updated EMFAC2011 incorporates the latest emissions inventory methods for heavy duty trucks and buses. These estimates reflect the impact of the economic recession. Table 4.7-11**

<u>shows the resultant emission factors for diesel exhaust based on CARB EMFAC2011 model.</u>

The 15 mph speed limit is also discussed in Issue AQ-2 and Issue AQ-3, was included in the MMRP for the Final EIR/EIS, and will be in the MMRP for the Final SEIR.

Comment MC-52: ***Additional off-road construction equipment exhaust emissions for increase in sediment excavation, screening plant operation, and the import of boulder and other materials, it is noted that the OFFROAD model assumes that post-2007 engines are subject to the 2008 procedures for new off-road diesel engines and are certified to Tier 2, Tier 3, or Tier 4 interim emission standards. Please clarify how this will be monitored and enforced.***

Response MC-52: This comment refers to page 4.7-14 in the Draft SEIR. Use of certified construction equipment is discussed in Issue AQ-2 and Issue AQ-3 in the Final EIR/EIS and in the Draft SEIR. Monitoring and reporting for these issues is addressed in the MMRP prepared for the Final EIR/EIS, which was sent to Monterey County RMA-Planning Department in August 2011. The MMRP will be updated for the Final SEIR and will be adopted when findings are made. Copies of the updated MMRP will be sent to the Monterey County RMA-Planning Department and other responsible agencies after the MMRP has been adopted and the Notice of Determination has been filed.

Comment MC-53: ***Issue AQ-1 (Dam Site Activities) was revised to account for an additional 314,000 cubic yards of sediment material. Table 4.7-33 indicates that daily construction emissions of NO_x increase 12.2%, CO increased 5.2%, PM_{10} increased 7.4%, ROC increased 5.9%, and PM_{10F} increased 9.1%. As with the previous analysis, these emissions continue to result in a Class I, significant and unavoidable impact. However, the impact is worsened substantially, and yet no additional mitigation has been added. The MBUAPCD should be consulted to determine if any additional mitigation measures are available to reduce the impact to the maximum extent feasible.***

Response MC-53: Although the severity of the impact under Issue AQ-1 under Alternative 3 would increase, the mitigation measures that would be implemented to minimize the impact would remain the same as the mitigation measures specified for the Proponent's Proposed Project. MBUAPCD was contacted during preparation of the Draft SEIR, and copies of the Draft SEIR were sent to the MBUAPCD during public review. No comments were received from the MBUAPCD, however, as with other responsible agencies, the MBUAPCD may require additional mitigation during project permitting.

Comment MC-54: ***Issue AQ-1a was added to analyze the air quality impacts of the newly proposed screening plant. This impact is considered less than significant and short-term when considered in isolation, and significant and unavoidable when combined with***

all construction emissions. The screening plant would not be constructed or used in isolation. Therefore, the purpose of analyzing the plant individually is unclear.

Response MC-54: For clarification, in the Final SEIR, Issue AQ-1a (Screening Plant Operation) has been revised as:

> **Tables 4.7-40 and 4.7-41 show estimated aggregated maximum emissions in pounds per day and tons per year that would occur due to screening plant operations.** *The screening plant operation was analyzed independently because it is a component of Alternative 3 that was not addressed in the Final EIR/EIS*.
>
> **…Table 4.7-40 shows that estimated daily emissions from screening plant activities would not exceed the level of significance for mass emissions; therefore the impacts would be less than significant by itself, but would add to overall significant emissions generated by the project.**
>
> *Mitigation*
> *Impacts associated with operation of the screening plant will be minimized by implementation of the mitigation measures for Issue AQ-1. However, even with this mitigation operation of the screening plant, as part of the dam site activities, would remain significant and unavoidable.*

Comment MC-55: ***In practice, the impact will be Class I and not Class III. In addition, although the impact was determined to be significant and unavoidable when combined with all construction emissions, no mitigation is identified for this impact. Please identify mitigation measures that would reduce this impact to the extent feasible.***

Response MC-55: Impacts associated with operation of the screening plant will be minimized by implementation of the mitigation measures for Issue AQ-1; this information has been added to the Final SEIR. However, operation of the screening plant, as part of the dam site activities, would remain significant and unavoidable. Also see Response MC-54.

Comment MC-56: ***The screening plant would occupy 0.22 acres, and construction of the plant would require grading. It is unclear if grading required for this plant is included in the construction emissions in Issue AQ-1. Please clarify.***

Response MC-56: The screening plant would be located in an area upstream of the diversion dike (see Draft SEIR Figure 3.5-2a). As part of the channel floodplain restoration, this area will be excavated and graded to the elevation of the pre-dam channel prior to construction of the screening plant (see Draft SEIR section 3.5.6). Excavation and grading in this area was included in the emissions analysis for the Project.

Comment MC-57: ***The screening plant would be removed (demolished) after construction is complete. It is unclear if the emissions from demolition of this facility have been analyzed. Please clarify.***

Response MC-57: The screening plant is a piece of heavy mobile equipment and will be permanently removed from the Project site after construction is complete, but it will not be demolished (see Draft SEIR section 3.5.6). Mobilization and demobilization of heavy equipment, including the screening plant, was assessed in the analyses of heavy equipment truck trips for air quality, greenhouse gas emissions, and traffic.

Comment MC-58: ***The SEIR notes that the Department of Water Resources has not established a quantitative threshold for GHG emissions. On page 4.7a-13 of the SEIR, the criteria used to determine the significance of the project include a comparison of project GHG emissions to the amount of GHG emissions for stationary source facilities that are required to report their GHG emissions (25,000 metric tons of CO_2E per year) to the U.S. Environmental Protection Agency (USEPA). CEQA explicitly gives lead agencies the authority to choose thresholds of significance, and defers to lead agency discretion when choosing thresholds. However, the 25,000 MT/CO_2E/year mandatory reporting threshold is intended to be applied to stationary sources, such as fossil fuel suppliers, industrial gas suppliers, direct greenhouse gas emitters, and manufacturers of heavy-duty and off-road vehicles and engines. Please clarify how the proposed project fits this characterization as a major stationary source facility.***

Response MC-58: DWR evaluated GHG emissions that would result from the project to determine whether those emissions would have a significant cumulative impact on the environment or would conflict with an applicable plan, policy or regulation designed to reduce GHG emissions. Although the project is not a stationary source of GHG emissions, the cumulative environmental impact of GHG emissions, the greatest impact of which is assumed to be global climate change, is independent of whether the source is mobile or stationary. The US Environmental Protection Agency and California Air Resources Board have established mandatory reporting requirements for GHG emissions that exceed 25,000 metric tons of CO_2e per year. (See Draft SEIR, page 4.7a-17.) There is no one universally accepted significance threshold for GHG emissions, but DWR regards the 25,000 MT reporting requirement established by US EPA and CARB as a useful point of reference because it relates to quantitative limits established by agencies with regulatory authority and expertise over air quality and GHG emissions.

DWR, as the Lead Agency under CEQA exercises its independent discretion on what criteria it determines to use. DWR chose to analyze, describe, and estimate the project's GHG impacts based on a qualitative threshold. (See Draft SEIR, page 4.7a-13.) DWR has considered the extent to which the project may increase GHG emissions (see Draft SEIR, pages 4.7a-14 through 4.7a - 16); whether the project emissions exceed different thresholds including reporting thresholds and suggested thresholds of significance; and the extent to which the proposed project complies with regulations or requirements adopted to implement a statewide, regional, or local plans for the reduction or mitigation of GHG emissions (see SEIR, pages 4.7a-4 through 4.7a-10, and 4.7a-17).

In this Supplemental DEIR, DWR utilizes three different qualitative significance criteria to determine significance as follows:

Criteria A: "Whether the proposed project has the potential to conflict with or is consistent with plans to reduce or mitigate greenhouse gases, including:

- The six key elements of the Climate Change Scoping Plan (see list above [Draft SEIR, pp. 4.7a-7 and 8]);
- CARB's eighteen (18) recommended actions in the Climate Change Scoping Plan,
- Regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions; or
- Whether the proposed project is part of a plan that includes overall reductions in greenhouse gas emissions

Criteria B: "Whether the relative amounts of greenhouse gas emissions over the life of the proposed project are small in comparison to the amount of greenhouse gas emissions for major facilities that are required to report greenhouse gas emissions (25,000 metric tons of CO_2e/yr)[.]"

Criteria C: "Whether the proposed project has the potential to contribute to a lower carbon future, such as:

- whether the design of the proposed project is inherently energy efficient;
- whether all applicable best management practices that would reduce greenhouse gas emissions are incorporated into the proposed project design;
- whether the proposed project implements or funds it fair share of a mitigation strategy designed to alleviate climate change?"

The comment refers to Criteria B. As stated in the foregoing, this criterion for determining the significance of emissions from the project is not meant as a quantitative emissions threshold. Instead, the 25,000 ton level is identified as a benchmark to provide scale for the level of emissions that might be considered large or substantial. DWR would not always determine that a project with larger than 25,000 mtCO2e/year is significant. The 25,000 ton number is held up as important because both the US EPA and California Air Resources Board have identified this level as the appropriate level above which stationary sources of emissions are required to report their emissions. This level therefore, represents a level of emissions that could be important in the context of impacts from GHG emissions. DWR uses this level as a screening tool but does not mean to imply that the proposed project is a major stationary source facility. The SEIR includes a discussion of the CAPCOA "white paper" on evaluating and addressing GHGs under CEQA. (CAPCOA, 2008, page 4.7a-12). This white paper is a resource guide and provides information about key elements of CEQA GHG analyses, however it is not a guidance document. Since the emissions from the project are much lower than 25,000 metric tons, and are short-term, even if DWR had utilized the quantitative thresholds set out in CAPCOA's whitepaper, DWR would find that the emissions are less than cumulatively considerable and therefore, not significant.

Comment MC-59: ***Page 4.7a-17 of the SEIR notes that the project's GHG emissions would be approximately 8,000 metric tons of CO_2E, and notes that this is "well below" the 25,000 MT/CO2E/year emissions level for major facilities that are required to report GHG emissions. Note that the project's 8,000 metric tons of CO_2E is also higher than some of the quantitative emissions thresholds discussed in Section 4.7a (refer to page 4.7a-12). It is recommended that the lead agency provide substantial evidence justifying the use of the identified threshold to determine the significance of project GHG emissions.***

Response MC-59: Please refer to response MC-58.

Comment MC-60: ***Page 4.7a-9 of the SEIR states that the Monterey Bay Unified Air Pollution Control District's (MBUAPCD) document considering various GHG thresholds does not consider significance thresholds for construction projects. It is recommended that construction-related GHG emissions be amortized over the project's lifetime in order to compare these emissions to quantitative GHG thresholds, which are generally expressed in terms of metric tons of CO_2E per year. A common default project lifetime is 30 years.***

Response MC-60: DWR elected not to apply that method of accounting for GHG emissions to the current project. The one-time emissions of the project are estimated to be 8,009 metric tons of CO_2e, which DWR determined to be less than significant for reasons discussed in the SEIR (see Chapter 4.7a, especially 4.7a.4 (Impact Analysis)). Amortization of the proposed project's total GHG emissions over the suggested 30 year time span would reduce this value to 267 metric tons of CO_2e per year, which would not alter the findings regarding significance.

Comment MC-61: ***Pages 4.7a-15 through 4.7a-16 of the SEIR address project CO_2 emissions. Combustion of diesel fuel, which is the primary source of GHG emissions from the project, results in CO_2, as well as CH_4 and N_2O, which are also common GHGs. Note that, CO_2 emissions make up approximately 76.7% of worldwide GHG emissions, methane emissions account for approximately 14.3% of worldwide GHG emissions, and N_2O emissions account for approxmately 7.9% of worldwide GHG emissions (IPCC, 2007). Collectively, these three GHGs make up approximately 98.9% of worldwide GHG emissions; therefore an inventory which accounts for all three of these GHGs would provide a more complete estimate of total project GHG emissions.***

Response MC-61: Methane and nitrous oxide are important contributors to global GHG emissions. However neither gas is a significant by-product of diesel fuel combustion; methane is primarily released from natural gas systems, entric fermentation, landfills, coal mining, and manure management, and nitrous oxide is predominately released from agricultural soil management practices. (Source: U.S. Emissions Inventory 2010: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008.) Diesel fuel combustion produces small quantities of methane and nitrous oxide (approximately 2% of total emissions, even when converted to carbon dioxide equivalents). (http://www.epa.gov/climateleadership/documents/resources/mobilesource_guidance.pdf) The SEIR has been updated to include methane and nitrous oxide emissions, but the increase (from 8,009 metric tons of CO_2 to 8,169 metric tons of CO_2e) does not change the analysis of the emissions or the ultimate significance determination. The Final SEIR will include the revised Table 4.7a-5 to include methane and nitrous oxide, as shown below.

Table 4.7a-5: Estimated Total Construction Phase GHG Emissions for Alternative 3

Activity	CO_2	CO_2	CH_4	N_2O	CO_2e
	Tons	Metric tons	*Tons*	*Tons*	*Metric tons*
Dam Site	**4621**	**4192**	*0.47*	*0.63*	*4377*
Project Related Traffic	**2393**	**2170**	*0.38*	*0.04*	*2191*
Additional Sediment Excavation	**596**	**541**	*0.06*	*0.08*	*564*
Screening Plant	**18**	**16**	***0.00***	***0.00***	***16***
Access Road Improvements	**1176**	**1067**	***0.12***	***0.15***	***1111***
Additional Truck Trips	**22**	**20**	***0.00***	***0.00***	***20***
Total Construction GHG Emissions	**8828**	**8009**	***1***	***1***	***8314***

Comment MC-62: ***It is recommended that the SEIR also include emissions of CH_4 and N_2O in the GHG inventory, in order to avoid underestimating the project's GHG emissions.***

Response MC-62: See response to comment MC-63.

Comment MC-63: ***Page 4.7a-17 of the SEIR explains that wherever feasible and practicable, the contractor would implement AB 32 GHG reduction measures, such as the use of low carbon fuels, construction recycling and reuse, and the proper use and maintenance of off-road construction equipment. The Page 4.7a-18 of the SEIR concludes that the project's GHG emissions would have a less than significant impact on the environment, based on its consistency with AB 32. It is recommended that implementation of the aforementioned AB 32 GHG reduction measures be mandatory and enforceable if their implementation is a prerequisite for a determination that GHG impacts would be less than significant.***

Response MC-63: DWR has determined that GHG emissions attributed to the project would not have a significant effect on the environment. Nevertheless, as stated in the Draft SEIR, "[t]he construction contractors will work to implement various GHG reduction and efficiency programs (best management practices [BMPs]) that would further reduce emissions …." (Draft SEIR, page 4.7a-16.) However, these BMPs were not presented and should not be construed as mitigation measures as even without consideration of these BMPs, under the qualitative threshold considered by DWR, the GHG emissions impacts would remain less than significant.

Comment MC-64: ***The noise setting lists a number of residences in proximity to the project site. It should be noted that these sensitive receptors were not included in the application package to the County. They should be added to Item 7.4 in the application package, or shown on a separate map, along with any receptors within approximately 500 feet of the access roads.***

Response MC-64: DWR is not involved with the permit application. This comment should be directed to the entity that submitted the CDP application package.

Comment MC-65: ***Table 4.8-1 on page 4.8-2 of the SEIR is not from the Monterey County 2010 General Plan. Please delete this table and insert Table 5-2 (Community Noise Exposure) on page S-17 of the 2010 General Plan.***

Response MC-65: As requested, in the Final SEIR, the information in Table 4.8-1 has been replaced by information from Table **S**-2 from the Monterey County 2010 General Plan.

Comment MC-66: ***Page 4.8-4 of the SEIR notes that sound level meters (SLMs) were placed in locations that "represented the ambient noise levels at nearby noise-sensitive receptors." Please clarify the criteria used to determine that the locations were representative.***

Response MC-66: Noise generated by the project during night work would be similar to noise levels generated during daytime hours, although work at night would be limited to sediment excavation at the dam site, and would not include blasting. Hauling of heavy equipment and material deliveries would not be conducted at night. Ambient noise conditions are lower during nighttime hours, and thus, the potential for construction noise to be perceived by noise-sensitive receptors is more likely and the possibility of noise impacts increases.

Noise will be generated at generally the same locations during both day and at night (if nighttime construction occurs), focusing on work at the dam site. As noted, any night work would be limited to excavation of sediment and hauling this sediment from the San Clemente Arm of to the Sediment Disposal Area on the Carmel River Arm. No heavy equipment or materials will be trucked to or from the site at night, nor will dam removal activities or blasting occur at night. During daytime hours, trucking of heavy equipment will occur and traffic generated noise will occur along local roadways including the Jeep Trail, Cachagua Road and Tassajara Road.

The existing ambient noise level conditions during daytime and nighttime hours for Alternative 3 are described in SEIR Section 4.8, beginning on page 4.8-22. Further detail regarding the measurements conducted during nighttime hours are described in Appendix BB. The cumulative noise level generated by the addition of noise generated by construction activities to existing ambient noise levels during daytime and nighttime hours are also described in this section.

Ambient noise is the all-encompassing noise at a noise-sensitive-receptor, or in the vicinity of a noise-sensitive area, associated with a given environment at a specified time, being usually a composite of sound from many sources at many directions, near and far. Ambient noise does not take noise generated by construction or project-related operations into account. Ambient noise levels are always present. On the other hand, construction noise levels generated by the project are separate from ambient noise and construction noise levels travel from the point of origin. Construction noise levels generated by daytime and nighttime construction activities are covered in Section 4.8. Figures 4.8.3 and 4.8.4 illustrate the dissipation of noise levels over distance and due to the topographical nature of the area surrounding dam site construction activities.

Sensitive noise receptors in the project area include all residents in the Sleepy Hollow community north of the dam site, as well as the users of the Stone Cabin, located on the Carmel River south of the dam site. All of these receptors would be exposed to ambient noise as ambient noise by definition is the existing noise at given location at any given time. In this case, the ambient noise level conditions at the Stone Cabin and Sleepy Hollow community are the existing noise conditions without factoring in any potential construction or project-related noise.

To address the potential impacts of night work, supplemental noise measurements during the nighttime hours in order to quantify existing ambient noise level conditions specifically during nighttime hours.

Sound Level Meters (SLMs) were installed near the Stone Cabin and placed near homes in the Sleepy Hollow community as measurement sites LT-1 through LT-4 in order to quantify existing noise conditions during nighttime hours when residents may be most perceptible to noise generated by construction activities at the project site.

LT-1 was placed next to the Stone Cabin and was representative of the existing ambient noise level conditions during nighttime hours. The predominant ambient noise at this location was the sound of the Carmel River flow near the cabin.

LT-2 and LT-3 were located on the southern end of the Sleepy Hollow community and further away from noise generated by community traffic and traffic along East Carmel Valley Road. These locations are representative of the homes that are nearest to the project site where construction activities would occur. These homes would be more susceptible to noise generated at the dam site. LT-4 was located at the northern end of the community and near the entrance to the community where more community traffic is expected and ambient noise levels are higher. This site is representative of homes located at the northern portion of the community. The combination of these three locations provide representative ambient noise information for the Sleepy Hollow community. Project generated noise levels for night work at these sensitive receptor locations, modeled using the Cadna/A model as described in the SEIR were then compared to the ambient noise levels. As described in the SEIR, based on the modeling the construction noise levels at the sensitive receptor locations are expected to be below ambient (existing) noise levels and are therefore expected to be imperceptible at those locations.

The locations for nighttime ambient noise measurements differ somewhat from the ambient noise measurements made for the FEIR/EIS. At the time the FEIR was prepared, night work was not being considered, thus noise measurements were made primarily along San Clement Drive, presumably to account for noise generated by truck traffic during construction. As described, any night work conducted would be limited to activities at the dam site. No trucks would be traveling through the Sleepy Hollow community. Thus, the measurement locations were selected to be representative of the Sleepy Hollow community in general that might be exposed to nighttime construction noise generated at the dam site.

Comment MC-67: ***The August 2011 noise measurement locations are shown on Figure 4.8-2. This figure provides no frame of reference regarding proximity to sensitive receptors or specific project features. It is suggested that measurement locations be shown on Figure 4.8-1 instead, as this would provide the reader with a better understanding of their location.***

Response MC-67: Figure 4.8-2 has been updated to more clearly depict the proximity to sensitive receptors and project features.

Comment MC-68: ***It is unclear if the August 2011 measurements were taken in the same locations as the October 1997 measurements, or in different locations. Please clarify. If they differ, please explain the reasoning for the change.***

Response MC-68: For clarification, in the Final SEIR Section 4.8.1 has been revised to say:

> In October 1997, ambient noise levels were monitored at the representative receptor locations. Existing noise levels recorded at each site are summarized in Table 4.8-2. Standard statistical noise descriptors were recorded at each receptor location. The L90 is the noise level exceeded 90 percent of the time, and is generally considered the background noise level. The L50 and L1 are the noise levels exceed 50 percent and 1 percent of the time, respectively. The Leq is the single noise level that has a noise energy equivalent to the overall varying noise monitored. The Ldn is the long-term average Leq, with a night time "penalty" of 10 dBA, when noise levels are expected to be significantly lower. The Ldn was computed for each location using the field measurements, a standard model of hourly traffic distribution and an updated National

Center for Highway Research traffic noise model.[22]

To determine the potential impacts of nighttime construction activities at the Dam and reservoir, the baseline nighttime noise environment was quantified by a noise measurement survey conducted on August 3 and August 4, 2011. Ambient noise measurements were taken at three locations within the Sleepy Hollow community north of SCD, and at the Stone Cabin located south of SCD (see Figure 4.8-2). The ambient noise measurements were conducted at night between the hours of 10:00 pm and to 7:00 am. Sound level meters (SLMs) were placed in locations that represented the ambient noise levels at nearby noise-sensitive receptors. The calibration of each meter was verified in the field before and after each measurement period.

The October 1997 and August 2011 noise measurements were conducted at different locations. The October 1997 ambient noise level survey was to characterize the day-night sound level (Ldn) in the existing community with an emphasis on the change in noise levels due to construction-related traffic. The purpose of the August 2011 ambient noise level survey was to characterize the existing noise exposure in the Sleepy Hollow community and at the Stone Cabin during nighttime hours and to assess the change in nighttime noise levels that would occur at these locations due to nighttime construction activities near the SCD.

Comment MC-69: ***The analysis under Issue NO-2 for Alternative 3 states that noise-related impacts from access road upgrades would be the same as those described for the Proponent's Proposed Project (dam strengthening). However, the location of the impacts would change. This analysis is ambiguous, and fails to acknowledge whether additional sensitive receptors located along Tassajara Road and southern arm of Cachagua Road would be impacted. Furthermore, if additional road improvements are required, noise impacts would increase (albeit remain temporary). Such impacts should be quantified to the extent feasible.***

Response MC-69: For clarification, In the Final SEIR Issue NO-2 was revised to say:

Noise-related impacts from access road upgrades would be the same as those described for the Proponent's Proposed Project. However, the location of these impacts would occur along the portion of Cachagua Road from the Jeep Trail south to Tassajara Road, rather than north of the Jeep Trail, and would affect a different set of receptors than the Proponent's Proposed Project.

Homes in the vicinity of the access road improvement locations on the southern arm of Cachagua Road may be exposed to temporary construction-related noise. The length of construction time would vary depending on the work being conducted. Grading and graveling at the locations near the intersection of Tassjara and Cachagua Roads would take less than one week, while improvements at the switchback locations and up to Bridge 529 could take up to two weeks.

Work at the switchbacks and at Bridge 529 would use a backhoe, compactor, and haul trucks for gravel, as well as a paver for applying asphalt to the widened curves. Assuming a distance of 200 to 400 feet from the road construction, nearby residents may be exposed to intermittent noise of up to 74 dBA from construction-related equipment. All access road improvement work would be conducted during daytime hours between 7 am to 6 pm. Temporary construction noise at these locations is considered a significant, unavoidable, short-term impact.

Comment MC-70: ***Mitigation for Issue NO-2 cross-references to mitigation for the Proponent's Project. This mitigation states that "standard measures such as limiting operations to normal daytime working hours to reduce noise nuisances would be routinely applied to construction activities near sensitive receptors." Please clarify the precise hours of construction limitations, and how this would apply to a project that proposes night-time construction activity. In addition, if these restrictions are applied only near sensitive receptors, please indicate the location of these receptors and the distance from which construction activity would be limited.***

Response MC-70: For clarification, in the Final SEIR, Issue NO-2 (Access Road Upgrades) has been revised to say:

> **Mitigation would be the same as that for the Proponent's Proposed Project**, *including the fact that all access road improvements will be limited to the hours between 7:00 am and 6:00 pm (see Final EIR/EIS page 4.8-13)*. The mitigation measures would reduce the impacts of noise generated during access road improvements.

Comment MC-71: ***Page 4.8-23 of the SEIR notes that no material delivery trucks or heavy construction equipment would be moved in or out of the site at night. However, construction workers would still need to access the site for nighttime work. The discussion under NO-3 does not appear to analyze the impact for nighttime worker transportation.***

Response MC-71: For clarification, in the Final SEIR, Issue NO-3 has been revised to say:

> **Noise impacts from project generated traffic would be the same as for the Proponent's Proposed Project, with the exception that under Alternative 3, heavy equipment and some material delivery would approach the project site via Tassajara Road and the portion of Cachagua Road south of the Jeep Trail. This would result in impacts similar to those described for the Proponent's Proposed Project, but would affect a different set of residential receptors. Pieces of heavy equipment would be brought to and from the site as needed during the construction season (generally April to October) at a rate of approximately 10 to 60 round trips per month (average of up to two to six round trips per day). The increased noise levels would be brief in duration and would only last up to a few seconds for each truck passby.**

Night work would be restricted to sediment excavation activities at the dam site as described in Issue NO-1. Night crews would consist of approximately 20 personnel. A typical night shift would be from 5 pm to 4 am. About 8 vehicles would transport night shift workers to the project site at the end of the day shift. Most workers would be transported to and from the site using a van pool, but cars and pickup trucks may be used as well. After a night shift, 1 or 2 vans and 4 to 6 personal vehicles would leave the project site.

Construction worker vehicles traveling to and from the dam site would include standard gas engine cars, pickups, and vans, which would produce maximum noise levels of 55 to 65 dBA at a distance of 15 meters. Access would be via Cachagua Road and the Jeep Trail.

There are no sensitive noise receptors along the Jeep Trail. Receptors along Cachagua Road and Carmel Valley Road include a number of residential properties. Cachagua Road is a public road and the addition of approximately 8 vehicles to the existing early morning traffic volumes is not expected to be significant.

However, since background traffic noise levels are relatively low in areas removed from Carmel Valley Road, new truck traffic passing receptors several times per day would be noticeable, and would produce peak noise levels of up to 80 dBA at some receptors. The increased noise levels would be brief in duration and would only last up to a few seconds for each truck passby. Truck passbys would likely be more noticeable along Tassajara and Cachagua Road where residences are closer to the roadway than along the Jeep Trail where the nearest sensitive receptor (Stone Cabin) is more than 2000 feet away.

The Monterey County Land Use Compatibility Standards for Exterior Community Noise show in Table 4.8-1 are in listed terms of the Community Noise Equivalent Level (CNEL) or the Day-Night Average Level (Ldn), which are descriptors of total noise exposure at a given location for an annual average day. Brief truck passbys, while noticeable at some locations, would not increase average daily noise above unacceptable levels shown in this table.

Comment MC-72: ***Issues NO-2 and NO-3 cross-reference mitigation for the Proponent's Project (dam strengthening). This mitigation includes limiting passenger vehicle (including van pools) access for construction workers to between 7 a.m. and 7 p.m. However, the proposed project would include nighttime construction. Please clarify how this mitigation measure could be implemented for the project, given proposed nighttime construction activities.***

Response MC-72: Issue NO-2 (Access Road Upgrades) only involves construction-related noise generated during access road improvements. All access road improvements would be limited to daytime hours between 7 am and 6 pm. Access road improvements will not be constructed at night.

However, activities associated with Issue NO-3 (Project-Generated Traffic) could occur at night. Night work would be restricted to sediment excavation activities at the dam site as described in Issue NO-1. Night crews would consist of approximately 20 personnel. A typical night shift would be from 5 pm to 4 am. About 8 vehicles would transport night shift workers to the project site at the end of the day shift. Most workers would be transported to and from the site using a van pool, but cars and pickup trucks may be used as well. After a night shift, 1 or 2 vans and 4 to 6 personal vehicles would leave the project site. Access would be via Cachagua Road and the Jeep Trail.

In the Final SEIR, Issue NO-3 will be revised to say:

> **Mitigation for issue NO-2 (Access Road Upgrades) for the Proponent's Proposed Project would also mitigate Impact NO-3 (Project-Generated Traffic)** *except that construction activities at the SCD and reservoir sites may occur at night. Night work would be restricted to sediment excavation in the San Clemente Creek arm and placement of materials in the Sediment Disposal Area. No material delivery trucks or heavy construction equipment would be moved in or out of the site at night and no blasting would be permitted at night.*

Comment MC-73: ***At the top of page 4.9-53, the SEIR states that worker access would be the same as identified in the Final EIR/S. However, the revised project would include nighttime construction activities. Impacts related to nighttime worker access should be clarified and discussed.***

Response MC-73: Issue TC-1 in the Final SEIR has been revised to say:

> **The number of construction workers on-site will vary throughout the project with peak construction activity generally occurring during the late spring, summer and fall.** *Worker access refers to how workers would travel to the construction sites, and would be the same as identified in the Final EIR/EIS with the addition of the use of Tassajara Road (see Section 3.5.5 in the Final EIR/EIS and Section 3.5.5 in the SEIR). Routes used by workers to access the construction sites would be the same regardless of work shift.*

Comment MC-74: ***Please clarify whether the traffic analysis assumed that construction workers would access the site independently or utilize a park–and –ride system. If they would utilize a park-and-ride system, please indicate the location of the park-and-ride lot.***

Response MC-74: The traffic analysis did not assume use of a park-and-ride lot. Therefore, the traffic analysis in the Draft SEIR represents the maximum number of worker trips. The number of worker trips in the Draft SEIR is the same as the number estimated in the Final EIR/EIS.

The impact discussion under Issue TC-1 in the Final SEIR has been revised to say:

IMPACT

The Alternative 3 trip generation statistics are summarized in Table 4.9-6. Employee data for each phase of the Alternative 3 construction project is provided in Section 3.5. Phasing and information regarding access road improvements is also provided in Section 3.5.

During project construction, access road construction personnel will use the public park and ride area at the intersection of Highway 68 and Laureles Grade. Construction personnel for the remaining project activities would need a larger park and ride area, which will be constructed at the intersection of the Cachagua Road and the Jeep Trail. This will be coordinated by CAW and Monterey County. CAW will obtain a Use Permit for use of the new park-and-ride facility.

Comment MC-75: ***Page 4.9-53 of the SEIR states: "The 20-foot wide sections of the Jeep Trail between Cachagua Road and the new access road to the reservoir would be adequate for two-way travel. Turnouts would be provided along sections of the Jeep Trail that would be limited to one-way travel." However, the project description states that the Jeep Trail is currently 12 feet wide, and would be widened to 18 feet (page 3.5-42).***

Response MC-75: In the Final SEIR has been corrected to say:

~~*The 20-foot wide sections of the Jeep Trail between Cachagua Road and the new access road to the reservoir would be adequate for two-way travel.*~~ *The Jeep Trail will be improved to provide a 12-foot wide roadway with two 3-foot shoulders for a total width of 18 feet which would be adequate for 2-way travel.*

Comment MC-76: ***Page 4.9-55 of the SEIR states that "all trucks were assumed to travel between the project via Carmel Valley Road and Highway 1." However, in the Air Quality section it is stated that "boulder and other channel restoration materials would likely come from suppliers in the Salinas area" and in the GHG section it is stated that "haul trucks were estimated to be traveling from Salinas to the project site." Please clarify what route trucks would take from Salinas to the project site.***

Response MC-76: Truck travel from Salinas was incorporated in the air quality and GHG analyses. It is still assumed that trucks would travel to Highway 1 and down Carmel Valley Road to access the Project area.

Comment MC-77: ***Additional mitigation was added for Issue TC-1, TC-3a, TC-7, and TC-8. Consistent with the comment in General Comments above, it is recommended that language in these measures be revised to replace "would" or "will" with "shall."***

Response MC-77: Please see Response MC-6, above.

Comment MC-78: ***Table 4.10-2 (Inventoried Historical Structures) was revised to alter the "Relevant NRHP/CPHR Criteria or Reason for Omission" column for historic HR-3 and to add HR-10, which is listed as having a "general lack of significance" in the "Relevant NRHP/CPHR Criteria or Reason for Omission" column. All other historic structures listed in Table 4.10-2 reference specific NRHP and CRHR criterion in this column. Are criteria not available for HR-3 and HR-10?***

Response MC-78: The phrase "Reason for Omission," means the same thing as reason for "lack of criteria." The reason HR-3 does not have NRHP/CPHR criteria is "lack of integrity." The reason HR-10 does not have NRHP/CPHR criteria is "general lack of significance."

Comment MC-79: ***The text description of resource HR-3 was not revised. Please clarify the reasoning for the revision in Table 4.10-2.***

Response MC-79: In the Final SEIR, the description of HR-3 has been revised to state:

> This building is ineligible for the NRHP or CRHR and classified as a non-contributing resource within the historic district because it has been extensively modified and expanded in order to keep up with existing water treatment methods. *Under the NRHP and CRHR classifications, the building is considered to have lack of integrity.*

Comment MC-80: ***Page 4.10-30 of the SEIR states that "impacts and mitigation measures for Issues CR-2 (Damage to Historic Structures from Construction-Related Vibration), CR-3 (Introduction of Temporary Dirt/Unintended Damage), CR-5 (Alteration to the Setting of Surround Environment), and CR-6 (Introduction of Visual Obstructions) would be the same as described for the Proponent's Project; except that the Chemical Building/Instrument Hut and the San Clemente Dam and Associated Fish Ladder would be removed." It is unclear how the revised Alternative 3 qualifies as having the same impact as dam strengthening. In particular, the current proposed project would include removal of 830,000 cubic yards of accumulated sediment, blasting, and other effects that would create construction-related vibration, create an accumulation of dirt, and alter the existing setting.***

Response MC-80: Issues CR-2, CR-3, CR-5, and CR-6 all relate to various impacts to cultural resources from the dam thickening alternative that were evaluated in the Final EIR (see FEIR 4.10-22 - 4.10-24).

The Final EIR states that the impacts and mitigation measures for CR-2, CR-3, CR-5, and CR-6 under Alternative 3 (Carmel River Reroute and Dam Removal) would be the same as for Dam Thickening (the Proponent's Proposed Project in the FEIR) (see FEIR 4.10-26).

Changes to the Carmel River Reroute and Dam Removal alternative (Alternative 3 in the FEIR) described in the SEIR do not affect this determination. Impacts and mitigation for Issues CR-2, CR-3, CR-5, and CR-6 on pages 4.10-26 – 4.10-28 of the SEIR contain the same information provided in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

Comment MC-81: ***At the top of page 4.11-26, the SEIR states that "After construction, the viewshed would return to the condition it was prior to construction." Given that "dam operations and maintenance activities are routine features of the landscape" (page 4.11-25) for residences in the area, it is unclear how the proposed project would return the viewshed to its current condition after construction.***

Response MC-81: In the Final SEIR, the impact under Issue VQ-2 has been revised to say:

> *After construction demobilization and implementation of all mitigation measures including grading and revegetation, the viewshed would return return to pre-project conditions except that the dam and fish ladder would be permanently removed, and dam operations and maintenance would no longer occur.*
>
> *~~After construction, the viewshed would return to the condition it was prior to the construction. Therefore, no long-term impacts are anticipated, however the shortterm viewshed impacts to residents cannot be minimized and would remain significant and unavoidable during project construction.~~*

Comment MC-82: ***The project includes removal of two dams, relocation of 830,000 cubic yards of sediment, and re-routing of the Carmel River. These activities would permanently alter the viewshed in this area.***

Response MC-82: The project involves removal of one dam, the San Clemente Dam. Removal of Old Carmel River Dam is not evaluated by DWR. Contact the California State Coastal Conservancy regarding removal of the Old Carmel River Dam. Except as described in the Draft SEIR under Chapter 4.11 (Aesthetics), information regarding impacts to the viewshed are the same as in the Final EIR/EIS. DWR is circulating only the SEIR for comment and review without recirculating the previous Final EIR. For clarity and the convenience of the public, DWR presented the changes introduced in the SEIR in context, which necessarily requires the inclusion of text from the Final EIR/EIS that is unchanged. As explained in the SEIR, comments would only be considered on matters in the SEIR that were not new or different from those discussed in the Final EIR/EIS (see SEIR, page 1-7). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

Comment MC-83: ***The revised analysis includes the addition of a new Impact VQ-5a, which analyzes changes to viewsheds near or on the Jeep Trail. The analysis focuses on construction activities and construction-related uses. According to the analysis, impacts would be significant and unavoidable, but short-term. The project proposes to widen the Jeep Trail from 12 feet to 18 feet, which would require the removal of a substantial number of trees. These activities would permanently alter the landscape in this location. Therefore, long-term impacts to this viewshed should also be analyzed.***

Response MC-83: For clarification, in the Final SEIR, mitigation for Issue VQ-5a has been revised to say:

> **To minimize this impact, after construction, disturbed areas near the Jeep Trail would be revegetated as specified in the Botanical Resources Management Plan (Appendix U).** ~~*All disturbed areas near the Jeep Trail will be revegetated. With revegetation there would ultimately be no long-term impact to the viewshed.*~~ **However, even with implementation of this mitigation, the impact would remain significant and unavoidable during construction.**

Comment MC-84: ***Mitigation for Issue VQ-6 (Light and Glare from Night-time Construction Activities) states that "lighting would be directed down toward work areas to the extent possible, and would be shielded to reduce sky glow and spillover." Additional details should be provided for this mitigation to be measurable and enforceable. Please indicate specific types of lighting that would be acceptable, and whether these would be indicated on a lighting plan subject to agency review.***

Response MC-84: Night lighting would consist of standard halogen type flood lights. As described in Issue VQ-6, lighting would be directed down toward the work area and would be shielded to reduce sky glow and spillover. The only residence near the dam site is the Dam Keeper's cottage, which is owned by California American Water Company and possibly may not be occupied during construction.

If requested by the Monterey County RMA-Planning Department, the CDP Applicant would prepare a lighting plan during the permitting process.

Comment MC-85: ***New Issue REC-5 should be added to the list of issues on page 4.12-10.***

Response MC-85: Issue REC-5 has been added to the list of impact issues in the Final SEIR.

Comment MC-86: ***Mitigation for Issue REC-2 should change "would" to "shall" and should define "working hours."***

Response MC-86: Please see Response MC-6, above.

Comment MC-87: ***In addition, attempt should be made to mitigate the impact by providing access, cutouts, or communicating access issues with owners of the stone cabin.***

Response MC-87: The Stone Cabin owners were sent copies of the Draft SEIR and have been made aware of the potential access issues. Also, as required by the Traffic Coordination and Communication Plan in the mitigation for Issue TC-1, the Project Applicant will discuss access issues with the Stone Cabin owners prior to the start of the access road improvements.

Comment MC-88: ***Please clarify the threshold(s) used for Issue REC-2 and REC-5.***

Response MC-88: Consistent with section 4.9.2 in the Final EIR/EIS and Issue TC-1 in the Final EIR/EIS and the Draft SEIR, a traffic impact is considered significant if the traffic delay experienced by motorists is substantially increased. Since it is not known whether motorist delays would be less than 10 minutes, the impact determinations for Issue REC-2 (Disruption of Use of Jeep Trail to Stone Cabin) and Issue REC-5 (Delays for Motorists Traveling to the Los Padres National Forest) are consider significant, unavoidable, short-term.

May 31, 2012

Mr. Richard Olebe

Department of Water Resources

Division of Safety of Dams

2200 X Street, Suite 200

Sacramento, California 95818

RE: San Clemente Dam NO. 642

Monterey County

Dear Mr Olebe:

I'm in receipt of the San Clemente Dam Seismic Safety Project Draft SEIR Reviews and thank you for sending me the information.

I believe it would be Hugh mistake to remove the dam. We need to preserve what little water resources we have.

Approximately 40years ago the Monterey Peninsula Water District,(MPWMD) was created with the purpose of creating a new sustainable water source. During the 40 years not ONE DROP of new water has been developed for us, by this agency. During the 40 years, tens of millions of dollars have been spent, a Hugh bureaucracy created, we have been subject to server water rationing, conservation (reduced usage by 6,000 acre feet) and we property owners forced to spend millions of dollars retrofiring plumbing fixtures.

The consequence off the lack of action by the district, opposition by environmentalist,(disguised as unsolvable environmental issue) has resulted in we having some of the highest water rates in the country and with the prospects of even higher rates, with the propose De- Sal plant, which, by the way is also being challenged, by the same group and similar reason. AD-1

Green lawns are vanishing, beautiful gardens converted to drought resident everything and our beautiful public parks leave a lot to be desired.

The current policy of MPWMD restricts water used to all properties within the district, improved or unimproved. So if you wish to enlarge your home and add a bath you cannot, if you own an unimproved property and wish to develop it you cannot., If you own a commercial property with a variety of permitted zoning used, the district policy restrict the use to the 1984 use and any intensified use is denied water. For example , say, the use was a retail store in 1984, say today a pizza parlor or sandwich would like to rent the space, the districts will not grant the difference in water, ire-regardless of the amount needed. So business properties remain vacant for extended periods of time. During the past 40 years, thousands of potential new jobs have been lost, millions dollar of sales tax lost new business opportunities denied, and millions of taxable rental income dollars loses to the State of California. To be blunt this probably can be described as a taking from the citizen of California and of individual property rights.

Just about every water project that has been proposed has been nix by the environmental groups via legal challenges and or Sacramento political interference.

The dam that was proposed years ago was and still is the best long term and cost effective solutions. Had it been built it would be paid for today, our water rates would not be so high and the damage to the Carmel River would have been mitigated, without any damage to the fisheries. The technology to do so existed then and does now. The dam would be generating clean electrical energy and the revenues thereby reducing water cost. What a lost opportunity. AD-2

Now Cal -Am wants to remove the San Clemente Dam, at our expense rather than restore it. This dam should have been maintained by and improved Cal- Am during their ownership. The removal will eliminate a water source we cannot afford to lose. AD-3

I urge you and the State of California to serious reconsider and at least required the dam to be restore. We need the water, it is killing our community. AD-4

Even better yet build a new dam.

Thank you for your time and consideration. Kindly past this along to the PUC. AD-5

Cordially,

Anthony G Davi, Sr.

Comment AD-1: ***I believe it would be a Hugh mistake to remove the dam. We need to preserve what little water resources we have.***

Approximately 40 years ago the Monterey Peninsula Water District, (MPWMD) was created with the purpose of creating a new sustainable water source. During the 40 years not ONE DROP of new water has been developed for us, by this agency. During the 40 years, tens of millions of dollars have been spent, a Hugh bureaucracy created, we have been subject to server water rationing, conservation (reduced usage by 6,000 acre feet) and we property owners forced to spend millions of dollars retrofiring plumbing fixtures.

The consequence off the lack of action by the district, opposition by environmentalists, (disguised as unsolvable environmental issue) has resulted in having some of the highest water rates in the country and with the prospects of even higher rates, with the purpose De-Sal plant, which, by the way is also being challenged, by the same group and similar reason.

Green lawns are vanishing, beautiful gardens converted to drought resident everything and our beautiful public parks leave a lot to be desired.

The current policy of MPWMD restricts water used to all properties within the district, improved or unimproved. So if you wish to enlarge your home and bath you cannot, if you own an unimproved property and wish to develop it you cannot. , If you own a commercial property with a variety of permitted zoning used, the district policy restrict the use to the 1984 use and any intensified use is denied water. For example, say, the use was a retail store in 1984, say today a pizza parlor or sandwich would like to rent the space, the districts will not grant the difference in water, ire-regardless of the amount needed. So business properties remain vacant for extended periods of time. During the past 40 years, thousands of potential new jobs have been lost, millions dollar of sales tax lost new business opportunities denied, and millions of taxable rental income dollars loses to the State of California. To be blunt this probably can be described as a taking from the citizen of California and of individual property rights.

Response AD-1: DWR is aware of the water issues in the Project area. The San Clemente Dam was built in 1921 in upper Carmel Valley to supply water to the population and tourism industry on the Monterey Peninsula. The original San Clemente reservoir capacity of approximately 1,425 acre-feet was essential to meet the water supply needs of the 1930s and for several decades thereafter. However, over 90 percent of the reservoir is now filled with sediment.

In the Final EIR/EIS and the SEIR, under Alternative 3, a permanent diversion intake and temporary water diversion pipeline will be installed to replace the existing intake at the Dam to avoid interruption of the Carmel River source of CAW's water supply while the project is under construction. The permanent pipeline will be installed during project construction.

DWR's jurisdiction over the San Clemente Dam is restricted to seismic safety (see Section 1.2 in the Final EIR/EIS). Issues involving water supply and water storage are beyond the scope of this project.

Comment AD-2: ***Just about every water project that has been proposed has been nix by the environmental groups via legal challenges and or Sacramento political interference.***

The dam that was proposed years ago was and still is the best long term and cost effective solutions. Had it been built it would have been paid for today, our water rates would not be so high and the damage to the Carmel River would have been mitigated, without any damage to the fisheries. The technology to do so existed then and does now. The dam would be generating clean electrical energy and the revenues thereby reducing water cost. What a lost opportunity.

Response AD-2: DWR's jurisdiction over the San Clemente Dam Seismic Safety Project is to protect public safety by alleviating dam safety issues associated with San Clemente Dam. As stated in the Final EIR/EIS, the Proponent's Proposed Project (Dam Strengthening) and Alternatives I (Dam Notching), 2 (Dam Removal), and 3 (Carmel River Reroute and Dam Removal) meet the requirement of increasing the safety of San Clemente Dam to meet current standards for withstanding a Maximum Credible Earthquake and passing a Probable Maximum Flood (see section 2.1 in the Final EIR/EIS). Implementation of Alternative 3 would meet the seismic safety objectives. Development of other water projects is beyond the scope of this project.

Comment AD-3: ***Now Cal-Am wants to remove the San Clemente Dam, at our expense rather than restore it. This dam should have been maintained by and improved Cal-Am during their ownership. The removal will eliminate a water source we cannot afford to lose.***

Response AD-3: DWR's jurisdiction over the San Clemente Dam Seismic Safety Project is to protect public safety by alleviating dam safety issues associated with San Clemente Dam. As stated in the Final EIR/EIS, the Proponent's Proposed Project (Dam Strengthening) and Alternatives I (Dam Notching), 2 (Dam Removal), and 3 (Carmel River Reroute and Dam Removal) meet the requirement of increasing the safety of San Clemente Dam to meet current standards for withstanding a Maximum Credible Earthquake and passing a Probable Maximum Flood (see section 2.1 in the Final EIR/EIS). Implementation of Alternative 3 would meet the seismic safety objectives. Development of other water projects is beyond the scope of this project.

The San Clemente Dam was originally constructed to provide a point of diversion on the Carmel River and a head for gravity feed into the water system, and is not considered a water storage project. The purpose and need of the action which the EIR/EIS and the SEIR evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS and the SEIR do not consider alternatives for water supply or water storage. For additional information, in the Final EIR/EIS, see Appendix C in the Final EIR/EIS (Written Comments on the Draft EIR/EIS) and Appendix E (Responses to Comments).

A permanent diversion intake and temporary water diversion pipeline will be installed to replace the existing intake at the Dam to avoid interruption of the Carmel River source of CAW's water supply while the project is under construction. The permanent pipeline will be installed during project construction (see page 3.5-11 in the Draft SEIR).

Comment AD-4: ***I urge you and the State of California to serious reconsider and at least required the dam to be restore.***

Response AD-4: Please refer to Response AD-1.

Comment AD-5: ***Even better yet build a new dam…Kindly past this along to the PUC.***

Response AD-5: DWR is aware of the water supply issues in the Project area, however, development of other water projects is beyond the scope of this project.

All CEQA documents associated with the San Clemente Dam Seismic Safety Project are public records. The Public Utilities Commission is on the mailing list for the San Clemente Dam Seismic Safety Project. As with the EIR/EIS comments received on the Draft SEIR, and the corresponding responses, will be incorporated into the Final SEIR and will be sent to all parties on the mailing list, including the Public Utilities Commission.

MICHAEL AND DONNA DORMODY
35425 DORMODY ROAD
CARMEL CA 93923

May 18, 2012

Mr. Richard Olebe
Department of Water Resources
Division of Safety of Dams
2200 X Street, Suite 200
Sacramento, California 95818

This letter concerns
San Clemente Dam, No 642
Monterey County
Project Carmel River Reroute and San Clemente Dam Removal
Applicant California American Water Company

We are the property owners North and West of the proposed plan to reroute the Carmel River into San
DD-1 Clemente Creek. The Corps of Engineers say the project bypass is 3000 feet upstream of SCD while the
EIR says it is 2500 feet upstream. What is the correct figure? How close does this upstream boundary DD-2
come to our property boundary. Your reroute channel of a whole river comes into our property at
almost a 90 degree angle. The San Clemente Creek at times has poured 14,000 to 16,000 cubic feet per
second near that same spot. The San Clemente has a water shed that can produce lots of rain in a short
time (Check County rain gauges on Ponciano Ridge and White Rock) At times the Black Rock and San
Clemente can produce 20% of water entering the Carmel River. This amount of water could create a
DD-3 firehose shot of water into our property. What are the plans to reduce excessive erosion, undermining
or slope failure in winter flows. What measures will be taken to protect our property during DD-4
construction and in the future? There should be some clear long-term monitoring program and
DD-5 mechanism to address future problems as they arise due to the rerouting of the river and its effects on
our 14 acres. This agreement should be longer than the proposed 10 years. For it could easily take that
long until we get any significant flood flows in the river to really test the design. What agency will be DD-6
required to post a bond to cover any damages occurring during and after construction?

Thank you for your time
Donna Dormody
Michael and Donna Dormody
831-659-0166
Donnadormody@hotmail.com

Comment DD-1: ***The Corps of Engineers say the project bypass is 3000 feet upstream of SCD while the EIR says it is 2500 feet upstream. What is the correct figure?***

Response DD-1: The downstream end of the proposed diversion channel (also referred to as the bypass channel) is located approximately 2,500 linear feet upstream of the existing San Clemente Dam location. In the SEIR, see Figure 3.5-2a, "Revised Detailed Carmel River Bypass Site Plan." The location of the proposed diversion channel has not changed from the Final EIR (see Figure 3.5.2).

Comment DD-2: ***How close does this upstream boundary come to our property boundary?***

Response DD-2: As described in the Final EIR (see Land Ownership Figure 4.13-1), the proposed diversion channel will be located in parcel No. APN417051004000 (see Property Boundary Map). This parcel is currently owned by the California American Water Company. The proposed diversion channel would be approximately 500 feet southeast from the property boundary of neighboring parcel No. APN415051014000.

Comment DD-3: ***What are the plans to reduce excessive erosion, undermining or slope failure in winter flows.***

Response DD-3: In the Final EIR/EIS under Alternative 3, Issue FI-13 specifies that about 2,200 feet of the existing and excavated slopes along portions of the San Clemente Creek, located within the active combined flow of the rerouted Carmel River and San Clemente Creek, will be designed and constructed to be stable under the design flood and long-term loading conditions to minimize potential erosion and landslides. Slope protection improvements would include placement of cobbles and boulders. Other methods such as use of rock bolts and shotcrete may be used to minimize erosion, undermining, and slope failure. Also see section 3.5.4 "Project Characteristics" in the Final EIR/EIS and SEIR.

Comment DD-4: ***What measures will be taken to protect our property during construction and into the future?***

Response DD-4: As noted in Response DD-3, the existing and excavated slopes along portions of the San Clemente Creek, located within the active combined flow of the rerouted Carmel River and San Clemente Creek will be designed and constructed to be stable under long-term loading conditions and the design flood to minimize potential erosion and landslides. Furthermore, the slopes will be instrumented to monitor for signs of any impending instabilities during construction and the five-year post-construction phase of the project. California American Water and its agents will be responsible for post-construction monitoring and performing project slope repairs for the next five years, for a total period of 10 years, as specified in the final EIR/EIS and SEIR documents. For related information regarding slope stabilization and erosion control measures, in the SEIR please see Issue GS-4 (Soil Erosion), Issue WR-2a (Changes in the Amount of Sediment Flow Passing San Clemente Dam Immediately After Construction), Issue WQ-2 (Unstream, Streambank, and/or Stream Margin Construction Activities, Issue WQ-10 (Reservoir Sediment Excavation), and Appendix U (Botanical Resources Management Plan). Also see Appendix K (Storm Water Pollution Prevention Plan) in the Final EIR/EIS.

Questions regarding future actions should be directed to California American Water Company at:

California American Water Company
Monterey Division
50 Ragsdale Drive, Suite 100
Monterey, CA 93942-0951
(831) 646-3241

Comment DD-5: ***There should be some clear long-term monitoring program and mechanism to address future problems as they arise due to the rerouting of the river and its effects on our 14 acres. This agreement should be longer than the proposed 10 years. For it could easily take that long until we get any significant flood flows in the river to really test the design.***

Response DD-5: The project slopes including slopes along San Clemente Creek, which is within the active combined flow of the rerouted Carmel River and San Clemente Creek, will be monitored and repaired by the contractor for 5 years after project construction. California American Water and its agents will be responsible for post-construction monitoring and performing project slope repairs for the next five years, for a total period of 10 years, as specified in the final EIR/EIS and SEIR documents. Also see Response DD-4, above.

Other questions regarding this element of the project should be directed to California American Water Company at the contact information given above.

Comment DD-6: ***What agency will be required to post a bond to cover any damages occurring during and after construction?***

Response DD-6: The project is the responsibility of the California American Water Company. Questions regarding potential damages resulting from the project should be addressed to California American Water Company at the contact information given above.

ANTHONY LOMBARDO & ASSOCIATES
A PROFESSIONAL CORPORATION

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June 6, 2012

VIA EMAIL AND U.S. MAIL

File No. 742.000

Richard Olebe
Department of Water Resources
Division of Safety of Dams
2200 X Street, Ste. 200
Sacramento, CA 95818.

Re: San Clemente Dam Removal Project

Dear Mr. Olebe:

We have been retained by the Sleepy Hollow Homeowners Association Board of Directors to represent it and its members with regard to the San Clemente Dam Removal Project (the "Project"). We write to provide the following comments regarding the DSEIR for the San Clemente Dam Seismic Safety Project.

Sleepy Hollow is a small, quiet, gated community in Carmel Valley which is zoned by Monterey County as "Rural density residential". According to the DSEIR, the Project will attempt to include the routing of construction traffic through Sleepy Hollow, and the traffic will have "short-term, significant unavoidable" impacts on the neighborhood quality of life. SH-1

SH-2 The DSEIR is vague and does not provide any details regarding how many additional vehicles and how many construction vehicles will are contemplated to be driving through Sleepy Hollow. It is also not specific regarding what kinds of mitigations will be included in a required construction management plan and traffic/transportation plan. As of today, California American Water Company has not provided a construction management plan or a traffic/transportation plan which are sufficient to address the concerns of the Sleepy Hollow community. SH-3

Cal-Am maintains a limited use easement providing restricted access through Sleepy Hollow. However, this easement does not encompass such heavy use of the roads within Sleepy Hollow as is proposed with the Project. The magnitude of traffic that is proposed by this Project (specifically by parties that are not guests, agents or employees of the parties) was never contemplated by or included in the easement language. This Project clearly overburdens the use of this easement and use of this easement for this Project should not be allowed. SH-4

As noted in previous correspondence on this matter, this project may result in significant traffic, security, safety and aesthetic impacts on San Clemente Road and to those individuals and families who reside in the Sleepy Hollow neighborhood. Identified impacts include but are not limited to the following: SH-5

- Degradation and premature failure of the roadways and bridge structure within the gated community due to heavy traffic loads and dramatically increased traffic activity which the roadways and bridge are not designed to handle;
- Erosion and degradation of both the road surface and its edges causing material damage to its footing and the underlying structure
- Many months of elevated noise, elevated vibration and elevated dust levels which could cause harm to residents, wildlife, and adjacent structures;
- Decreased aesthetics throughout the community for an extended period of time;
- Decreased property valuations;
- Loss of privacy for all residents and guests;
- Increased exposure to liability;
- Decreased personal safety within Sleepy Hollow due to increased traffic on the road system and distribution of an access code to the private gated community; and
- Increased security liabilities due to distribution of access codes to the private gated community.

SH-6 Based upon the potential for significant unavoidable impacts to the Sleepy Hollow community, as identified above and in the DSEIR, we respectfully request that all vehicles seeking access to the Project be required to take the alternative route which will be built on the eastern end of the Project. This will avoid the significant impacts caused by the increased neighborhood traffic and uphold the integrity of the Sleepy Hollow HOA/Cal-Am easement agreement.

Sincerely,

Kelly Sutherland

Kelly McCarthy Sutherland
KMS/SPB/gp

CC: Sharon Pezzolo, President, Sleep Hollow HOA

SH-1: ***According to the DSEIR, the Project will attempt to include the routing of construction traffic through Sleepy Hollow, and the traffic will have "short-term, significant unavoidable impacts on the neighborhood quality of life.***

RESPONSE SH-1: Potential routing of construction-related traffic through Sleepy Hollow was described in the Final EIR/EIS (see Sections 3.5.2 and 3.5.5). Project changes considered in the DSEIR do not include any changes to traffic in the vicinity of Sleep Hollow. As stated in Chapter 1, page 1-7 in the DSEIR, comments will only be accepted on those issues that are new to the SEIR. Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

For information on the comments and responses prepared for the Draft EIR/EIS, please refer to Appendix C (Written Comments Received on the Draft EIR/EIS), Appendix D (Transcript of Public Hearing on the Draft EIR/EIS), and Appendix E (Responses to Comments) in the Final EIR/EIS.

SH-2: ***The DSEIR is vague and does not provide any details regarding how many additional vehicles and how many construction vehicles will are contemplated to be driving through Sleepy Hollow. It is also not specific regarding what kinds of mitigations will be included in a required construction management plan and traffic/transportation plan.***

RESPONSE SH-2: Details regarding potential construction-related vehicle use through Sleepy Hollow as well as information regarding traffic mitigation, the Construction Management Plan, Trip Reduction Plan, Traffic Coordination and Communication Plan, and the Traffic Safety Plan was described in the Final EIR/EIS (see Section 3.5.5, Issue TC-6 (Neighborhood Quality of Life) on pages 4.9-46 and 4.9-39, and Issue TC-1 (Road Segment Traffic Operation) on pages 4.9-46, 4.9-31, and 4.9-19). Project changes considered in the DSEIR do not include any changes to traffic in the vicinity of Sleepy Hollow. Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required. For additional information on the comments and responses prepared for the Draft EIR/EIS, please refer to Appendix C (Written Comments Received on the Draft EIR/EIS), Appendix D (Transcript of Public Hearing on the Draft EIR/EIS), and Appendix E (Responses to Comments) in the Final EIR/EIS.

SH-3: ***As of today, California American Water Company has not provided a construction management plan or traffic/transportation plan which is sufficient to address the concerns of the Sleepy Hollow community.***

RESPONSE SH-3: As required by Monterey County, the Construction Management Plan, Trip Reduction Plan, Traffic Coordination and Communication Plan, and the Traffic Safety Plan will be prepared by the Applicant and submitted to Monterey County for approval prior to the start of construction. Information regarding traffic mitigation, the Construction Management Plan, Trip Reduction Plan, Traffic Coordination and Communication Plan, and the Traffic Safety Plan was described in the Final EIR/EIS (see Issue TC-1 (Road Segment Traffic Operation) on pages 4.9-

46, 4.9-31, and 4.9-19). Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

SH-4: ***This Project clearly overburdens the use of this easement and use of this easement for this Project should not be allowed.***

RESPONSE SH-4: This comment is not addressed to the adequacy of the Draft SEIR. Concerns over use of the easement between the Sleepy Hollow Homeowners Association and the California-American Water Company should be directed to the California-American Water Company at:

California-American Water Company
Monterey Division
50 Ragsdale Drive, Suite 100
Monterey, CA 93942-0951
831-646-3241

SH-5: ***As noted in previous correspondence on this matter, this project may result in significant traffic, security, safety and aesthetic impacts on San Clemente Road and to those individuals and families who reside in the Sleepy Hollow neighborhood. Identified impacts include but are not limited to the following:***

- ***Degradation and premature failure of roadways and bridge structure within the gated community due to heavy traffic loads and dramatically increased traffic activity which the roadways and bridge are not designed to handle;***
- ***Erosion and degradation of both the road surface and its edges causing material damage to its footing and the underlying structure***
- ***Many months of eleveated noise, elevated vibration and elevated dust levels which could cause harm to residents, wildlife, and adjacent structures;***
- ***Decreased aesthetics throughout the community for an extended period of time;***
- ***Decreased property valuations;***
- ***Loss of privacy for all residents and guests;***
- ***Increased exposure to liability;***
- ***Decreased personal safety within Sleepy Hollow due to increased traffic on the road system and distribution of an access code to the private gated community; and***
- ***Increased security liabilities due to distribution of access codes to the private gated community.***

RESPONSE SH-5: Potential routing of construction-related traffic through Sleepy Hollow was described in the Final EIR/EIS (see Section 3.5.5, Issue TC-6 (Neighborhood Quality of Life) on pages 4.9-46 and 4.9-39, and Issue TC-1 (Road Segment Traffic Operation) on pages 4.9-46, 4.9-31, and 4.9-19). Project changes considered in the DSEIR do not include any changes to traffic in the vicinity of Sleep Hollow. Since the potential traffic routing through Sleepy Hollow remains the same, the associated potential impacts to San Clemente Road and the Sleepy Hollow neighborhood also remain the same as as those described in the Final EIR/EIS. Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required.

For information on the comments and responses prepared for the Draft EIR/EIS, please refer to Appendix C (Written Comments Received on the Draft EIR/EIS), Appendix D (Transcript of Public Hearing on the Draft EIR/EIS), and Appendix E (Responses to Comments) in the Final EIR/EIS.

SH-6: ***Based upon the potential for significant unavoidable impacts to the Sleepy Hollow community, as identified above and in the DSEIR, we respectfully request that all vehicles seeking access to the Project be required to take the alternative route which will be built on the eastern end of the Project.***

RESPONSE SH-6: Potential routing of construction-related traffic through Sleepy Hollow for access below the dam was described in the Final EIR/EIS (see Section 3.5.5, Issue TC-6 (Neighborhood Quality of Life) on pages 4.9-46 and 4.9-39, and Issue TC-1 (Road Segment Traffic Operation) on pages 4.9-46, 4.9-31, and 4.9-19). Project changes considered in the DSEIR do not include any changes to traffic in the vicinity of Sleep Hollow. The impacts and mitigations for the potential impacts also remain the same as described in the Final EIR/EIS. Because this comment relates to information that is unchanged from the Final EIR/EIS, no response is required. For additional information on the comments and responses prepared for the Draft EIR/EIS, please refer to Appendix C (Written Comments Received on the Draft EIR/EIS), Appendix D (Transcript of Public Hearing on the Draft EIR/EIS), and Appendix E (Responses to Comments) in the Final EIR/EIS.