FINAL
ENVIRONMENTAL IMPACT REPORT
FOR THE
SAN DIEGO COUNTY WATER AUTHORITY
MISSION TRAILS FRS II, PIPELINE TUNNEL, AND VENT DEMOLITION PROJECT
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Draft Environmental Impact Report
March 2006

Prepared for:

San Diego County Water Authority

TIERRA
ENVIRONMENTAL SERVICES

Mission Trails FRS II, Pipeline Tunnel and Vent Demolition Project

Draft Environmental Impact Report

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ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Trips
AM	Morning time (12:00 midnight up to 12:00 noon)
AMSL	Above Mean Sea Level
APCD	Air Pollution Control District
APE	Area of Potential Effect
AQIA	Air Quality Impact Analysis
BMPs	Best Management Practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAC	Citizens' Advisory Committee
Cal/OSHA	California Occupational Safety and Health Administration
CDMG	California Division of Mines and Geology
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers' Association
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CHMA	Crestridge Habitat Management Area
CIP	Capital Improvement Program
CNEL	Community Noise Equivalent Level
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	Carbon Monoxide
Corps	U.S. Army Corps of Engineers
cy	cubic yards
dB	decibels
dBA	decibels (A-weighted)
DO	Dissolved Oxygen
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
ERP	Emergency Response Plan
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
fps	feet per second
FRS	Flow Regulatory Structure
FTA	Federal Transit Administration
FUDS	Formerly Used Defense Site

HCP	Habitat Conservation Plan
HVAC	Heating, Ventilation, Air Conditioning
HU	Hydrologic Unit
I-15	Interstate 15
in/sec	inches per second
KOPs	Key Observations Points
kV	kilovolt
lbs/day	pounds per day
Leq	equivalent sound level
lf	linear feet
LHD	Load-Haul-Dump
LOS	Level of service
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corps Air Station
mg	million gallon
mgd	million gallons per day
MHPA	Multi-Habitat Planning Area
MLP	Moreno-Lakeside Pipeline
mph	miles per hour
MRZ	Mineral Resource Zones
MSCP	San Diego Multiple Species Conservation Program
MSL	Mean Sea Level
MTRP	Mission Trails Regional Park
MWD	Metropolitan Water District of Southern California
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Communities Conservation Program
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OE	Ordnance and Explosives
OSHA	Federal Occupational Safety and Health Administration
Pb	Lead
PCE	Passenger Car Equivalence
PEIR	Program Environmental Impact Report
PM	Evening time (12:00 noon up to 12:00 midnight)
PM_{10}	Particulates with an aerodynamic diameter less than 10 microns
PPV	Peak Particle Velocity

ROC	Reactive Organic Compounds
ROG	Reactive Organic Gas
ROW	Right of Way
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCH	State Clearinghouse
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas and Electric
SDRWQCB	San Diego Regional Water Quality Control Board
SDUSD	San Diego Unified School District
SO_2	Sulfur Dioxide
SR-52	State Route 52
SWPPP	Stormwater Pollution Prevention Plan
SWSAS	Storm Water Sampling and Analysis Strategy
TBM	Tunnel Boring Machine
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TRB	Transportation Research Board
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WDR	Waste Discharge Requirements
WGCEP	Working Groups on California Earthquake Probabilities

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EXECUTIVE SUMMARY

This Draft Environmental Impact Report (EIR) addresses the proposed Mission Trails Flow Regulatory Structure II (FRS II), Pipeline Tunnel, and Vent Demolition Project (proposed project). The San Diego County Water Authority (Water Authority) proposes to construct an up to 18-million-gallon (mg) belowground flow regulatory structure, aboveground appurtenant structures, inlet and outlet tunnel pipelines and associated portals and air vacuum valves, and a stabilized crossing of the San Diego River. Two existing pipelines would be abandoned in place and up to ten vent structures would be removed or replaced by much smaller air vacuum valve structures. The inlet and outlet tunnel pipelines would total approximately 1 mile in length.

The Water Authority's largest customer, the City of San Diego, is currently undertaking several water treatment plant expansion projects to meet public demands and the Water Authority must increase delivery capabilities to match the increased water treatment capabilities. The City of San Diego anticipates completion of the Miramar and Alvarado water treatment plant expansions by 2009, and expansion of the Otay Water Treatment plant by 2030. The Sweetwater Authority plans to expand its Perdue Water Treatment Plant by 2030. The Water Authority prepared a Draft Regional Water Facilities Master Plan (Master Plan) in 2003 to meet these and other future water delivery and supply demands, and approved a Program EIR addressing the Master Plan in November 2003.

ES.1 PROJECT OBJECTIVES

The primary objective of the proposed project is to provide additional regulatory storage and improved flow control and capacity in response to future increased untreated water demands in the south county area. The Water Authority transports water from Riverside County to the southern portion of San Diego County, near the Mexican border, in a series of large-diameter pipelines. The pipelines are in two north-south easement corridors, or easements, called the First and Second Aqueducts. Three water pipelines currently cross Mission Trails Regional Park (MTRP) within the Second Aqueduct easement, which is 130 feet wide. Pipelines 3 and 4 carry untreated ("raw") water and Pipeline 4B carries treated water. The proposed project is necessary at this time to allow for increased transmission capacity to downstream water treatment plants and to provide additional operating flexibility. The tunnel portion of the proposed project must be below the hydraulic grade line to provide increased flow through MTRP. The proposed FRS would provide flow control for a maximum of 18 million gallons.

A secondary project objective is protection from an anticipated higher frequency of service interruptions once the Second Aqueduct untreated water pipelines to the north are converted from a gravity system to a partially pumped system.

Associated project objectives are to remove unnecessary aboveground water facilities from MTRP and to construct a stabilized crossing of the San Diego River along the Water Authority's easement.

The specific project objectives are to:

- Eliminate hydraulic bottlenecks in Pipelines 3 and 4 for untreated water.
- Increase the water deliveries to water treatment plants under expansion.
- Improve pipeline operations by reducing spills.
- Provide short-term operational storage to meet unplanned outages.
- Remove most of the vents across MTRP; and,
- Stabilize existing crossing of San Diego River and improve surface of existing dirt roads to improve Water Authority, Park Ranger, Fire, Police, and Emergency vehicular access to MTRP, from south of the San Diego River to north of the San Diego River, to facilitate inspections and maintenance.

ES.2 PROJECT OVERVIEW

The proposed project is an important component of the Water Authority's 2003 Master Plan, which recommends a number of projects for construction between 2005 and 2020. Projects were identified under the categories of Expansion of Internal System Capacity, Additional Water Treatment Capacity, Additional Seasonal/Carryover Storage, and New Conveyance and Supply. The proposed project involves an expansion of internal system capacity so that the Water Authority may deliver greater volumes of water south of MTRP. The elimination of a hydrologic bottleneck in MTRP and provision of a flow regulatory structure (FRS) would provide the needed increase in internal system capacity.

The Water Authority certified a Final Program EIR for the Draft Regional Water Facilities Master Plan in November 2003, which addressed the potential environmental impacts associated with these projects at a program level. Project-specific review was deferred to such time that a project was proposed for construction and engineering and design work had commenced. This Project EIR has been prepared to evaluate the proposed project in light of the Final Program EIR now that preliminary engineering design studies have been prepared.

The proposed project consists of the construction of the following water storage and delivery structures within MTRP:

- Up to18-mg belowground storage facility;
- Aboveground control building;
- Inlet and outlet valve vaults for belowground storage facility;
- Inlet and outlet piping for belowground storage facility;
- Overflow pipe and energy dissipater;
- Inlet and outlet tunnel pipelines;
- North and south tunnel portals;
- Inlet and outlet tunnel shafts;

- Removal of existing vent structures and blowoff valves;
- Installation of air vacuum valves in place of vent structures;
- Abandonment of two existing pipelines and construction of new interconnections; and,
- Stabilized crossing of the San Diego River.

Project construction is anticipated to take approximately 2 years and would result in temporary closure of access points, roads, and trails within the West Fortuna Mountain area of MTRP. Closure of the Jackson Drive access road from Mission Gorge Road to the San Diego River would be required for a period of approximately 3 months. With one exception, existing park roads used by construction traffic would be graded to a width of 12 feet, where currently less than 12 feet, and existing erosion of the roadbeds would be repaired. The exceptions is that one approximately 2,000-foot stretch of road, between the SDG&E easement and the FRS II, would be widened to 20 feet to allow for two-way truck traffic. All areas widened in excess of 12 feet would be returned to a 12-foot width following construction. New roads would be limited to short unpaved service roads to the inlet and outlet valve vaults, a rerouted trail/road around the proposed FRS II control building, and a driveway to the proposed control building.

ES.3 PUBLIC OUTREACH PROGRAM

The Water Authority is dedicated to communicating to communities and stakeholders potentially impacted by the proposed project throughout project design and construction. Project briefings have been provided to elected officials, the Mission Trails Task Force and Citizens' Advisory Committee (CAC), the Tierrasanta Town Council, and the Belsera Homeowners Association to keep these stakeholders updated on the project and to provide them with timely information. Other interested groups will be provided presentations as requested. In addition, notices have been, and will continue to be, distributed by mail or door-to-door. The project newsletter, the *Park Watermark,* is mailed to over 5,000 stakeholders and provides a general overview of the project's status. Stakeholders are also encouraged to call the toll-free project information hotline (877) 682-9283, ext. 7004 with questions and concerns. The call will be returned within one business day.

The Water Authority began the public outreach for the proposed project in mid-2003 with presentations to the CAC regarding the Master Plan and the Master Plan components within MTRP. Presentations continued through 2004, prior to the commencement of the environmental review process. The following is a chronological summary of the Water Authority's outreach efforts from March 16, 2005 through January 25, 2006. Outreach will continue throughout the life of the project.

Date	Event/Action	Location	Time
May 4, 2004	MTRP Task Force Project Briefing	MTRP Visitors Center	7:00 p.m.
June 16, 2004	Tierrasanta Community Council project introduction	Tierrasanta Recreation Center	7:00 p.m.
June 21, 2004	Navajo Community Planners, Inc. project introduction	Mission Valley Church of the Nazarene	7:00 p.m.

Date	Event/Action	Location	Time
June 2004	MTRP tour for five members of Tierrasanta Community Council	Mission Trails Regional Park	9:00 a.m.
July 7, 2004	San Carlos Area Council project introduction	San Carlos Library	7:00 p.m.
November 9, 2004	MTRP Citizens' Advisory Committee meeting	MTRP Visitors Center	7:00 p.m.
December 1, 2004	Sent email to Eric Germain and John Barone (former MTRP Senior Park Ranger)	N/A	N/A
December 10, 2004	Met with John Barone (former MTRP Senior Park Ranger)	MTRP Visitors Center	10:00 a.m.
February 9, 2005	Project Team met with new Senior Park Ranger (Tracey Walker)	MTRP Visitors Center	9:00 a.m.
March 1, 2005	MTRP Citizens' Advisory Committee meeting	MTRP Visitors Center	7:00 p.m.
March 2, 2005	San Carlos Area Council project update	San Carlos Library	7:00 p.m.
March 16, 2005	MTRP Task Force project briefing	San Diego City Hall	Noon
March 16, 2005	Tierrasanta Community Council project briefing	Tierrasanta Recreation Center	7:00 p.m.
March 18, 2005	Mailed introduction letter to community members, elected Officials, and stakeholders	N/A	N/A
March 21, 2005	Navajo Community Planners, Inc. project briefing	Mission Valley Church of the Nazarene	7:00 p.m.
April 5, 2005	Mailed Environmental Impact Report Notice of Preparation	N/A	N/A
April 19, 2005	Scoping meeting	Water Authority	6:30 p.m.
May 4, 2005	Mailed postcard regarding 1st phase geotechnical work	N/A	N/A
May 5, 2005	Scoping period ends	N/A	N/A
May 17, 2005	Belsera Homeowners Association Board project briefing	Tierrasanta Recreation Center	7:00 p.m.
May 19, 2005	1st Mission Trails Working Group Meeting	Water Authority	6:00 p.m.
May 20, 2005	Mailed 1st Mission Trails Newsletter	N/A	N/A
May 21, 2005	Information booth staffed at Explore Mission Trails Day	Mission Trails Visitor Center	All Day
June 4, 2005	MT Working Group tour	Project Site	10:00 a.m.
June 9, 2005	2nd Mission Trails Working Group meeting	Water Authority	6:00 p.m.

Date	Event/Action	Location	Time
July 9, 2005	MTRP Citizens' Advisory Committee project site tour	Project Site	10:00 a.m.
August 4, 2005	3rd Mission Trails Working Group meeting	SDCWA	6 :00 p.m.
August 30, 2005	MTRP Citizens' Advisory Committee meeting	Mission Trails Visitor Center	7:00 p.m.
October 2005	Mailed postcard regarding 2nd phase geotechnical work	N/A	N/A
October 4, 2005	MTRP Citizens' Advisory Committee meeting	Mission Trails Visitor Center	7:00 p.m.
January 3, 2006	MTRP Citizens' Advisory Committee meeting	Mission Trails Visitor Center	7:00 p.m.
January 11, 2006	Mailed out invitation for Tierrasanta Community open house	N/A	N/A
January 20, 2005	Distributed door hanger invitations to Tierrasanta Community open house	N/A	N/A
Jan. 25, 2006	Tierrasanta open house event	Tierrasanta Home Owners Association 10690 Escobar Lane	7:00 p.m.
March 2, 2006	4th Mission Trails Working Group meeting	Water Authority Headquarters	6:00 p.m.
March 7, 2006	MTRP Citizens' Advisory Committee meeting	Mission Trails Visitor Center	7:00 p.m.
March 15, 2006	MTRP Task Force meeting	San Diego City Hall	12:00 p.m.

ES.4 AREAS OF CONTROVERSY

The Water Authority has conducted an extensive public outreach program for the proposed project and has received public comments from neighboring communities and individuals concerned with MTRP. The Water Authority has also met with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (Corps), and San Diego Regional Water Quality Control Board (RWQCB). This public outreach is intended to provide the greatest benefit to the regional water delivery infrastructure, MTRP, and adjacent communities while resulting in the least negative impacts to residents, park users, park facilities and the environment. The following areas of concern have been raised in response to the Notice of Preparation (NOP) and during public outreach meetings:

- Temporary traffic impacts within the Tierrasanta community during construction and the selection of the most appropriate truck routes;
- Temporary noise impacts associated with construction activities at the North Portal, near the Belsera neighborhood;
- Temporary noise impacts associated with the Pipeline Interconnect Reconfiguration, immediately adjacent to the northeast corner of the Belsera neighborhood;

- Temporary closure of access points, roads, and trails within MTRP;
- Temporary potential impacts to the federally endangered Quino checkerspot butterfly, California gnatcatcher, and least Bell's vireo;
- Short-term visual and biological impacts associated with the temporary loss of natural vegetation within MTRP;
- Long-term visual impacts associated with the FRS II control building;
- Long-term biology and hydrology impacts to the San Diego River associated with the stabilized river crossing.

ES.5 ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123 requires a summary to identify issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects. The Water Authority must select between the proposed project and project alternatives to achieve the greatest benefit to the regional water supply system while minimizing impacts to MTRP and the adjacent community in a cost-effective manner. Project alternatives to be considered consist of:

- Selection of either an aboveground control building (proposed project) or vent structures with controls in the existing FRS I access/control building;
- Selection of a preferred method of tunnel construction from a separate inlet and outlet tunnel (proposed project), a single tunnel from the South Portal only, or an inlet tunnel and an outlet trenched pipeline.

As noted, the aboveground control building and the separate inlet tunnel and outlet tunnel are analyzed in detail in the EIR as the proposed project. The other project alternatives are summarized in the following section and are discussed in Section 7.0.

ES.6 ALTERNATIVES TO THE PROJECT

Several alternatives to the proposed project that can reduce or avoid significant environmental effects have been identified that would achieve the goals and objectives of the proposed project. Other project alternatives, including the No Project Alternative, have been dismissed from consideration because they do not meet the goals and objectives of the proposed project. The feasible alternatives include the elimination of the control building and the construction of two vent structures instead, and several options for tunnel construction. The tunnel construction alternatives consist of constructing a single tunnel entirely from the South Portal; and constructing an inlet tunnel from the North Portal simultaneously with a trenched outlet pipeline, thus eliminating the need for an outlet tunnel.

ES.6.1 Two-Vent Structures to Replace Access/Control Building Alternative

Under this alternative, the proposed access/control building on the FRS II site would be replaced by two vent structures, reducing visual impacts to the park users. The instrumentation and controls for the valve vaults and water storage basins would be housed inside the existing FRS I access/control building. The vent structures would allow air to exhaust or enter each water storage basin as the water levels in the basin fluctuate. The vent structure alternative would include access hatches into the water storage basins for maintenance personnel to inspect the interior of each basin. Eight-foot-high security fencing would be installed around the access hatches and vent structures.

ES.6.2 Combined Inlet/Outlet Tunnel Pipeline from South Portal Alternative

The Combined Inlet/Outlet Tunnel Pipeline Alternative from the South Portal would result in the an increased volume of export material as compared to the proposed project, and therefore an increase in the number of truck trips out of MTRP. This alternative would, however, avoid the need to export materials from the North Portal. Construction noise, dust, and traffic would all be substantially reduced or avoided at the North Portal location. North Portal construction would still be necessary, as would a 10-day, 24/7, connection of the tunnel pipeline to the existing pipelines at the North Portal. Additional construction activities would be necessary between 7:00 a.m. and 7:00 p.m. Monday through Saturday for mobilization, grading, excavation, shoring, backfill, and demobilization.

ES.6.3 Inlet Tunnel/Trenched Outlet Pipeline Alternative

The Inlet Tunnel/Trenched Outlet Pipeline Alternative would reduce truck trips out of MTRP by replacing the outlet tunnel with a cut and cover trenched pipeline. This alternative would, however, increase impacts to biological and visual resources.

ES.7 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

Table ES-1 provides a summary of the potential environmental impacts, mitigation measures, and level of significance after mitigation for each issue that was analyzed in this EIR.

Table ES-1
Summary of Environmental Impacts and Mitigation Measures

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Land Use	Impacts to land use would be less than significant.	No mitigation measures are required.	No residual impacts would occur.
Aesthetics/ Visual Quality	Short-term visual impacts due to construction in the park would be adverse but less than significant for various key observation points. Long-term visual impacts associated with the aboveground features of the project would be less than significant. Other aesthetic/visual impacts, including light or glare, would be less than significant.	No mitigation measures are required.	No residual impacts would occur.
Traffic/ Circulation	Impacts of construction and operation traffic would be less than significant.	No mitigation measures are required.	No residual impacts would occur.
Air Quality	Impacts of emissions of NOx would be significant for a duration of more than 1 year during construction (**AQ 1**). Impacts of emissions of PM_{10} would be significant for a duration of more than 1 year during construction (**AQ 2**) Other construction emissions would be less than significant. Operational emissions would be less than significant. Cumulative impacts to air quality during construction would be significant. However, the proposed project's contribution to cumulative air quality impacts would cease upon completion of construction.	To reduce significant NOx impacts caused by emissions generated by construction equipment during construction, the Water Authority shall implement the following mitigation measure: **AQ 1-1** Heavy-duty diesel equipment engines shall be properly tuned and maintained in compliance with State of California emissions regulations to ensure minimum emissions under normal operation. The Water Authority shall require its construction contractors to implement this measure to the extent practical. To reduce significant fugitive dust and PM_{10} emissions generated during construction, the Water Authority shall implement the following mitigation measures: **AQ 2-1** Vehicles hauling dirt or fill shall be covered with a tarp or other means.	Implementation of the recommended mitigation measures would reduce short-term impacts to air quality, but the impacts would not be expected to be reduced to below a level of significance by the mitigation measures. In addition, the estimates incorporated a 51 percent reduction in fugitive dust from watering as part of PM_{10} modeling. Therefore, the impact of peak emissions would remain significant during the approximately 14 months when the construction of individual components would cause NO_x and PM_{10} thresholds to be exceeded. A Statement of Overriding Considerations for direct and cumulative air quality impacts would be necessary for project approval. Significant air quality impacts would be temporary because they would cease upon the completion of construction.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Noise and Vibration	Construction would result in a substantial temporary increase in the ambient noise levels where average daily noise levels at the adjacent residential properties, particularly at the North Portal and Pipeline Interconnect Reconfiguration site, may exceed 75 dBA. This would be a significant impact. (**N 1**) Nighttime construction would occur at the North Portal and at the Pipeline Interconnect Reconfiguration site for 10 consecutive days during the connection of the new pipeline tunnel to the existing pipeline, and the South Portal for approximately 1 year. Noise impacts between 7:00 p.m. and 7:00 a.m. Monday through Saturday, and all day Sunday, would be significant. (**N 2**) Impacts from traffic noise during construction and permanent noise impacts would be less than significant. Due to the close proximity of the residences near the North Portal site, groundborne vibration from the blasting would be significant. (**N 3**)	To mitigate significant construction noise impacts associated with substantial increases of noise levels above ambient that may exceed 75 dBA, the Water Authority shall implement the following mitigation measures: **N 1-1** No motor driven semi-stationary equipment shall be operated continuously under load within 500 feet of any residences at night (7:00 pm – 7:00 a.m.) unless a temporary noise propagation barrier is erected, and/or enhanced mufflers are used to reduce noise exposure at any adjacent building facade to 45 dB L_{eq}. **N 1-2** The contractor shall use portable noise screens or enclosures to provide shielding for high noise activities or equipment as necessary. The effectiveness of a barrier depends upon factors such as the relative height of the barrier relative to the line-of-sight from the source to the receiver, the distance from the barrier to the source and to the receiver and the reflections of sound. To be effective, a barrier must block the line-of-sight from the source to the receiver. A properly designed noise barrier can reduce noise as much as 20 dBA. **N 1-3** The Water Authority shall monitor noise levels during construction to ensure compliance with the noise thresholds. To mitigate significant noise impacts during night construction at the North Portal and Pipeline Interconnect Reconfiguration, the Water Authority shall implement the following mitigation measure: **N 2-1** The Water Authority shall construct a temporary sound wall along the western boundary of the North Portal staging area and the Pipeline Interconnect Reconfiguration site to reduce construction noise levels at the Belsera property line. A properly designed noise barrier can reduce noise as much as 20 dBA. **N2-2** The Water Authority shall monitor noise levels during construction to ensure compliance with the noise thresholds. To mitigate the potential vibration impacts associated with blasting, the Water Authority shall implement the following mitigation measures: **N 3-1** The Water Authority shall monitor all blasting activities to confirm that they are consistent with the Water Authority's General Conditions and Standard Specifications, Section 02229, including:	Implementation of the recommended mitigation measures would reduce short-term impacts due to construction noise by 20 dBA, but these impacts would not be expected to be reduced to below a level of significance by the mitigation measures. Therefore, the impacts due to construction noise would remain significant during the construction period. A Statement of Overriding Considerations would be necessary for project approval. This significant noise impact would be temporary because it would cease upon the completion of construction. No residual impacts would remain after implementation of the proposed mitigation measures for potential vibration impacts associated with blasting.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Noise and Vibration continued		▪ Blasting shall only be conducted during construction when other practicable excavation methods are not available. ▪ Advanced written notification of the date and time of any blasting activities shall be provided to all residents and businesses within 400 feet of the blast area. ▪ A Blast Plan will be developed and approved by the local regulatory authority in the event that blasting is necessary. **N 3-2** Blast monitoring shall be required for all blasting operations within the City, including monitoring of ground motions, peak particle velocity, and air blast levels. **N 3-3** The hours of blasting shall be determined by site specific requirements and blasting shall be limited to daytime hours between 7:00 a.m. and 7:00 p.m., Monday through Saturday. **N 3-4** If the blasting results in vibration or blast levels with a PPV in excess of 2.0 inches/second, modifications to the procedures shall be implemented, such as using different delay patterns, reduction in size of the individual blasts, shorter and/or smaller diameter blast holes, closer spacing of blast holes, reduction of explosives, blast mats, sound walls, or a combination. A properly designed noise barrier can reduce noise as much as 20 dBA. **N 3-5** A public outreach program shall be implemented to alert the public to the potential for vibrations and noise associated with blasting.	
Recreation	The closure of some park access points, roads, and trails in the western portion of MTRP for a period of up to 2 years would result in an adverse but less than significant short-term impact. Permanent impacts to recreation would not occur.	No mitigation measures are required.	No residual impacts would occur.
Water Resources	Impacts of the project on water resources would be less than significant.	No mitigation measures are required.	No residual impacts would occur.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Biological Resources	Impacts of project construction on the following biological resources would be significant ▪ Diegan coastal sage scrub (**BR 1**) ▪ Coastal sage-chaparral scrub (**BR 2**) ▪ Valley needlegrass grassland (**BR 3**) ▪ Vernal pools (**BR 4**) ▪ Southern willow scrub (**BR 5**) ▪ Southern cottonwood-willow riparian forest (**BR 6**) ▪ Mule-fat scrub (**BR 7**) ▪ Open water (**BR 8**) ▪ Quino checkerspot butterfly **(BR 9)** ▪ California gnatcatcher (**BR 10**) ▪ least Bell's vireo (**BR 11**)	To mitigate significant impacts to biological resources, the Water Authority shall implement the following mitigation measures: **BR 1-1, 2-1, 3-1** Temporary impacts to Diegan coastal sage scrub, coastal sage scrub-chaparral scrub, and valley needlegrass shall be mitigated through revegetation with a coastal sage scrub seed mix that includes valley needlegrass seed. Permanent impacts to Diegan coastal sage scrub, coastal sage scrub-chaparral scrub, and valley needlegrass shall be mitigated off site using mitigation credits from the Water Authority's Crestridge Habitat Management Area. **BR 4-1** Permanent impacts to San Diego claypan vernal pool habitat shall be mitigated at a 2:1 ratio by the creation of replacement vernal pool habitat. The Water Authority shall request enrollment under the RWQCB *General Waste Discharge Requirements (WDR) for Dredged of Fill Discharges to Waters Deemed by the U.S. ACOE to be Outside of Federal Jurisdiction* (Order No. 2004-0004-DWQ). The site selected for the creation of claypan vernal pool habitat shall have the appropriate topography and soil type for vernal pool creation and shall ideally be disturbed. The vernal pool creation effort shall not have an adverse effect on existing vernal pools. The created vernal pools shall be protected through the use of fencing, education, signage and enforcement to keep park visitors away from the pools. Two sites that are potentially suitable for vernal pool mitigation have been identified within MTRP. The final vernal pool creation program shall be prepared to the mutual satisfaction of the Water Authority, MTRP staff, and the RWQCB. **BR 5-1** Mitigation for temporary and permanent impacts southern willow scrub at the stabilized crossing of the San Diego River shall be mitigated through the revegetation of disturbed areas adjacent to the San Diego River with southern willow scrub species. **BR 6-1** Mitigation for temporary and permanent impacts to southern cottonwood-willow riparian forest shall be mitigated through the planting of southern cottonwood-willow riparian forest container stock within disturbed areas adjacent to the San Diego River. **BR 7-1** Mitigation for temporary impacts to mule-fat scrub shall be mitigated through the planting of mule fat scrub within disturbed areas adjacent to the San Diego River.	No residual impacts would remain after implementation of the proposed mitigation measures.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Biological Resources continued		**BR 8-1** Mitigation for permanent impacts to waters of the U.S. shall be mitigated through the creation of wetlands along the San Diego River in MTRP and the restoration/enhancement of an adjacent area. **BR 9-1** A qualified biologist shall conduct a pre-construction survey for the Quino checkerspot butterfly during the flight season prior to the commencement of project construction. Should Quino checkerspot butterflies be present, the Water Authority shall provide mitigation in the form of habitat preservation, enhancement, or creation to the mutual satisfaction of the USFWS and the Water Authority. **BR 10-1** All on-site grading and construction activities adjacent to Diegan coastal sage scrub shall occur outside the gnatcatcher breeding season (March 1 through August 15). It is possible that construction activities could overlap the gnatcatcher breeding season and, therefore, indirect impacts to gnatcatchers could occur. If grading or construction is planned to commence during the breeding season, a pre-construction survey shall be conducted to determine the presence or absence of gnatcatchers within areas affected by noise. If no nesting birds occur within this area, development would be allowed to proceed. However, if nesting birds are observed within this area, development shall be postponed until all nesting activity has ceased or until after August 15. Work that has commenced prior to the breeding season shall be allowed to continue without interruption. Traffic shall continue to traverse occupied habitat enroute to construction sites in unoccupied areas. **BR 11-1** Indirect impacts to least Bell's vireos resulting from loss of habitat at the proposed stabilized San Diego River crossing shall be mitigated by the planting of southern willow scrub (Mitigation Measure **BR 5-1**). **BR 11-2** If feasible, indirect impacts to least Bell's vireos resulting from construction noise at the San Diego River shall be mitigated by prohibiting construction of the San Diego River stabilized crossing during the breeding season (March 15- September 15). If not feasible, the Water Authority shall consult with the USFWS and implement any required mitigation measures.	

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Cultural Resources	Four cultural resource sites are located near the project area (CA-SDI-5518, CA-SDI-5656, CA-SDI-5657 and CA-SDI-12018). Direct impacts to extant cultural resources within the project area could result from brushing and vegetation removal, grading, and other ground disturbing activities during construction. These impacts would be significant. **(CR 1)** Implementation of the proposed project could uncover significant cultural resources that have not been previously documented. The impact of discovering unexpected cultural resources would be significant. (**CR 2**)	To mitigate significant impacts to cultural resources during project construction, the Water Authority shall implement the following mitigation measures: **CR 1-1** Prior to construction, a qualified archaeologist shall flag the construction zone, including a 10-foot buffer zone, so that impacts occur entirely outside the boundaries of CA-SDI-5518, CA-SDI-5656, CA-SDI-5657, and CA-SDI-12018. **CR 2-1** In the event that unanticipated cultural resources are encountered during project construction, all earthmoving activities shall cease until the qualified archaeologist examines the findings, assesses their significance, and offers recommendations for procedures deemed appropriate to either further investigate or mitigate adverse impacts to those cultural resources that have been encountered (e.g., excavate the significant resource). These additional measures shall be implemented. **CR 2-2** If human bone or bones of unknown origin are found during project construction, all work shall stop in the vicinity of the find and the County Coroner and the Water Authority shall be contacted immediately. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission who shall notify the person it believes to be the most likely descendant. The most likely descendant shall work with the Water Authority to develop a program for reinternment of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the identified appropriate actions have been completed. Any collection of artifacts resulting from the surveys and monitoring, as well as the associated records, shall be curated at an appropriate institution in San Diego County that meets the standards of the State of California Guidelines for the Curation of Archaeological Collections.	No residual impacts would remain after implementation of the proposed mitigation measures.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Geology and Soils	The project would involve extensive grading, including widening of unpaved access trails within MTRP that are on soils with severe erodibility and high runoff potential. Therefore, the potential for substantial soil erosion or the loss of topsoil is high. However, this impact would be avoided by implementation of the standard specifications and project features described in Section 2.6, including erosion control BMPs developed for the SWPPP. The impact of potential erosion and loss of topsoil would be less than significant. Impacts of the project in relation to surface fault rupture, earthquake ground shaking, liquefaction, subsidence, expansive soils, mass wasting, tsunami, seiche, landslide, lateral spreading, and subsidence would be less than significant.	No mitigation measures are required.	No residual impacts would occur.
Paleontological Resources	The proposed project would involve grading and excavation in formations considered to have moderate and high sensitivity for fossil remains. The project would also involve construction in close proximity to areas documented to contain fossil remains. Therefore, grading associated with the proposed project has the potential to result in impacts to paleontological resources. This impact would be significant. **(PR 1)**	To mitigate potentially significant impacts to paleontological resources, the Water Authority shall implement the following mitigation measures: **PR 1-1** The following measures shall be carried out by a qualified professional paleontologist: ▪ Existing bedrock outcrops and (possibly) excavation of test trenches shall be inspected for fossil remains. ▪ Surface collection of discovered fossil remains shall be conducted via simple excavation of exposed specimens and possibly plaster-jacketing of large and/or fragile specimens or more elaborate quarry excavations of richly fossiliferous deposits. ▪ Stratigraphic and geologic data shall be recovered to provide context for recovered fossil remains. These data will typically include a description of lithologies of fossil-bearing strata, measurement and description of the overall stratigraphic section, and photographic documentation of the setting.	No residual impacts would remain after implementation of the proposed mitigation measures.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Paleontological Resources continued		▪ Laboratory preparation of collected fossil remains shall be conducted for potentially significant or unique finds. ▪ Prepared significant or unique fossil remains shall be cataloged and identified. ▪ Cataloged fossil remains shall be transferred for storage to an accredited institution. ▪ A final report summarizing the findings from the laboratory and field, stratigraphic units inspected, types of fossils discovered, and the significance of the curated collection shall be prepared.	
Public Safety and Hazardous Materials	MTRP was once part of Camp Elliott, a military training area, and has been identified as potentially having unexploded ordnance from the historic military use. Therefore, the impact of potential exposure of construction and maintenance workers to hazardous materials in the soil and/or unexploded ordnance would be significant. **(Impact PS 1)** The potential for people or structures to be exposed to risk of loss, injury or death involving wildland fires due to the project would be significant. **(Impact PS 2)**	To mitigate the impacts of potential soil contamination and unexploded ordnance to construction workers, the Water Authority shall implement the following mitigation measures: **PS 1-1** Before completion of final design plans and specifications, all proposed project construction areas shall be investigated to determine if there is a record of hazardous materials contamination (Phase I Environmental Site Assessment). If so, the Water Authority shall characterize the site(s) according to the nature and extent of soil contamination, and determine the need for further investigation and/or remediation of the soils conditions on the contaminated site. **PS 1-2** If warranted, a Phase II investigation shall be conducted. The Phase II investigation shall, at a minimum, involve soil sampling. Should further investigation reveal high levels of hazardous materials in the site soils, mitigate health and safety risks according to County Department of Environmental Health and Regional Water Quality Control Board regulations. This will include site-specific health and safety plans prepared prior to construction. **PS 1-3** Prior to the start of construction, a qualified contractor shall survey all project construction sites, including access roads in MTRP, for the presence of unexploded ordnance. The survey shall include identification of potential unexploded ordnance locations and a determination of the presence or absence of unexploded ordnance in the area. Once the survey is completed, a qualified contractor shall arrange for the removal of any unexploded ordnance found. In addition, the unexploded ordnance contractor shall provide training, as needed, to construction contractors related to the identification of unexploded ordnance.	No residual impacts would remain after implementation of the proposed mitigation measures.

Table ES-1. Continued

Environmental Topic	Potential Impacts	Mitigation Measures	Level of Significance Following Mitigation
Public Safety and Hazardous Materials continued		To mitigate the potential wildland fire risk, the Water Authority shall implement the following mitigation measures: **PS 2-1** Prior to approval of final design plans and specifications, a Fire Prevention Program shall be developed in consultation with the Fire Marshal for each component of the proposed project. The program shall address fire prevention for the construction period and for long-term maintenance activities. **PS 2-2** Prior to completion of construction, an Emergency Response Plan (ERP) shall be developed by the Water Authority (facility operator) in coordination with the County Office of Emergency Services, the County Environmental Health Department, and the appropriate Fire Protection District.	
Utilities and Public Services	Impacts on public utilities and services would be less than significant.	No mitigation measures would be required.	No residual impacts would occur.

SECTION 1.0
INTRODUCTION

1.1 PROJECT BACKGROUND

The San Diego County Water Authority (Water Authority) prepared a Draft Regional Water Facilities Master Plan (Master Plan) in 2003 to evaluate the ability to provide a safe and reliable water supply to its member agencies. The Master Plan recommends additional facilities and improvements to existing facilities in order to effectively meet the Water Authority's mission through 2030.

The Master Plan encompasses a region-wide planning effort, incorporating three interrelated components: water demands, water supplies, and facilities. Facility planning began with estimating future water demands, proceeded to the identification of water supplies and their reliability, and then defined facilities needed to treat and transport the supplies to the points of demand. This planning process was iterative in nature and computer simulations were employed to model facility alternatives that supplement the Water Authority's current system. The planning process resulted in the identification of ten projects to expand internal system capacity, eight projects to supplement treated water aqueducts, two projects for new conveyance and supply, and one project to provide additional seasonal/carryover storage capacity. The Mission Trails Flow Regulatory Structure (FRS) II, Pipeline Tunnel, and Vent Demolition Project (proposed project) is one of the ten projects proposed to expand internal system capacity.

The proposed project was evaluated at the program level in the Final Program Environmental Impact Report for the Regional Water Facilities Master Plan, which was certified by the Water Authority's Board of Directors on November 20, 2003 and is available for review at the Water Authority's headquarters at 4677 Overland Avenue, San Diego, CA 92123, and on the Water Authority website. The Program Environmental Impact Report (PEIR) evaluated three region-wide alternatives for conveying water supplies to meet customer demands. The new facilities and modifications that would be needed to treat and transport water supplies were analyzed at a general level, with the intent that project-specific environmental documentation would be prepared for each of the proposed components. The proposed project is necessary at this time to allow for increased transmission capacity to downstream water treatment plants and to provide additional operating flexibility. The tunnel portion of the proposed project must be below the hydraulic grade line and is needed to lower the hydraulic grade line to provide increased flow through Mission Trails Regional Park (MTRP). The proposed FRS would provide flow control for a maximum of 18 million gallons (mg).

1.1.1 Existing Water Supply System

The Water Authority purchases water from the Metropolitan Water District of Southern California (MWD) and delivers it to 23 member agencies through five large-diameter pipelines. Water in these pipelines flows by gravity from north to south. The pipelines are in two north-south easement corridors, or easements, called the First and Second Aqueducts. Three water pipelines currently cross MTRP within the Second Aqueduct easement, which is 130 feet wide.

Pipelines 3 and 4 carry untreated ("raw") water and Pipeline 4B carries treated water. The untreated water in Pipeline 3 is delivered to Lower Otay Lake. Pipeline 4 conveys water to the City of San Diego's Alvarado Water Treatment Plant. Figure 1-1 provides a schematic of the Water Authority's aqueduct system in the project area.

Treated water flowing in Pipeline 4B-II is obtained from MWD's Lake Skinner Water Treatment Plant in Riverside County and delivered to southern San Diego County member agencies for direct delivery to their customers. In MTRP, Pipeline 4B-II is connected to an existing 18-mg, buried Flow Regulatory Structure (FRS I), or covered water tank, which is used to regulate the flow of treated water to the south. This facility was built in the mid-1990s adjacent to the west side of the Second Aqueduct easement, approximately 800 feet southeast of Corte Playa Catalina. There is an aboveground, fenced control building located on top of the covered water tank.

Vent structures, which consist of vertical shafts connecting the buried pipelines to the open air, are located at major high points along the alignment and function as hydraulic control points. Other smaller facilities, such as blow-off valves, are also on existing pipelines to drain the pipes for maintenance. One major vent, called Miramar Hill, is located near Interstate 15 (I-15) and Mercy Road and sets the "maximum" hydraulic condition to the south. As the three pipelines in the Second Aqueduct easement traverse the west Fortuna Ridge, they cross a series of five hills and valleys. A vent is located on each of the two untreated water pipelines on each hill. The vents are large cylinders that extend above ground at various heights. The vents are called the Elliot Vents, and each pair is identified as #1 through #5, from north to south (Figure 1-2). Elliot Vent #5 is the tallest pair of structures; these highly visible light blue cylinders are prominently located on a hill due east of the Clairemont Mesa Boulevard park entrance. Between Elliot Vents #4 and #5 there is a buried vault called a "flow balancing structure" which allows the Water Authority to transfer flow from Pipeline 4 to Pipeline 3. The proposed project would affect a portion of Pipelines 3 and 4 in MTRP and the vents and smaller structures on these pipelines.

1.2 PURPOSE AND USE OF THE EIR

This project-level Environmental Impact Report (EIR) has been prepared by the Water Authority, acting in its capacity as Lead Agency pursuant to the California Environmental Quality Act (CEQA), as amended, and the State CEQA Guidelines. This document evaluates the environmental impacts identified as potentially significant by community members, agencies, the Water Authority, and its consultants. The EIR process and the information it generates will be used for the following purposes:

- To give government officials and the community the opportunity to have input into the decision-making process;
- To provide agencies with information necessary to determine if they have jurisdiction over some aspect of the project, and, if so, to identify project permitting requirements;
- To assist the community in understanding the expected project-related environmental effects and how decision makers plan to respond to and mitigate these effects; and

- To develop mitigation measures that reduce or eliminate the potential for environmental, public health, and safety impacts.

1.3 SCOPING PROCESS

The Water Authority circulated a Notice of Preparation (NOP) for the proposed project on April 15, 2005. The 30-day public review period for the NOP ended May 15, 2005.

An Open House and Scoping Meeting was held at the Water Authority office at 4677 Overland Avenue on April 19, 2005 from 6:30 PM to 8:00 PM. The purpose of the public meeting was to provide the public and governmental agencies with information on the proposed project and the CEQA process, and to give attendees an opportunity to identify environmental issues and alternatives that should be considered in the Draft EIR.

One person spoke at the Scoping Meeting and expressed concern that Renovo Way and Seda Drive not be used by the Water Authority for construction access as had previously been agreed during the FRS I project (a copy of the meeting transcript is included in Appendix A).

Scoping Comment Forms were also available for those attendees interested in providing written comments on the scope of issues to be addressed in the Draft EIR. Attendees were invited to mail their comments to the Water Authority no later than May 4, 2005, or leave them with Water Authority staff following the meeting to ensure that their concerns could be addressed in the Draft EIR. Two comment forms were left with Water Authority staff following the scoping meeting.

Fourteen letters or e-mail messages were received during the NOP public scoping process from public agencies and private citizens. Comment letters, e-mails, and comment forms received are included in Appendix A. The input received from the CEQA scoping process assisted the Water Authority in identifying the range of actions, alternatives, issues, and potential effects associated with the proposed project. All issues raised in the Scoping Meeting were reviewed by the Water Authority and the environmental team to determine the appropriate consideration and level of analysis.

1.4 DOCUMENT ORGANIZATION

This EIR is divided into eleven sections starting with an Executive Summary and proceeding through Section 1.0 Introduction (this section), Section 2.0 Project Description, Section 3.0 Environmental Analysis, Section 4.0 Cumulative Impacts, Section 5.0 Growth Inducing Effects, Section 6.0 Other Mandatory Considerations, Section 7.0 Alternatives, Section 8.0 Organizations and Persons Consulted, Section 9.0 List of Preparers, and Section 10.0 References. Tables are found throughout the text of each section while figures are included at the end of each section or subsection. The Notice of Preparation (Appendix A), Traffic Technical Report (Appendix B), Air Quality Technical Report (Appendix C), Noise and Vibration Technical Report (Appendix D), Biology Technical Report (Appendix E), and Cultural Resources Technical Report (Appendix F) are bound in a separate volume.

1.5 INCORPORATION BY REFERENCE

This EIR provides project-level analysis of a capital improvement project identified in the Master Plan, which was the subject of a PEIR (SCH #2003021052) prepared by the Water Authority. The Final PEIR identified a number of potential environmental effects and provided a series of potential mitigation measures to be implemented during the project-level environmental review, construction, and operation of individual capital improvement projects. Therefore, this EIR hereby incorporates by reference the Master Plan PEIR per CEQA Guidelines §15150. All relevant sections of the PEIR have been referenced, repeated, or summarized in this EIR. The Master Plan PEIR is available for review on the Water Authority's website (http://www.sdcwa.org) or at the Water Authority offices at 4677 Overland Avenue, San Diego, California 92123.

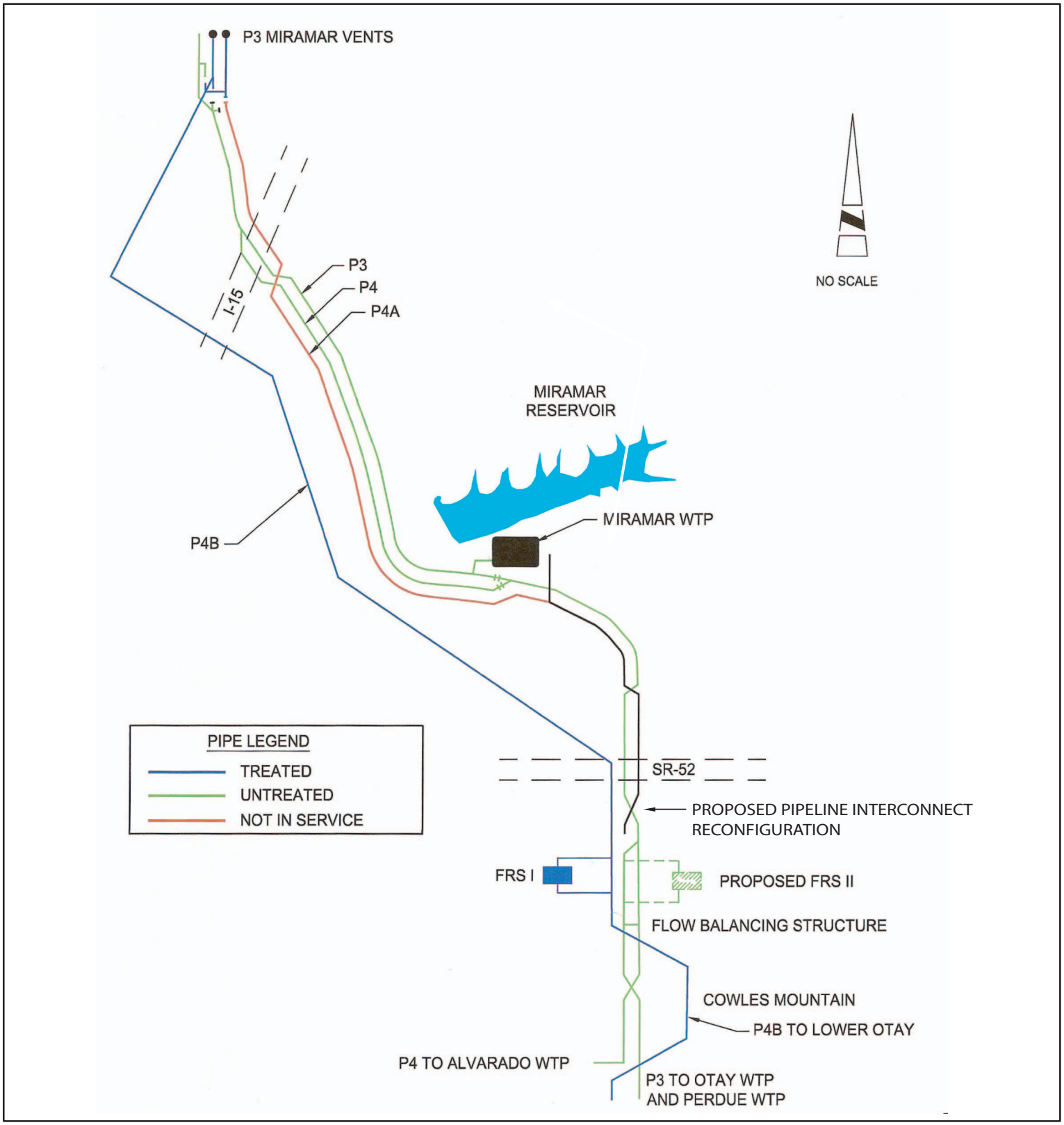
The proposed project is very similar to portions of the Pipeline 4B I and 4B II projects, and to the FRS I project proposed by the Water Authority in 1991 – 1993 and constructed in 1995. Therefore, the Final EIR for the Water Authority Pipeline 4B Phase II (SCH #90011102); Addendum to the Final EIR for the Water Authority Pipeline 4B, Phase II Flow Regulatory Structure (SCH #90011102); and Draft Supplemental EIR Flow Regulatory Structure for Pipeline 4B, Phase II (SCH #93021011) are hereby incorporated by reference. The relevant and appropriate sections of these previous environmental documents have been referenced, repeated, or summarized in this EIR. In general, these reports were used to document baseline conditions for issues such as geology, paleontology, cultural resources, and pre-Cedar Fire biological resources.

1.6 AVAILABILITY OF THE EIR

The Draft EIR will be subject to a 45-day public review period. Interested individuals, organizations, and agencies can provide written comments on the document during this review period. During the public review period, the Draft EIR will be circulated for review by trustee and responsible agencies. Responsible agencies are those agencies, other than the Lead Agency, that have discretionary approval over the proposed project. Trustee agencies are those agencies that have jurisdiction by law over natural resources affected by the proposed project which are held in trust for the people of the State of California. Publication of this Draft EIR marks the beginning of the 45-day public review period. Written comments will be received by the Water Authority at the following address:

Mr. Mark Tegio
Water Resources Specialist
San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123-1233
Telephone: (858) 522-6753
Facsimile: (858) 268-7881

Copies of the Draft EIR will be made available to the public at the Water Authority's office and on the Water Authority's website (www.sdcwa.org) and public libraries in the project area.



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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Regional Water Authority Facilities

Figure 1-1

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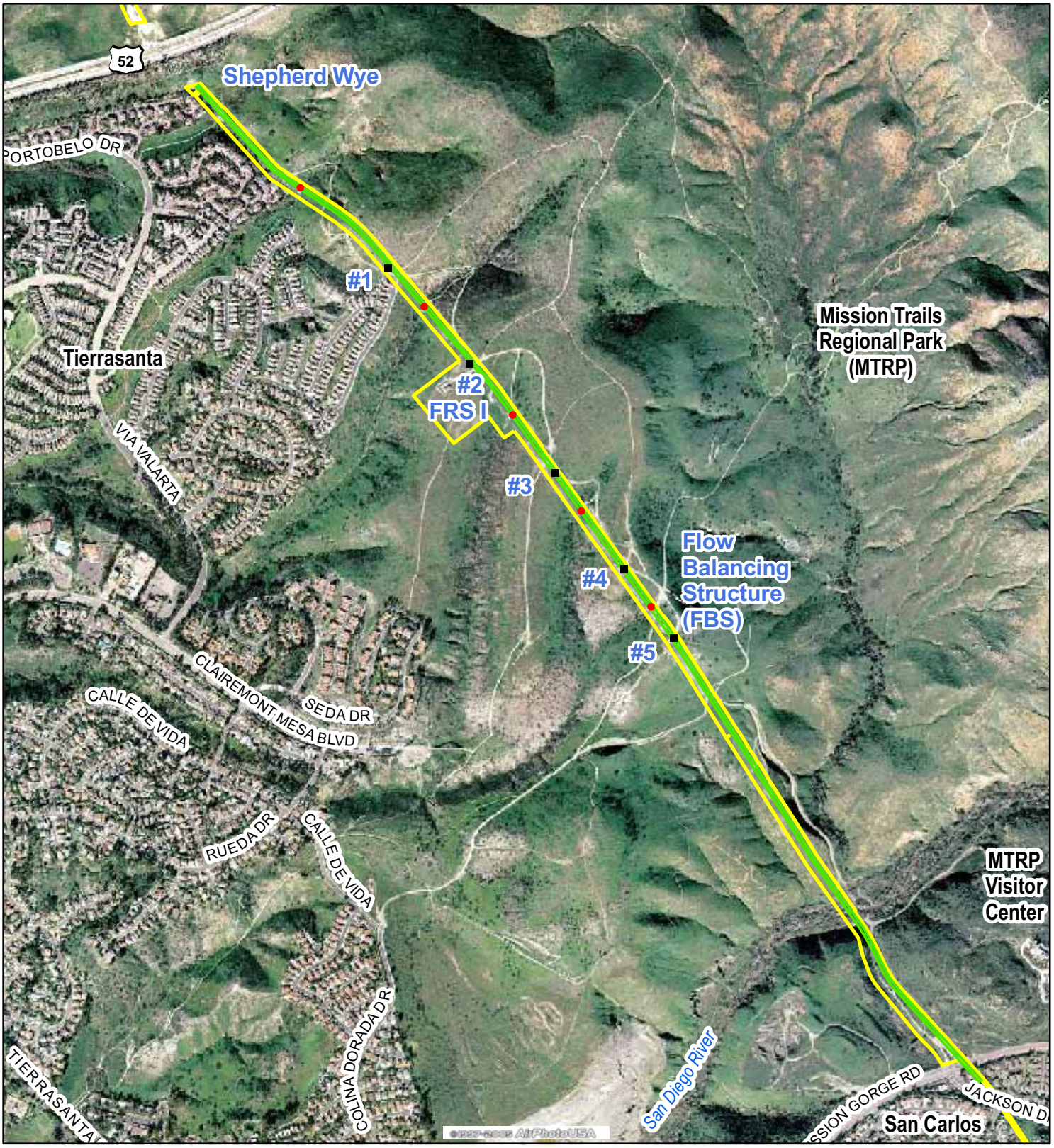

Legend

- SDCWA Right-of-Way
- Pipelines 3 and 4
- Elliott Vents
- Blow Off

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Feet

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

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Date: Mar 03, 2006

San Diego County Water Authority

Existing Water Authority Facilities in MTRP

Figure 1-2

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SECTION 2.0
PROJECT DESCRIPTION

This section describes the project location and environmental setting, project objectives, each of the project components, project operations, project design features, and the discretionary actions and approvals required for implementation of the proposed Mission Trails FRS II, Pipeline Tunnel and Vent Demolition Project (proposed project). The project includes all activities necessary for the construction and operation of an up to 18-mg, belowground reservoir, associated pipeline tunnels and staging areas; the demolition of existing vent structures; and the construction of a stabilized crossing of the San Diego River.

2.1 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The project site is located within the northwestern portion of MTRP, just east of the Tierrasanta community, within the City of San Diego (Figure 2-1). State Route 52 (SR-52) is just north of the northern project boundary and Mission Gorge Road forms the southern project boundary. Interstate 15 (I-15) is 2.8 miles to the west. The proposed project is located within Township 15S, Range 2W, on the United States Geological Survey (USGS) 7.5-minute, La Mesa, CA quadrangle topographic map, as shown on Figure 2-2. On-site elevations range from 180 to 820 feet above mean sea level (AMSL) with the lowest elevation at the San Diego River and the highest elevations at the FRS II site, which range from 760 AMSL in the northwest to 820 feet AMSL in the southeast. Along the tunnel alignment, elevations rise and fall as the proposed tunnel passes under canyons and ridges. Elevations range from 550 AMSL in the canyon at the northern end, to a high of approximately 820 feet AMSL at the North Ridge and South Ridge. At the southern end of the proposed tunnel, the ground elevation is approximately 700 feet AMSL. The project study area encompasses approximately 155 acres within MTRP, including areas proposed for new aboveground facilities, and existing developed and undeveloped areas that would be used as staging areas and access roads (Figure 2-3). Truck routes through the Tierrasanta community to SR-52 and I-15 include Clairemont Mesa Boulevard, Portobello Drive, Via Valarta, Antigua Boulevard, and Santo Road. Rueda Drive and Calle de Vida would be used on a limited basis (less than 40 trips per day) for oversized vehicles unable to use the bridge in MTRP at the eastern end of Clairemont Mesa Boulevard.

The project area is in the western portion of the Peninsular Ranges geomorphic province of southern California, which is characterized by northwest trending mountain ranges, valleys, and fault zones. As is all of southern California, the project site is within a seismically active region. Geologic formations consist of Santiago Peak Volcanics at the North Portal area; Mission Valley Formation, Pomerado Conglomerate, and Friars Formation at the FRS II site and along the tunnel alignment; and alluvium at the San Diego River in Mission Gorge. Santiago Peak Volcanics are very hard and typically require blasting to excavate. All other geologic formations that would be encountered consist of cobbles with interbeds of sandstone, siltstone, and claystone. There are no known major or active faults on or in the immediate vicinity of the project site. The Rose Canyon Fault is within 8.3 miles of the project site. While not in the immediate vicinity, it is close enough to be of design consequence, as it would generate the most credible earthquake from a design standpoint. On-site soils consist of gravelly loams, cobbly loams, and riverwash.

The project area is within the San Diego River watershed. With the exception of the stabilized crossing of the San Diego River, substantial groundwater is not anticipated during tunnel or FRS II construction.

The project site is located in the San Diego Air Basin (SDAB). The boundaries of the air basin are coincident with those of San Diego County. The climate of San Diego County is profoundly influenced by the Pacific Ocean and its semi-permanent high pressure systems that result in dry, warm summers and mild, occasionally wet winters. Normal wind patterns include moderate to strong onshore winds during the day and weak offshore winds at night.

The proposed project would be located within urban open space that provides both habitat for native plants and animals and recreational opportunities for residents and visitors to the San Diego area. MTRP, dedicated as parkland in 1974, has become one of the largest urban parks in the United States encompassing nearly 5,800 acres situated only 8 miles northeast of downtown San Diego. MTRP features over 40 miles of trails, boating on Lake Murray, camping at the Kumeyaay Lake Campground, numerous informative hikes, and a state-of-the-art Visitor and Interpretive Center.

MTRP includes lands originally used by the Kumeyaay Indians and features the site of the Old Mission Dam, built to store water for the Mission San Diego de Alcala. The northwest corner of MTRP, where the proposed project would be located, features a series of ridges and valleys covered with Diegan coastal sage scrub and southern mixed chaparral. The San Diego River crosses the Second Aqueduct at the southern end of the project area. This area is dominated by southern willow riparian scrub. All vegetation north of the San Diego River burned in the Cedar Fire in October 2003. Access roads and easements associated with the Water Authority's existing Second Aqueduct and San Diego Gas & Electric (SDG&E) high voltage power lines traverse this corner of the park, as does a network of hiking/biking/equestrian trails.

The Mission Trials Regional Park Master Plan, which was adopted in 1985, identifies five major geographical areas of the park. The project site is located within West Fortuna Mountain area, with the stabilized crossing of the San Diego River within the Mission Gorge area. In 1997, the City of San Diego adopted the Multiple Species Conservation Program (MSCP) Subarea Plan, which includes the project site and all of MTRP in the Eastern Area Multi-Habitat Planning Area (MHPA), as part of the hard line preserve for biological purposes. Portions of the park are developed with active and passive recreational uses, with large areas retained as undeveloped open spaces. Surrounding land uses include residential development to the west in Tierrasanta and to the south in San Carlos and Navajo, the Marine Corps Air Station Miramar to the north (on the north side of SR-52), and the East Fortuna Mountain portion of MTRP to the east.

2.2 PROJECT OBJECTIVES

The proposed project, which would increase the Water Authority's ability to transport raw water to water treatment plants south of MTRP, is necessary to meet increased demands for untreated water in the south county area. Specifically, the City of San Diego and the Sweetwater Authority are currently undertaking several water treatment plant expansion projects to meet public demands and the Water Authority must increase delivery capabilities to match the increased

water treatment capabilities. The City of San Diego anticipates completion of the Miramar and Alvarado water treatment plant expansions by 2009 and the Otay Water Treatment Plant by 2030. The Sweetwater Authority plans to complete expansion of the Perdue Water Treatment plant by 2030.

The primary objective of the proposed project is to provide additional regulatory storage and improved flow control and capacity for raw water in response to future increased demands from water treatment plants in the south county area. Hydraulic modeling of the Water Authority's raw water system has identified a bottleneck in the flow through MTRP where Pipelines 3 and 4 cross Fortuna Ridge. This bottleneck restricts flows from Miramar Hill in the north and, without the proposed project, would prevent the Water Authority from meeting near-future demands of the water treatment plants to the south. The proposed project would eliminate this bottleneck through the construction of a single, approximately 13-foot-diameter tunnel within which an up to 96-inch-diameter steel pipeline would be installed. The pipeline tunnel would replace parallel sections of Pipelines 3 and 4, which are the two raw water pipelines that traverse MTRP. The pipeline tunnel would also lower the hydraulic grade line to provide increased flow through MTRP. The proposed pipeline tunnel would connect to the proposed FRS II, which would provide up to 18 mg in storage capacity for times when member agencies reject flow, and would provide stored water to continue deliveries when there is an interruption in flow from the north. In other words, the proposed project would increase flow capacity and would allow the Water Authority to better regulate the flow of raw water through MTRP.

A secondary project objective is protection of the aqueduct system from an anticipated higher frequency of service interruptions once the Second Aqueduct pipelines to the north are converted from a gravity flow system to a partially pumped system. This conversion will occur at the completion of the San Vicente Tunnel and Pump Station project and the Rancho Penasquitos Pressure Control/Hydroelectric Facility project, currently scheduled for 2008. The post-project flow capacity of the raw water pipelines would be 686 cubic feet per second (cfs) south of the Miramar Vent and 353 cfs south of the Miramar Water Treatment Plant.

Other project objectives are to reduce the visual impacts of Water Authority structures within MTRP through the removal of existing vent structures and to stabilize an existing road crossing of the San Diego River adjacent to the Water Authority's right-of-way in Mission Gorge.

The specific project objectives are to:

- Eliminate hydraulic bottlenecks in Pipelines 3 and 4 for untreated water.
- Increase the water deliveries to water treatment plants under expansion.
- Improve pipeline operations by reducing spills.
- Provide short-term operational storage to meet unplanned outages.
- Remove most of the vents across MTRP; and,
- Stabilize existing crossing of San Diego River and improve surface of existing dirt roads to improve Water Authority, Park Ranger, Fire, Police, and Emergency vehicular access

to MTRP, from south of the San Diego River to north of the San Diego River, to facilitate inspections and maintenance.

2.3 PROJECT COMPONENTS

The proposed project consists of two major components: the FRS II, and large-diameter inlet and outlet pipelines installed within tunnels. In addition, many of the vents within the affected reach of Pipelines 3 and 4 would be removed or replaced with much smaller air release/vacuum valves, as would several blow-off valve structures, which are grouped as "appurtenances." Finally, the project includes the construction of a stabilized crossing of the San Diego River to facilitate operations and maintenance, including improved access for emergency pipeline repairs. Locations of these project components are shown on a recent aerial photo of the project area (Figure 2-4). Additional areas of disturbance, such as tunnel portals, staging areas, and access roads, are discussed in Section 2.4, Project Construction.

2.3.1 Flow Regulatory Structure

The proposed FRS II would consist of an up to 18-mg buried reservoir, an aboveground control building, and appurtenant facilities. Site grading layout for the FRS II facility is shown on Figure 2-5. The FRS II would be constructed on a 12.78-acre parcel known as the Elliott 4 Parcel (APN 371-010-1500), which is currently owned by the San Diego Unified School District (SDUSD). With the elimination of the Jackson Drive Extension from the City of San Diego Circulation Element in the early 1990s, the parcel is no longer considered viable for a school site. The site is located approximately 400 feet northeast of the existing FRS I site and was considered in 1993 as an alternative location for the FRS I. The rectangular parcel measures approximately 655 feet by 850 feet and is located just east of the Water Authority's 130-foot-wide Second Aqueduct easement. Ground elevations range from 760 feet AMSL in the northwest to 820 feet AMSL in the southeast.

Buried Reservoir

The buried reservoir would consist of a concrete structure measuring up to 296 feet by 392 feet, with an overall height of up to 28 feet from floor to roof, depending on the slope of the floor and roof. All of the reservoir would be buried (Figure 2-5). Inside the structure would be two basins, up to 9-mg each, which would allow one basin to be taken out of service for maintenance while the other basin remains in service. Each basin would contain an overflow structure at elevation 792 feet AMSL to prevent accidental filling to a point that the basins would pressurize. The overflow structure would be designed for the full design flow into the structure. Such emergency overflow would be conveyed by a pipeline to the canyon on the north side of the buried reservoir. An energy dissipater would be constructed at the end of the pipeline to prevent erosion of the canyon in the event of an emergency overflow situation. The pipeline outlet and energy dissipater would be located within the Water Authority's existing 130-foot-wide Second Aqueduct easement. A 2-foot-thick layer of soil, vegetated with a native plant mix, would be placed on top of the buried reservoir structure following construction.

Access/Control Building

An aboveground access/control building associated with the buried reservoir would house the control room and access room. The access/control building would be located at the south edge of the buried reservoir. The building would measure approximately 20 feet by 50 feet, and would be a maximum of 10 feet high. The entire structure would be surrounded by an 8-foot-high security fence, which would be accessed by workers through a gate. A vegetated, earthen berm would be placed around the building to partially screen public views by residents to the west and park users. Figure 2-6 presents a computer simulation of the proposed access/control building.

The control room is the main room of the building. It would serve as the primary entrance to the building and contain the Supervisory Control and Data Acquisition (SCADA) equipment and other control equipment. The access room would be located adjacent to the control room and would be the only personnel entrance to the reservoir basins. A stairway from this room would lead into each reservoir basin for maintenance and access for testing. Equipment hatches in the roof would be used for placing equipment in the basins and removing material. The separate valve vaults would house the large valves that would isolate the basins from water entering and leaving the basins.

Electric and communication utilities are available in the residential area immediately west of MTRP along Corte Playa Catalina. SBC/Pac Bell provides telephone service to the existing FRS I facility. It is anticipated that a similar service would be sufficient for the proposed FRS II facility. Both SDG&E and SBC have confirmed that there is sufficient capacity in their systems to serve the proposed FRS II site. New conduit would be required along the Second Aqueduct right-of-way from Corte Playa Catalina to the FRS II site. The distance would be approximately 1,400 feet to the FRS II site for both conduits. The conduits would be buried and located within the existing Second Aqueduct right-of-way.

Exterior lights would be provided at all aboveground structures. All exterior lights would be shielded to prevent glare and exposure to the nearby residents and would only be used when workers were present. Routine inspections and maintenance would be conducted during daylight hours. Workers would only be present at the structure after dark in the event of an emergency.

Landscape planting would be limited to a native seed mix designed to grow with no irrigation once it is established. Areas that would be planted include cut and fill slopes and all other areas disturbed by construction of the FRS II components. The intent of the revegetation would be to prevent erosion and visually blend all improved areas with the surrounding natural vegetation following construction.

FRS II On-Site Piping

The inlet piping bringing water into the reservoir from the north would consist of a buried welded steel pipe up to 96 inches in diameter that would branch into two 72-inch-diameter steel pipes. At the maximum flow rate of 353 cfs, the velocity in a 96-inch-diameter pipeline would be 7.0 feet per second (fps). The 72-inch-diameter pipes would enter the FRS II reservoir

through the inlet valve vault. The outlet piping would exit the structure to the south in two 72-inch-diameter steel pipes. All pipelines would be mortar lined and plastic-tape wrapped and mortar coated. The overflow pipe could be a concrete pipe or a welded steel pipe with a plastic-tape wrap and cement mortar coating. Since this pipeline is not anticipated to be used except in an emergency, it also would be epoxy lined to prevent potential damage to cement mortar lining that is caused by the mortar drying in an empty pipe.

2.3.2 Pipeline Tunnels

The proposed new pipelines would replace approximately 5,000 feet of existing Pipelines 3 and 4 in MTRP with a single 96-inch-diameter welded steel pipeline. The vertical alignment of the new inlet and outlet pipelines in the tunnels would be designed without localized high or low points. This means that instead of following the contours of the West Fortuna Mountain area of MTRP with its series of five ridges and valleys, the inlet pipeline tunnel would follow a continuous grade from the North Portal up to the FRS II inlet shaft, and the outlet pipeline tunnel would follow a continuous grade from the FRS II outlet shaft down to the South Portal. The elimination of the ups and downs of the existing Pipelines 3 and 4 would increase the flow capacity of the alignment, as would the increased pipe diameter. The pipeline tunnels would require vents at the inlet and outlet connection shafts adjacent to the FRS II. Existing blow-offs would be used at the portals/tie-ins. The alignment and profile of the inlet tunnel and outlet are shown on Figure 2-7. The total length of tunnel for the proposed project would be approximately 4,800 feet. The difference in length between the pipeline tunnel and the abandoned existing pipeline would consist of trenched pipelines at the North and South Portals that would connect the new pipeline tunnel to the existing pipelines.

The pipelines would be placed in tunnels that would be constructed belowground, except at the North and South Portals and the inlet and outlet shafts adjacent to the FRS II. The tunnel portals are the locations where construction equipment and excavated material would enter and exit the tunnel. The inlet and outlet shafts are the locations where the pipeline tunnel would connect to the FRS II via on-site piping. The tunnel portals would be located just east of the Water Authority easement, on City of San Diego property. The inlet shaft would be located within the footprint for the FRS II, on the property that would be purchased from SDUSD. The outlet shaft would be located outside the school district property, on land owned by the City of San Diego. The vent structures and blow-off structures are within the Water Authority Second Aqueduct easement.

The excavated tunnels are proposed to be approximately 13 feet in diameter. The two tunnel segments would be constructed from the North and South Portals, moving toward the FRS II inlet and outlet shafts. The North Portal would be located just west of the Second Aqueduct easement near the Portobelo Drive access point. The South Portal would be located just west of the Second Aqueduct easement between Elliott Vents #4 and #5.

The North Portal construction staging area would impact an area of approximately 4.5 acres, extending from the portal site to the intersection of an existing dirt road with the Portobelo Drive entrance. The South Portal construction staging area would impact an area of approximately 1.3 acres extending from Elliott Vent #4 to the pipeline connection point near Elliott Vent #5. The

permanent portal footprints would each consist of a 6-foot-diameter lid on an accessway to the buried insulating flange, if an insulating flange is required, at each pipeline connection point.

The inlet and outlet tunnels would terminate at the FRS II reservoir in 12-foot-diameter vertical tunnel shafts constructed near the reservoir. The construction area for the inlet (northern) shaft would be within the SDUSD property. The construction area for the outlet (southern) shaft would be outside of the SDUSD property, and would encompass an area measuring approximately 150 feet wide by 200 feet long. Permanent shaft footprints would consist of 25-foot by 25-foot concrete pads on the ground surface to be an access point for the 12-foot by 12-foot belowground vault extending to the pipeline tunnel. The shafts would lead to permanent 20-foot deep vaults above the pipeline tunnels.

The tunnels would be designed as pressure tunnels and would require watertight linings that would be installed after excavation. The support system for the tunnel lining could consist of the following types of lining methods:

- Rock reinforcement: resin, cement grouted, and friction rock bolts coupled with surface treatment of shotcrete or other materials to stabilize poor quality closely jointed rock. Effective for supporting tunnel in Santiago Peak Volcanics excavated using drill and blast method. Santiago Peak Volcanics are found at the North Portal and are anticipated for the first 200 to 1,000 feet of tunnel. The drill and blast method of excavation consists of the drilling of holes into the solid rock and the use of explosives to fracture the rock. The rock pieces are then excavated using standard low-profile excavators and loaders designed for use within tunnels.

- Steel ribs: wide flange beams bolted at plate connections to form a complete rib in a horseshoe or circular shape; lagging consisting of timber, steel channels, shotcrete, and liner plates can be installed in between adjacent ribs. Effective for supporting tunnel in Mission Valley Formation and Pomerado Conglomerate excavated by a roadheader or a roadheader with a shield, and in Santiago Peak Volcanics excavated by drill and blast method. Shield excavation involves the use of a steel liner to prevent tunnel collapse during excavation with standard excavation equipment while a roadheader is like a giant drill bit that cuts through the earth. The roadheader that would be used for the proposed project would be electrically powered from a trailing electric cable. Power would be supplied by diesel generators located at the tunnel portal staging areas or from a power drop from SDG&E.

- Shotcrete: concrete sprayed onto the rock surface through a hose and nozzle. Effective for supporting tunnels in Mission Valley Formation and Pomerado Conglomerate excavated by a shield or roadheader, and in Santiago Peak Volcanics excavated by drill and blast method.

- Liner plate: Thin, rectangular curved steel plates installed in a circular ring and bolted together, with the annular space between the plates and the tunnel walls filled with cement grout. Effective for sedimentary formations excavated using a shield.

- Expanded precast concrete segments: Rings of reinforced concrete placed using hydraulic jacks. Effective for Mission Valley Formation and Pomerado Conglomerate excavated using a shield.

2.3.3 Vent Removal

The proposed project would allow most or all of the existing highly visible vent structures in MTRP to be removed or replaced with a less visually obtrusive structure. Some vents would be replaced with an air release/vacuum structure. The planned action for each vent is as follows:

- Elliot Vents #1, #2, and #3 on Pipelines 3 and 4 would be removed.
- Elliot Vent #4 on Pipelines 3 and 4 would be removed. This pair of vents would be replaced with air release/vacuum structures per Water Authority Standard Drawing SD-3. The air release/vacuum structures would be concrete boxes or cylinders up to 10 feet square and extending up to 3 feet above the ground surface.
- Elliot Vent #5 on Pipeline 3 would stay at its present location or may be replaced with an air release/vacuum structure.
- Elliot Vent #5 on Pipeline 4 would be removed and replaced with an air release/vacuum structure.

2.3.4 San Diego River Crossing

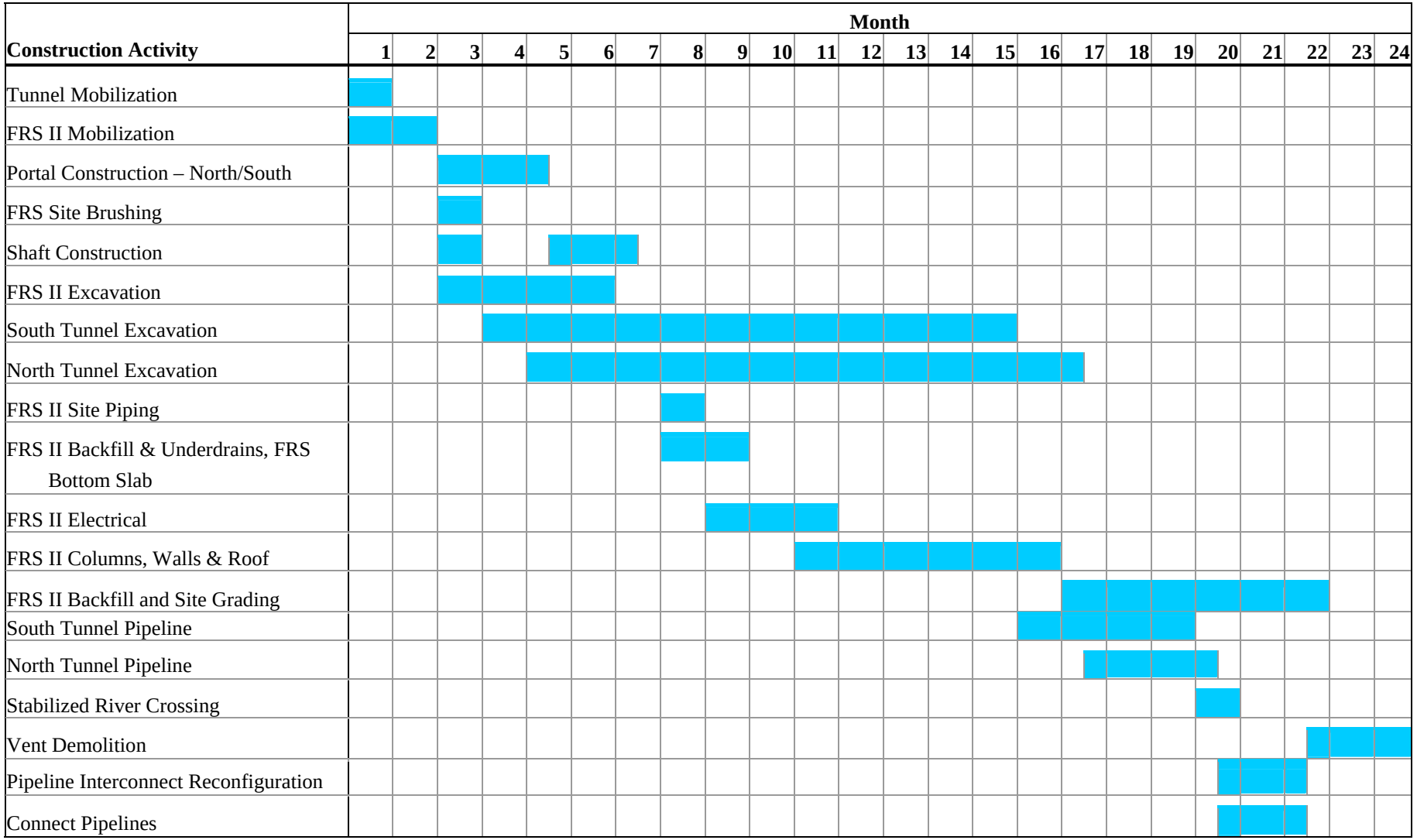
The proposed project would include construction of a stabilized crossing of the San Diego River at the location of an existing unimproved gravel road crossing. The stabilized crossing would facilitate site access for future operations, maintenance, and security patrol. The proposed stabilized crossing would be located upstream of Pipelines 3 and 4, outside of the Water Authority's right-of-way. Water Authority operations and maintenance personnel drive the Second Aqueduct access road on a daily basis to inspect facilities and perform routine maintenance. Increased maintenance activities for the FRS II and pipeline tunnel would require enhanced access to the site. Water flows in the San Diego River currently force Water Authority personnel, park rangers, and emergency vehicles to make a lengthy detour to access Mission Gorge Road from the park when the water is more than 12 to 18 inches deep, depending on the condition of the riverbed and banks. The crossing needs to be stabilized so that small trucks can cross the river during normal flows. The river would remain impassable during winter storm events and subsequent periods of high flow. The crossing would consist of a concrete slab at grade with the existing riverbed (Figures 2-8 and 2-9).

2.4 PROJECT CONSTRUCTION

2.4.1 General Schedule

A composite schedule of construction activity for the FRS II, pipeline tunnels, and appurtenances is presented in Table 2-1. This table shows the expected duration of each major construction activity. Overall, construction is expected to last approximately 2 years, with the level of

Table 2-1
Proposed Construction Schedule



intensity varying from high for the first 6 months during tunnel mobilization and FRS II excavation; to moderate for the 18 months during tunnel excavation, pipeline installation and FRS II construction; to low at the end of the project during vent demolition and pipeline connections. The general working time would be 7:00 a.m. to 7:00 p.m., Monday through Saturday. Construction at the South Portal would be 24 hours per day, 7 days per week for the duration of the project. Construction at the North Portal would be limited to 7:00 a.m. to 7:00 p.m., Monday through Saturday, with the exception of two, 10-day pipeline connection periods, one at the beginning of the project and one at the end, during which construction would be 24 hours per day.

2.4.2 Staging Areas

General staging for the proposed project would occur at the Clairemont Mesa Boulevard MTRP entrance, west of the bridge. Construction trailers and other support facilities not required at the portal or FRS II sites would be located in this staging area. Parking for crew/engineering vehicles would be allotted in this space as well, to minimize individual vehicles on park trails being used for hauling. It is anticipated that the entire Clairemont Mesa Boulevard park entrance area would be used for staging for the entire duration of construction. The location of the project staging areas is shown on Figure 2-4. The acreage for each staging area is shown on Table 2-2.

Table 2-2
Construction Staging Area Footprint Size

Location	Area (acres)
Clairemont Mesa Boulevard	2.4
North Portal	4.5
FRS II Site Inlet Shaft	0.8
FRS II Site	12.78
FRS II Site Outlet Shaft	0.8
South Portal	1.3
Vent Demolition Sites	0.25 each
Blow-off Demolition Sites	0.25 each
San Diego River Crossing	1.0

A staging area would be graded on the FRS II site for stockpiling of excavated soil, pipe, and other equipment and materials. The staging area on the FRS II site would be cleared and graded in accordance with environmental requirements to stockpile top soil. The site would then be fine graded to a level surface to provide 0.5 to 1.0 percent grade for site drainage. It is not anticipated that the contractor would pave the site. Erosion control measures would be required in accordance with the Stormwater Pollution Prevention Plan (SWPPP). At the conclusion of construction, the contractor would restore the site to the final topography shown in the construction documents. Completed topography would ultimately depend on the location of access roads. Areas temporarily disturbed on the FRS II site would be planted with native vegetation.

Staging areas would be similarly graded at each of the portal sites, and restored at the end of construction. Staging areas for the portals are shown on Figure 2-4. Vent demolition and blowoff abandonment activities would require staging areas approximately 150 feet by 150 feet around these points, all of which can be reached by existing park roads or the Water Authority easement. These areas would be restored to similar topography and planted with native vegetation at the end of construction.

2.4.3 Access Routes

Following an extensive study of road widths, slopes, and other considerations, the following routes to/from I-15 and SR-52 have been proposed for construction equipment and hauling of excavated material via trucks (see Figure 2-10):

- North Portal Construction Activities Ingress/Egress - east/west on Clairemont Mesa Boulevard from I-15, or east/west on Antigua Boulevard from Santo Road and SR-52, to Via Valarta and Portobelo Drive. From Portobelo Drive to North Portal via MTRP access point at Belsera.

- South Portal and FRS II Construction Activities Ingress/Egress - east/west on Clairemont Mesa Boulevard to MTRP access point at the end of the street, over the park bridge to South Portal and FRS II sites via existing MTRP roads.

An exception to the proposed access ingress and egress pattern is that equipment heavier than 60,000 pounds (30 tons) would not be brought into the construction areas in MTRP via the park bridge, because the posted weight limit on the bridge is 30 tons. Large equipment, such as track-type tractors, track loaders, excavators, dozers, scrapper, cranes, and end dump trucks, would be brought into and out of the MTRP South Portal and FRS II sites via the Calle de Vida MTRP access point, following Calle de Vida and Rueda Drive to/from Clairemont Mesa Boulevard. This type of equipment would generally come into the sites for the duration of their use in construction, and then be removed. Such heavy equipment would not be entering and leaving the sites on a frequent basis.

The Clairemont Mesa Boulevard entrance and bridge and the Portobelo Drive access road used for construction ingress and egress and associated activities would be closed to MTRP patrons during project construction. This is because tunnel construction would be possible 24 hours per day, 7 days per week, for months at a time and public safety must be maintained. The Calle de Vida entrance to MTRP would remain open during project construction with access restricted only while trucks and equipment are present. All park entrance points, roads, and trails would be reopened at the earliest date possible, without compromising the safety of park patrons or project workers.

With one exception, the park roads used for construction ingress and egress would be widened to 12 feet, if currently less than 12 feet wide. One approximately 2,000-foot-long section of access road from Clairemont Mesa Boulevard, between the SDG&E tower and FRS II site, would be widened to 20 feet to allow for two-way truck traffic. This section of road would be returned to a 12-foot width following construction. All access roads would also be re-graded for use as

needed during construction. Crushed rock or gravel would be placed on the park access roads to minimize erosion damage and stabilize the surface for heavy trucks.

2.4.4 FRS II Construction

Construction of the FRS II would require the clearing and grubbing of the project site and the excavation of up to 105,000 cubic yards (cy) of rock and soil (muck). The excavated muck would be hauled off site in dump trucks with anticipated capacities of 10 cy (10-wheel dump trucks) or 15 cy (18-wheel dump trucks). Ten-wheel dump trucks with trailers could also be used. The excavation of up to 105,000 cy of muck would require up to 10,500 truck trips using 10 cy dump trucks for muck disposal. Use of 15 cy dump trucks would reduce the maximum number of truck trips to 7,000 trips. Peak traffic periods may reach 240 trips per day, with all trucks using the Clairemont Mesa Boulevard access for ingress and egress. Excavation would take approximately 5 months and would be followed by the construction of the concrete FRS II, the construction of an aboveground access and control building, the backfilling and covering of the FRS II, and the revegetation of the project site. The basic construction sequence for the FRS II is expected to be as follows:

- Staging area construction, access road modifications, and equipment/supply mobilization
- Brushing, clearing and grubbing on site
- Excavation of first 40 feet of depth
- Excavation of final 10 feet of depth
- Subgrade backfill and laying underdrains and vaults
- Bottom slab concrete forming and pouring
- Columns, walls and roof forming and concrete pouring
- Backfill FRS structure
- Electrical lines trenching, wiring installation, and connection to supply
- Site piping trenching and installation
- Valve vault construction
- Access/control building construction
- Final site grading and revegetation
- Start-up and testing
- Demobilization

Heavy equipment to accomplish grading would be brought on site and would remain on site for the duration of construction. This type of equipment could include Caterpillar D9 and D11R track-type tractors, Caterpillar 973C track loaders, and Caterpillar 325C L and 330C L excavators.

Preliminary geotechnical investigations indicate the lower reaches of the reservoir excavation may have cemented sandstone requiring rock hammers and blasting. The contractor's actual equipment used for excavation may ultimately dictate whether blasting is needed. A description of a typical blasting operation is provided below under the discussion of pipeline tunnel construction.

2.4.5 Pipeline Tunnel Construction

Construction of the pipeline tunnels would require the clearing and grubbing of the North and South Portals, excavation of up to 48,060 cy from approximately 4,825 feet of tunnel, installation of pipe sections within the tunnels, connection of the completed tunnel pipelines to the FRS II and the existing aqueducts, and restoration of the tunnel portals. The excavation of up to 48,060 cy of muck would require up to 4,806 truck trips using 10 cy dump trucks for muck disposal. Use of 15 cy dump trucks would reduce the maximum number of truck trips to 3,204 trips. All trips are round trips with empty trucks entering MTRP and loaded trucks leaving MTRP. Muck truck traffic through the Portobelo Drive access is anticipated to vary from 4 to 8 dump trucks per day over a period of 14 months. Muck truck traffic through the Clairemont Mesa Boulevard access is anticipated to vary from 23 to 38 dump trucks per day over a period of 5 months. Construction of the tunnels and installation of the pipeline would take approximately 20 months.

The basic construction sequence for the pipeline tunnel is expected to be as follows:

- Staging area construction, access road modifications, and equipment/supply mobilization
- North Portal construction and preparation for tunnel excavation
- South Portal construction and preparation for tunnel excavation
- Shaft construction for FRS II connections
- North tunnel excavation
- South tunnel excavation
- Final tunnel lining installation
- Pipeline installation
- FRS II and existing pipeline connections
- Demobilization from shafts and site restoration
- Demobilization from portals and site restoration

Portal/shaft construction is expected to generate the greatest number of truck trips during tunnel construction. The type of equipment brought on site would include heavy lift crane, down hole track rig, surface loader, down hole excavator, off-road fork lift, generator, compressor, cable saw, and miscellaneous tools.

The two tunnels would be constructed from opposite directions: from the North Portal southward to the shaft on the inlet side of the FRS II, and from the South Portal northward to the shaft on the outlet side of the FRS II. Each tunnel reach through the Mission Valley Formation and the Pomerado Conglomerate is expected to be constructed with roadheader type of tunneling equipment. Roadheaders are mining machines used mainly for excavation of tunnels in weak to moderately strong rock. If combined with a shield, the shield would be advanced forward by pushing off an initial support system. An average advance rate of 10 linear feet (lf) of tunnel per single 8-hour shift each day is estimated for the first 1,000 feet of the inlet tunnel where the drill and blast technique is required. The average advance rate for the remainder of the tunnel would be 18 lf per single 8-hour shift each day using a roadheader for excavation. The Outlet Tunnel, from the South Portal, would be constructed using three shifts per day (24/7) with an average daily advance rate of 34 lf.

Large tunnels can also be constructed with a Tunnel Boring Machine (TBM), which is a self-propelled, fully automated machine capable of excavating, loading, and installing the initial tunnel support system in one continuous operation. Based on the limited length of the two tunnel headings, the relatively high cost of tunnel boring machines, and the horizontal and vertical geometry of the alignment, this tunnel construction method is not considered likely. The construction technique, however, would be up to the contractor.

At the north end of the project area, the first 200 to 1,000 feet of inlet tunnel excavation would occur in Santiago Peak Volcanics, which are strong to extremely strong igneous rocks. Drill and blast excavation would be required at the North Portal for this initial reach. This type of construction generally consists of four steps: 1) drilling a pattern of holes in the tunnel face and loading the holes with explosives, 2) blasting the round and ventilating the blasting gases, 3) mucking (removing) the blasted rock, and 4) installing initial ground support as needed. To minimize additional disturbance beyond the intended excavation lines, controlled, smooth wall blasting techniques would be used with low charge weights per delay. Advance rates are estimated at 10 feet per 8-hour shift for drill and blast and 18 feet per 8-hour shift for excavation with a roadheader. Two months have been anticipated in the construction schedule for this initial reach through hard rock from the North Portal. Blasting could occur between 7:00 a.m. and 7:00 p.m., Monday through Saturday. Seismic monitoring, blast mats, sequential blasting, and direction optimization would be conducted to minimize vibration, fly rock and air blast. Blasting permits would be obtained from the City of San Diego Fire Department.

As the tunnel is excavated, the excavated muck would be removed. Muck cars, a horizontal continuous conveyor belt, or belowground trackless Load-Haul-Dump (LHD) are typical muck removal methods. The choice of muck removal methods would be based primarily on excavation sequence, contractor preference, and equipment availability. The excavated material would be hauled off site in dump trucks.

Groundwater inflow into the tunnel may occur through permeable layers within the sedimentary rock. The tunnel is expected to be constructed above the groundwater table, but perched groundwater may be encountered. In this case, the tunnel face would be immediately supported until the water has drained to the tunnel portals. The groundwater would be treated prior to discharge to existing drainage channels in MTRP using settling ponds, tanks, portable filtration plants, pH adjustment, or a combination of systems, in accordance with discharge permits that would be obtained from the San Diego Regional Water Quality Control Board. Water from the North Portal would be directed into Shepherd Canyon and water from the South Portal would be directed into the canyon to the west.

Pipe sections would be installed once the inlet and outlet tunnels are constructed. Pipe would be installed in a maximum of 50-foot lengths through the portals. The size of trucks available to carry the pipe segments and the size of the crane available to lift the pipe segments into the portals would affect the segment length.

2.4.6 Pipeline Connections

Following the construction of the FRS II and pipeline tunnels and successful pressure testing of the new pipeline in the tunnels, the new pipelines would be connected to the existing Pipelines 3 and 4. This work would require the two existing water supply pipelines to be shut down. The work would include shutting down and draining the pipelines, constructing the connection, filling the pipelines, conducting any necessary abandonment, and placing the combined pipeline system back on-line. All work would have to be completed within 10 days (7 days for construction activity by the contractor and 3 days for draining and filling the pipeline). This 10-day period must fall within a 60-day period during the winter months when water demand south of the project site is at its lowest for the year. This is because the water treatment plants south of MTRP have a limited storage capacity for raw water and would run out after a shutdown much longer than 10 days. Simultaneous shutdown of both Pipelines 3 and 4 would be required. To minimize shutdown time, both connections (at the north and the south) would be completed at the same time. The pipeline connection work would require 24-hour/day operations at both tunnel portals for up to 10 consecutive days.

Construction work for the tie-in points would occur in the following sequence:

- Excavate existing pipelines and prepare trench shoring
- Isolate and dewater existing pipeline section (by Water Authority staff), dewater new pipe section, and remove test bulkhead
- Take out existing pipe sections designated to be demolished
- Clean and prepare existing connection joint
- Fit new pipe sections
- Weld pipe joints
- Mortar line pipe joints
- Inspect the connection
- Encase the connection in concrete
- Replace blind flanges at access points
- Construct concrete thrust blocks
- Backfill and compact excavated sections
- Place pipeline back in service

Abandoned sections of the pipelines that remain in place would be encased with sand or concrete. The length of section that would be abandoned for each pipe is approximately 5,000 feet.

In order to utilize the new Mission Trails Pipeline Tunnel and FRS II most effectively, it may be necessary to re-configure the flows in the pipelines leading into the Mission Trails project area. This project component is referred to as the Pipeline Interconnect Reconfiguration. At present, Pipelines 3, 4, and 4B enter the area from the SR-52 right-of-way; Pipeline 3 carries untreated water, Pipeline 4 is out-of-service, and Pipeline 4B carries treated water. Pipeline reconfiguration could include the reactivation of Pipeline 4, which is currently out of service, to carry either untreated or treated water, thereby increasing flow capacity. It is also possible that Pipeline 3 could be switched to carry treated water, and Pipeline 4B switched to carry the

untreated water flows. These reconfigurations would require the construction of one or two "crossovers" to reconnect the pipes in the optimum configuration. This would occur in the general vicinity of the existing "Shepherd Canyon Wye" facility and San Diego 11 service connection, at the north end of the project area (See Figure 2-4). Access would be from Portobelo Drive.

The probable construction for these crossovers, if needed, would involve excavation for pipeline construction, which could take a few weeks to a few months for total completion. Although the overall construction period could last several months, the shutdown period for the crossover connections would only take approximately 10 days and would be simultaneous with the connection of the tunnel pipelines. During the shutdown period, work at the site would be 24 hours per day, 7 days per week. The surface would be restored to existing conditions following the construction in this area.

2.4.7 Vent and Blowoff Removal

A construction zone of 150 feet by 150 feet, centered on each pair of vents and at each blowoff location, would be disturbed by the removal of these appurtenances. The aboveground portion of the vents would be removed with a crane and hauled off site. The top of the buried portion of the steel vertical shafts would be dug up with an excavator, cut off approximately 3 feet below the ground surface, and hauled off site. The remaining belowground portions of the vent structures would be filled with concrete to prevent groundwater from entering the abandoned portion of the pipeline. The excavation would be filled with soil, and the site would be restored with a native seed mix. Some vents would be replaced with an air release/vacuum structure, as noted in Section 2.3.3.

The construction sequence at the blowoff structures would be similar. The equipment from these structures (valves, flanges, hatches, etc.) would be removed and salvaged, the pre-cast concrete portion of structures would be removed and disposed, and the manway would be capped with concrete to prevent groundwater from entering the pipe. The sites would be restored with a native seed mix.

2.4.8 Spoil Disposal

Topsoil and other soil needed for backfilling would be temporarily stockpiled on site. Excess materials would be hauled off site for use as fill at other construction sites or as cover material at a local landfill. The final disposal location for the excavated muck would be selected by the contractor. The contractor would be expected to select the most efficient disposal site, meaning the site at which the materials could be unloaded would result in the quickest round trip for haul trucks and the lowest disposal cost. Use of the spoils within MTRP would be the most efficient disposal method. Park Rangers from the City's Park and Recreation Department have expressed a need for clean fill in the park and would be given first priority for receipt of the material. This would benefit the park through the provision of free material for erosion control and other fill needs, and would benefit the Water Authority through reduced disposal costs. Finally, in-park disposal would reduce the number of truck trips on surrounding streets necessary for disposal of the spoils.

There are also several off-site disposal options for the contractor. If spoils are relatively free from foreign materials, sand and gravel processors and fill brokers may be interested in the materials. Nearby potential locations are shown on Figure 2-11 and include Canyon Rock and Asphalt rock quarry on Mission Gorge Road adjacent to the south side of MTRP. Quarry operators would be interested in muck that has less than 20 percent fines from the Pomerado Conglomerate and the Santiago Peak Volcanics. Vulcan Materials Mission Valley Quarry located in Mission Valley would also be interested in some of the muck. Hansen Aggregates Miramar Recycle Site, located west of I-15, is interested in Pomerado Conglomerate, and unsorted tunnel muck may be accepted at their site for fill. Hansen Aggregates Carroll Canyon Plant, located on Miramar Road, may accept Santiago Peak Volcanics. Sycamore Canyon Landfill, north of SR-52, would accept muck for daily cover if it is not wet or contaminated.

2.4.9 San Diego River Crossing Construction

The construction of a stabilized at-grade crossing of the San Diego River would require a construction zone approximately 50 feet wide by 100 feet long. This construction zone would include the existing unimproved road crossing in the river channel as well as additional area for a temporary cofferdam to divert flow during construction and for excavation at the channel bed to create a stable bottom condition and anchor the stabilization material. The area permanently disturbed would be a 15-foot-wide and 70-foot-long stabilized crossing area.

2.5 PROJECT OPERATION

2.5.1 FRS II Operation and Maintenance Procedures

Water flow into the FRS II buried reservoir would be controlled by the Water Authority Operations Center and is dependent on the total flow ordered from Lake Skinner and the water delivered to the member agencies north of the FRS II site. Normal water elevation in the FRS II structure would be maintained at approximately 780 feet AMSL. Flows rejected by member agency flow control facilities upstream of the FRS II would gradually fill the reservoir basins. Water deliveries that are greater than the member agencies' orders downstream of the FRS II would gradually empty the FRS II reservoir basins. The outlet valves would be for isolation of flow only.

The following maintenance activities are anticipated at the new FRS II facility:

- Visiting and inspecting the site approximately once per day to monitor daily operations and security at the site. This routine access would be accomplished with ¾-ton trucks.
- Maintaining the valves periodically at the valve vaults. The valve crew would access the site with 2-ton valve maintenance trucks. Frequency may vary from weekly to monthly.
- Cleaning the bottom of the basins to remove silt, clam and mussel shells, and other debris every 2-5 years. The basins would be drained individually into the water supply system and crews would access the basins through the access building. Equipment and debris

would be removed through the access hatches in the roof of the reservoir with a small crane.

- Responding to outages or other emergency situations as needed.

2.5.2 Pipeline Tunnel Operation and Maintenance Procedures

Based on the Regional Water Facilities Master Plan PEIR (2003), the following operations are generally associated with operation and maintenance of pipelines:

- Weekly visual inspection of pipeline alignments;
- Grading/repair of access roads as needed;
- Testing and servicing of blowoff valves, air release/vacuum valve assemblies as needed;
- Yearly walking of pipeline alignment and inspection of cathodic protection system; and
- Pressure testing pipeline, painting pipeline appurtenances, repairing tunnel entrances, and repairing minor leaks in buried pipeline joints or segments when necessary.

2.6 GENERAL CONDITIONS / STANDARD SPECIFICATIONS AND PROJECT DESIGN FEATURES

The Water Authority's *General Conditions and Standard Specifications* 2005 Edition will be provided to the selected contractors for this project. In addition, project-specific design features, which could minimize or avoid environmental impacts, will be implemented. These contract specifications and design features have been grouped by issue area. Note that they are not exhaustive, and that other construction specifications or design features could be developed that are as effective as those listed. Standard construction specifications and design features will be incorporated into the project as appropriate to avoid significant impacts. Additional detail regarding standard construction specifications can be found in the appropriate sections of the Water Authority's *General Conditions and Standard Specifications*.

2.6.1 Aesthetics/Visual Quality

Standard Specifications

General Conditions and Standard Specifications Section 02940 - Revegetation (3.13): The establishment maintenance period will begin on the first day following completion and acceptance of the revegetation work. Continue the establishment maintenance activities for a period of two years following the date of the filing of the Notice of Completion (i.e., the contract warranty period), and as specified herein.

Project Design Features

The proposed project has been designed to be almost entirely belowground. All disturbed areas will be graded following construction to be compatible with the surrounding topography. Excess

soil will be disposed of and the sites will be cleared of all construction debris. All areas disturbed by construction, not proposed for permanent roads or facilities, will then be revegetated with a native seed mix.

Building colors will be of neutral color and design elements will be incorporated to complement the surrounding natural open space. Building design will feature free-form curved walls. Building will be recessed into earthen berm.

Permanent lighting will be limited to use by Water Authority employees making repairs or conducting maintenance. Typically, no lights will be visible at night from the proposed facilities.

2.6.2 Traffic/Circulation

Standard Specifications

General Conditions and Standard Specifications Section 02200 - Earthwork (3.16): Haul excavated materials from the work site to approved disposal location(s) during the hours permitted in accordance with local traffic control regulations. Provide traffic control as required by the agency having jurisdiction.

Project Design Features

Prior to construction, the contractor will prepare the detailed Traffic Control Plan for review by the Water Authority and approval by the City of San Diego. The plan will be prepared in accordance with the latest edition of the Federal Highway Administration Manual of Uniform Traffic Control Devices, as modified by the most recent California Supplement.

Hours of operation for trucks associated with the project grading and construction, including hauling of excess materials out of MTRP and construction materials into MTRP, will be restricted to 7:00 a.m. to 7:00 p.m., Monday through Saturday.

Truck traffic on Rueda Drive and Calle de Vida will be limited to oversized trucks and equipment and will not exceed 40 trips/day. All other construction traffic will utilize the Clairemont Mesa Boulevard, Portobelo Drive or Mission Gorge Road (stabilized crossing of the San Diego River only) access points to MTRP.

2.6.3 Air Quality

Standard Specifications

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.03): Perform continuous dust abatement measures in accordance with the San Diego Air Pollution Control District's regulations to prevent construction from producing dust in amounts harmful to persons or animals or causing a nuisance to persons or animals living nearby or occupying buildings in the vicinity of the work. Use water or dust prevention to control dust.

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.05): Keep all public and private roads used for ingress and egress in a clean and neat condition. Take measures, as necessary, to prevent the tracking or accumulation of materials on roads. Sweep or wash all loose materials and mud from equipment before entering the road. Provide street sweeping services when requested by the Engineer.

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.10): Comply with all applicable federal, state, county, and city laws and regulations concerning the prevention and control of air pollution. Perform construction activities and operate equipment in a manner which will minimize atmospheric emissions or discharges of air contaminants. Do not operate equipment or vehicles that show excessive emissions of exhaust gases on the site.

General Conditions and Standard Specifications Section 02200 - Earthwork (3.01): Prevent dust from damaging crops, orchards, cultivated fields, and dwellings, or causing a nuisance to persons. Dust control measures shall be in effect for the duration of the project.

General Conditions and Standard Specifications Section 02310 - Tunneling (3.05): Use blasting mats as necessary to prevent flying rock during tunnel excavation near the portal(s).

Project Design Features

All clearing and grading will be carried out with dust control measures adequate to prevent creation of a nuisance to persons or public or private property. Clearing, grading, and construction plans will require that measures such as the following be undertaken to achieve this result: watering, application of surfactants, shrouding, control of vehicle speeds, or other technological measures to reduce dispersion of dust. Specific source control Best Management Practices (BMPs) identified in the project design could include, but not be limited to, the following:

- Multiple applications of water during grading between dozer/scraper passes.
- Chemical stabilization of internal roadways after completion of grading.
- Use of sweepers or water trucks to remove "track-out" at any point of public street access.
- Termination of grading if winds exceed 25 mph.
- Stabilization of dirt storage piles by chemical binders, tarps, fencing or other erosion control.

There are no permanent air quality impacts associated with the proposed project.

2.6.4 Noise and Vibration

Standard Specifications

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.11): Comply with all local sound control and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the Contract. Equip each internal combustion engine

used for any purpose on the job or related to the job with a muffler of a type recommended by the manufacturer. Do not operate internal combustion engines on the project without said muffler. Noise level requirements shall apply to all equipment on the job or related to the job, including but not limited to trucks and transient equipment that may or may not be owned by the Contractor. Avoid the use of loud sound signals in favor of light warnings except where required by safety laws for the protection of personnel.

Please refer to Public Safety/Hazards section for additional information regarding noise and vibration associated with blasting.

Project Design Features

Grading and construction activities will be limited to the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday, with the exception of 24/7 tunneling activities at the South Portal and the 10-day pipeline connection phase of the project at the North Portal, South Portal, and Pipeline Interconnect Reconfiguration. Temporary noise barriers will be provided between stationary equipment and the closest sensitive receptors at the North Portal and the Pipeline Interconnect Reconfiguration area north of the North Portal.

2.6.5 Recreation

Standard Specifications

There are no general conditions or standard specifications applicable to recreation.

Project Design Features

Roads and trails within MTRP that are within the area affected by the proposed project will be closed for the duration of construction to avoid potential conflicts between construction activities and recreational activities. All road and trail closures will be well marked and alternative routes will be identified. All roads and trails within the area affected by the proposed project will be restored to existing conditions, or better, following construction. Nearly all of the project features will be belowground. The surface of the park will be revegetated with a native seed mix and returned to natural open space available for passive recreation. Most of the existing Elliott Vents #1 - #5 will be removed and replaced with smaller facilities.

2.6.6 Hydrology/Water Quality

Standard Specifications

General Conditions and Standard Specifications Section 02140 - Dewatering (1.04): Comply with Regional Water Quality Control Board Waste Discharge requirements under Orders 96-41 and 95-25. Obtain authorization, as required, prior to discharge of groundwater, and comply with the sampling, testing, monitoring, and reporting requirements specified therein.

General Conditions and Standard Specifications Section 02140 - Dewatering (3.01): Dispose of water in such a manner as to cause no injury or nuisance to public or private property, or be a menace to the public health. Dispose of the water in accordance with applicable regulatory agency requirements. Prevent disposal of sediments from the soils to adjacent lands or waterways by employing necessary methods, including settling basins. Locate settling basins away from watercourses to prevent silt-bearing water from reaching the watercourse during flow regime. Where excavations may obstruct the natural flow of a watercourse, implement measures to control and dispose of the surface water that will not adversely affect water quality or beneficial uses of the watercourse. Divert watercourse flows around excavation areas by constructing barriers, temporary culverts, new channels or other appropriate means. Do not allow water containing mud, silt or other pollutants from aggregate washing or other construction activities to enter a watercourse or be placed in locations that may be subjected to high storm flows.

General Conditions and Standard Specifications Section 02270 - Temporary Erosion Control (1.01): For projects with soil disturbances of one acre or more, comply with the National Pollution Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity, General Permit No. CAS000002 and requirements included herein.

General Conditions and Standard Specifications Section 02270 - Temporary Erosion Control (3.01): Grade disturbed surfaces to provide positive drainage and prevent ponding of water. Surface water shall be controlled to prevent water damage or deposition of sediment to all adjoining and downstream properties. Install silt fences, sedimentation ponds, sandbag dikes, stabilized construction entrances and any other erosion control measure to minimize sediment escape from the construction site and to maintain runoff quality in compliance with the General Permit. Prevent construction sediment from entering any streams, ponds or drainage facilities. Erosion and sedimentation control measures shall remain in place until such time that the site of work is prepared for permanent drainage and erosion control measures. Remove temporary erosion and sediment control measures so as not to interfere with permanent drainage, erosion control and revegetation.

General Conditions and Standard Specifications Section 02940 - Revegetation (3.05): Continuously control erosion as specified herein and in accordance with measures shown on the Plans or the SWPPP. Erosion control measures shall be implemented and maintained throughout the warranty period.

Project Design Features

Prior to the start of ground disturbing activities, the Water Authority will prepare a SWPPP to reduce or eliminate pollutants during and after construction is complete. The plan will identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges from the construction site); identify non-storm water discharges; identify structural and/or treatment control BMPs that are to be implemented in accordance with a time schedule to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction; and develop a maintenance schedule for permanent or post-construction

BMPs that will "to the maximum extent possible" reduce or eliminate pollutants after construction is completed.

Detailed BMPs to prevent hazardous materials impacts to water quality will be included in the project SWPPP. Standard industry measures include, but are not limited to the following:

- Storage of a minimal amount of hazardous materials on site and restriction of storage/use locations to areas at least 50 feet from storm drains and watercourses.
- Use of covered and/or enclosed facilities for all hazardous materials storage.
- Maintenance of accurate written inventories and labels for all stored hazardous materials.
- Use of berms, ditches and/or impervious liners (or other applicable methods) in material storage and vehicle/equipment maintenance areas to provide a containment volume of 1.5 times the volume of stored/used materials to prevent discharge in the event of a spill.
- On-site storage of absorbent and clean-up materials where they are readily accessible.
- Proper location and maintenance of trash and wastewater facilities.
- Posting of regulatory agency telephone numbers and a summary guide of clean-up procedures in a conspicuous location at or near the job site trailer.
- Regular (at least weekly) monitoring and maintenance of hazardous material use/storage facilities and operations to ensure proper working order.
- Implementation of a Storm Water Sampling and Analysis Strategy (SWSAS) program pursuant to regulatory guidelines.

The grading/construction contractor will conform to applicable NPDES General Groundwater Extraction and Waste Discharge Permit criteria prior to disposal of extracted groundwater. While specific BMPs to address potential water quality concerns from disposal of extracted groundwater will be determined based on site-specific parameters, they will likely include the following types of standard industry measures derived from the NPDES Permit text and applicable agency/industry sources:

- Use of erosion prevention and sediment control devices for applicable conditions (e.g., when extracted groundwater is discharged onto graded or unstabilized areas).
- Testing, filtering (e.g., with gravel and filter fabric media) and/or treating (e.g., by conveyance to a municipal wastewater treatment plant) of extracted groundwater prior to discharge, if required for NPDES permit conformance.
- Removal of groundwater for treatment and disposal by a licensed operator, if required for NPDES permit conformance.

2.6.7 Biological Resources

Standard Specifications

General Conditions and Standard Specifications Section 02110 - Clearing and Grubbing (3.02): Conduct clearing and grubbing operations in a manner that will preserve and protect vegetation beyond the limits of clearing and grubbing. No filling, excavating, trenching or stockpiling of materials shall be permitted within the drip line of the protected vegetation. The drip line is defined as a circle drawn by extending a line vertically to the ground from the outermost branches of the vegetation. To prevent soil compaction within the drip line area, no equipment will be permitted within this area. Prior to the start of clearing and grubbing, schedule and attend a site observation visit with the Engineer to verify existing conditions and the location of environmentally sensitive areas. Erect protective fencing or environmental flagging around environmentally sensitive areas and along the rights-of-way as shown on the Plans and as directed by the Engineer during the site observation visit. Maintain fencing and flagging in good condition for the duration of the work.

General Conditions and Standard Specifications Section 02940 - Revegetation (3.05): Monitor for erosion within revegetation areas and provide measures to prevent gullies, rill and sheet erosion, and silt deposition from occurring. Erosion control shall emphasize prevention. Repair erosion as required and include redirection or dissipation of the water source and recontouring of soil, followed by seeding, mulching, or planting. Strategically placed and secured straw wattles, hay bales or sandbags may be used to dissipate water sources. Do not use invasive exotic species for erosion control.

Project Design Features

Native vegetation disturbance will be limited to the construction zones as indicated by flagging.

Equipment staging and refueling areas will be located away from sensitive habitat and natural drainages.

Prior to the commencement of construction, the limits of grading will be clearly delineated by a survey crew prior to brushing, clearing, or grading. The biological monitor will check the grading limits before initiation of construction grading. The contractor(s) will be responsible to mitigate impacts to sensitive biological resources beyond those identified in this report or any subsequent reports that occur as a result of construction activities.

Activities will be prohibited within drainages (other than those that may occur within an approved construction zone), including staging areas, equipment access, and disposal or temporary placement of excess fill.

Construction in or adjacent to sensitive areas or potentially affecting sensitive species will be appropriately scheduled to avoid sensitive and/or breeding seasons and to minimize potential impacts to biological resources.

Erosion and siltation into off site areas during construction will be minimized. The contractor will prepare an erosion control plan. The construction supervisor will be responsible for ensuring that the erosion control plan is developed and implemented.

Appropriate post-construction fencing and signage will be installed to prohibit access and avoid potential impacts to sensitive resources adjacent to the site.

Lighting will be directed away from any native habitat and will consist of low-sodium or similar lighting equipped with shields to focus light downward on the appropriate subject.

If staging areas outside the construction footprint are used, they will be surveyed for biological resources prior to use.

During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems will be used when necessary to prevent dust from leaving the site.

During construction, water trucks or sprinkler systems will be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this will include wetting down such areas in the morning and after work is completed for the day.

A tunnel has been proposed for construction of approximately 5,000 feet of pipeline beneath MTRP to minimize surface disturbance in the park. The FRS II has been designed to be belowground. An existing staging area, constructed for the FRS I project, has been selected for the proposed project. Existing roads within MTRP have been selected for ingress and egress to the construction sites. Impacts have been limited to the Water Authority's existing right-of-way wherever possible. An existing crossing of the San Diego River has been selected for the proposed stabilized crossing. Impacts (both temporary and permanent) to Diegan coastal sage scrub within the Water Authority's right-of-way have been previously mitigated at the Crestridge Habitat Management Area.

The removal of vegetation from MTRP will be limited to the non-breeding season for nesting migratory birds (September 15 through March 15). Such a restriction will also avoid direct impacts to birds afforded the federal species of concern and/or the California species of special concern status. If it would not be possible to limit clearing of vegetation to only during the non-breeding season, nesting surveys will be conducted prior to the removal of vegetation, active nest areas will be avoided, and a 500-foot buffer will be maintained around the nest, until the young birds have fledged. If removal of mature trees is proposed during the raptor breeding season, a survey for active raptor nests will be conducted, and similar measures will be followed if active nests are found.

2.6.8 Geology and Soils

Standard Specifications

General Conditions and Standard Specifications Section 02270 - Temporary Erosion Control: This section will be used as standard specifications to minimize soil erosion for construction projects.

Project Design Features

The project will include design features to minimize or avoid general geology and soils impacts. These features could include, but are not limited to, the following:

- Project plans will be reviewed to ensure compatibility with geotechnical conclusions.
- Applicable field activities (e.g. manufactured slope conditions, excavations and fill placement) will be reviewed and appropriately modified by the geotechnical engineer.
- Project design and construction elements, including seismic loading, excavation and grading, fill parameters (e.g., composition and moisture content), foundations and footings, manufactured slopes, and pipelines, will be in conformance with appropriate regulatory guidelines and industry standards.

Project construction activities will comply with existing regulatory requirements related to geology and soils, including applicable elements of the NPDES General Construction Permit, such as implementing a SWPPP and associated sedimentation BMPs. Typical control measures that may be implemented as part of the project SWPPP include:

- Preparation and implementation of a "weather triggered" action plan during the rainy season to provide enhanced erosion of sediment control measures prior to predicted storm events (i.e., 40 percent or greater chance of rain).
- Use of erosion control/stabilizing measures in appropriate areas (including disturbed areas and graded slopes with grades of 3:1 [horizontal to vertical] or steeper), such as geotextiles, mats, fiber rolls, soil binders, or temporary hydroseeding established prior to October 1.
- Use of sediment controls to protect the site perimeter and prevent off-site sediment transport, including measures such as filtration devises (e.g., temporary inlet filters), silt fences, fiber rolls, gravel bags, temporary sediment basins, check dams, street sweeping, energy dissipators, stabilizing construction access points, (e.g., with temporary graveling or pavement) and sediment stockpiles (e.g., with silt fences and tarps), and use of properly fitted covers for sediment transport vehicles.
- Storage of BMP materials in applicable on-site areas to provide "standby" capacity adequate to provide complete protection of exposed areas and prevent off-site sediment transport.
- Provision of training for the personnel responsible for BMP installation and maintenance.

- Solid waste management efforts such as proper containment and disposal of construction debris.
- Installation of permanent native vegetation as soon as feasible after grading or construction.
- Implementation of appropriate monitoring and maintenance efforts (e.g., prior to and after storm events) to ensure proper BMP function and efficiency.
- Implementation of sampling/analysis, monitoring/reporting and post-construction management programs per NPDES requirements.
- Implementation of additional BMPs as necessary (and required by appropriate regulatory agencies) to ensure adequate erosion and sediment control.

Actual BMPs for the proposed project will be determined during the NPDES permitting and SWPPP process, with such measures taking priority over the typical industry standard measures listed above.

The project will include design features to minimize or avoid instability of manufactured slopes and retaining walls. These features could include, but are not limited to, the following:

- Field observation/mapping of manufactured slopes by the project geotechnical engineer, and (if applicable) implementation of site-specific design/construction changes.
- Provision of adequate drainage for all manufactured slopes and retaining walls, including surface features to prevent runoff on slopes and subdrains, if appropriate, to prevent saturation of surficial materials (including retaining wall backfills).
- Use of maximum grades of 2:1 for fill slopes and 1.5:1 for cut slopes.
- Use of approved fill materials and application methodologies (e.g., compaction and moisture content) for fill slopes.
- Over-filling of fill slopes by approximately six feet horizontally, with slopes then trimmed back to expose the compacted inner core after the fill is brought to finish grade (or compaction with a sheepsfoot roller or equivalent devise for fill slopes either less than 10 feet high, located over cut or existing slopes, or that cannot be overfilled).
- Use of native and/or drought-tolerant landscaping to reduce irrigation requirements (and/or use of subdrains as noted above).
- Use of stabilizing techniques (e.g., rock bolts) in applicable cut slopes.
- Incorporating appropriate placement of slopes and retaining walls (i.e., away from potential saturation sources) and drainage facilities, as well as use of applicable criteria for lateral earth, surcharge and seismic pressures in the design of all retaining walls.
- Evaluation of soil/rock conditions encountered during excavation to determine appropriate slope inclinations and stabilizing measures (e.g., shoring) to conform with existing U.S. Occupational Safety and Health Administration (OSHA) and California Occupational Safety and Health Administration (CAL/OSHA) requirements (including 29 CFR Part 1926, Occupational Health Standards-Excavations).

The project will include design features to minimize or avoid differential compression or settlement of on-site soils. These features could include, but are not limited to, the following:

- Site-specific settlement analyses will be conducted in areas deemed appropriate by the project geotechnical engineer.
- Depending on the results of the individual analyses, the project geotechnical engineer may require additional measures including overexcavation of unsuitable materials and replacement with engineered fill, locating foundations and larger utility pipelines outside of cut/fill transition zones, and limited irrigation of landscaped areas.
- Expansive materials will be removed, mixed with non-expansive soils and/or placed in deeper fills (at least five feet below finished grade) during grading.
- Oversized material used in fills will not exhibit maximum dimensions greater than four feet, and will not be placed within 10 feet of finish grade, 10 feet of manufactured slope faces (measured horizontally from the slope face) or 3 feet of the deepest pipeline or other utilities. Oversize material (i.e., rock with maximum dimensions greater than 12 inches) will be managed via off-site disposal, use in non-structural fill, or crushing or pre-blasting to generate material with maximum dimensions of less than 12 inches.

Project development will conform to applicable industry standards (e.g., the UBC and/or Greenbook) regarding corrosive soils. A site-specific investigation of potential corrosion hazards will be conducted in areas deemed appropriate by a qualified corrosion engineer for the proposed project. The results of this analysis will be checked against the final project design, as appropriate, to address potential corrosion impacts, and may include, but not be limited to, measures such as:

- Excavation (or overexcavation) and treatment, and/or removal and replacement (i.e., with engineered fill) of corrosive materials.
- Use of non-corrosive and/or corrosion-resistant building materials in appropriate locations and installation of cathodic protection.

2.6.9 Public Safety and Hazardous Materials

Standard Specifications

General Conditions and Standard Specifications General Conditions (GC) Section 5.2: The Contractor is responsible for maintaining an orderly project site and providing jobsite security, and to that end shall employ such watchmen or other persons and implement other appropriate security as may be required.

General Conditions and Standard Specifications GC Section 5.3: The Contractor shall prohibit the use or possession of intoxicating liquors or controlled substance at the jobsite or in any vehicle or equipment used in performance of the Work.

General Conditions and Standard Specifications GC Section 5.4: The Contractor shall provide, erect, or maintain temporary fences, plates, over-crossings, trench bridges, bridges, railings, barriers, and traffic control devices, lights, warning signals, guards, street sweeping, trash removal, vector control and other security devices and systems appropriate to assure public health and safety.

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.07): Minimize fire danger in the vicinity of and adjacent to the construction site. Provide labor and equipment to protect the surrounding private property from fire damage resulting from construction operations.

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.08): Provide temporary fencing of all open or partially open trenches and excavations, all open or partially completed structures, and all work and storage areas at all times while unattended by workmen.

General Conditions and Standard Specifications Section 01560 - Temporary Controls (1.09): Establish a regular daily collection of all sanitary and organic wastes. Dispose of away from the site all wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations in accordance with all laws and regulations pertaining thereto.

General Conditions and Standard Specifications Section 02229 - Blasting: This section describes the methods, limitations, and reporting requirements for the use of explosives and blasting conducted during excavation and tunneling operations. Submittals required include a two-part conceptual blasting plan prior to the start of drilling. Part 1, the General Plan is required to include a complete summary of proposed methods for transporting, handling, storage, and use of explosives. Requirements of Part 2, the Site Specific Plan, include: The Site Specific Plan shall include the proposed general concept for trench excavation blasting, including controlled blasting techniques and control and monitoring of fly rock, airblast and ground vibration. Blasting intensities shall be limited as required to prevent damage to all existing structures, and in no case, shall intensities exceed the safety standard of particle velocity recommended by the U.S. Bureau of Mines [RI 8507].

General Conditions and Standard Specifications Section 02229 - Blasting (1.05): Retain the services of a qualified blasting consultant specialist to assist in the preparation of the required blasting plans and verification of reports.

General Conditions and Standard Specifications Section 02229 - Blasting (3.01): Conform to the requirements specified in the State of California Construction Safety Orders for the transporting, handling, storage, and use of explosives. Transportation of explosives shall be in accordance with the regulations of the State Fire Marshall and the California Highway Patrol. The locations, access and construction of explosive storage magazines shall be in accordance with the American Table of Distances for Storage of Explosives and approved by the Chief of San Diego County Fire Department and the Sheriff of San Diego County. Blasting shall only be permitted between the hours of 8:00 a.m. and 4:00 p.m. during any weekday (Monday through Friday),

unless special circumstances warrant another time or day, and special approval is granted in writing by the Engineer and the agency having jurisdiction. *Note: special allowance for possible blasting between the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday will be requested for the proposed project.*

General Conditions and Standard Specifications Section 02229 - Blasting (3.02): No blasting shall be permitted until the Contractor receives notification in writing from the Engineer that the blasting plans have been reviewed and until all preblast inspections and reports have been completed. Provide a minimum of two working days advance notice to all residences or businesses within 400 feet of the blast area. Provide two-work days notice to all utility agencies whose facilities may be influenced by the blasting operation.

General Conditions and Standard Specifications Section 02229 - Blasting (3.03): Conduct preblast inspections of all residential, commercial, and Water Authority structures, and other improvements and facilities as necessary, within 400 feet of the blast area. . . .The preblast inspection shall be for the purpose of determining the existence any visible or reasonably recognizable pre-existing defects or damages in any structure and for quality control and construction record purposes. . . .Conduct post-blast inspections upon receipt of a written or verbal request or complaint of damage to property, structure, or other improvement from the respective owners.

General Conditions and Standard Specifications Section 02229 - Blasting (3.04): Fly rock shall be contained within the project rights of way and shall not represent a hazard to people, vehicles, existing improvements or vegetation. Use blasting mats to prevent possible flyrock damage. At the end of each working day, clean the blasting site of all debris associated with the blasting operation.

Project Design Features

Prior to authorization to proceed or issuance of permits, the Water Authority will prepare a Fire Prevention and Response Plan. All construction crewmembers will be trained in the requirements of the plan. The plan will outline the responsibilities for the prevention, pre-suppression, and suppression activities associated with fire within MTRP.

Fire safety information will be disseminated to construction crews during regular safety meetings. Fire management techniques will be applied during project construction and deemed necessary by the Water Authority and depending on the on-site vegetation and vegetation of surrounding areas.

The Contractor will be required to conduct ongoing worker training for all levels of construction personnel, including weekly safety meetings.

2.6.10 Utilities and Public Services

Standard Specifications

General Conditions and Standard Specifications Section 01530 - Protection of Existing Facilities (1.05): Do not operate vehicles or equipment and do not place, push, store or stockpile vehicles, equipment, supplies, tools, fabricated or manufactured articles, fuel supplies, field office facilities, excavated or imported materials of any kind, and do not perform an work within 15 feet of the centerline of existing Water Authority-owned pipelines, except where specified or shown on the Plans, or where permission is granted in writing by the Engineer. At designated crossing locations of existing Water Authority-owned pipelines, limit equipment loads to the live load limits shown or specified. At these locations, if the Contractor elects to cross existing Water Authority-owned pipelines with equipment loads in excess of the live load limits shown or specified, erect temporary bridges for use by equipment that exceeds the specified live load limits.

General Conditions and Standard Specifications Section 01530 - Protection of Existing Facilities (1.08): All utilities including oil and gasoline pipelines, power, and telephone or communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the work shall remain continuously in service during all operations under the Contract, unless other arrangements satisfactory to the Engineer are made with the owner of said utility.

Project Design Features

The Water Authority will notify and coordinate with all other utility providers with easements, rights-of-way, or facilities within or adjacent to the area affected by the proposed project. Any need to connect with or relocate utilities will be presented to the appropriate utility provider prior to commencement of construction.

Any work requiring the shutdown of an aqueduct will be limited to a period not to exceed 10 days.

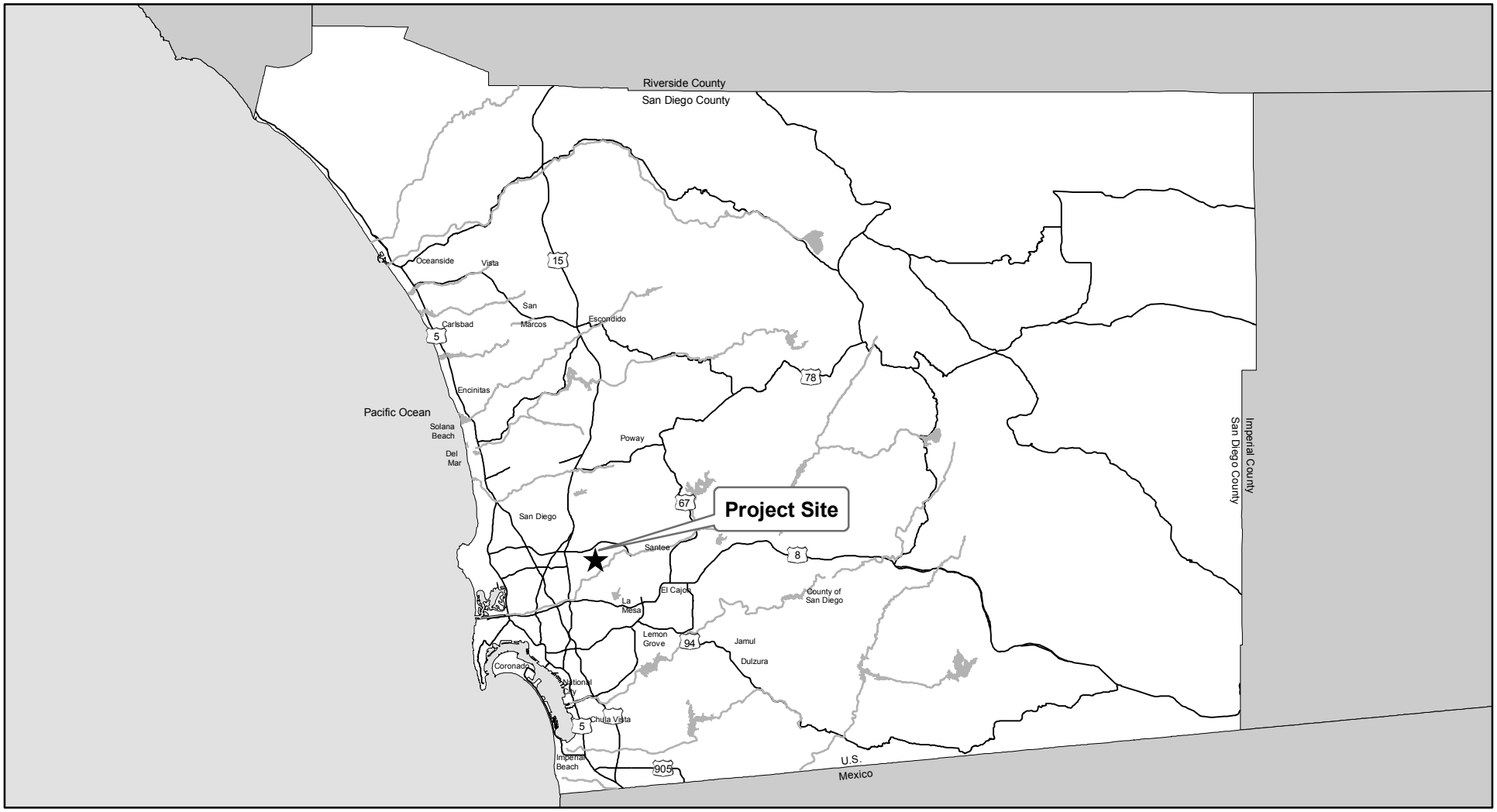
The proposed project will require connection of the pipeline tunnel to the existing aqueducts at the North and South Portals. A pipeline interconnect reconfiguration may also be needed north of the North Portal. The connections and reconfigurations will all be completed during a 10-day shutdown of the raw water aqueducts.

2.7 DISCRETIONARY ACTIONS AND APPROVALS

The Water Authority is the Lead Agency for the proposed project. Project construction will require the approval of the Water Authority Board of Directors. Responsible and Trustee Agencies that may take actions approving the proposed project are presented in Table 2-3.

Table 2-3
Potential Discretionary Actions and Approvals

Agency	Permit/Approval
U.S. Fish and Wildlife Service	Formal Section 7 Consultation for Endangered Species
U.S. Army Corps of Engineers	Individual 404 Permit for Crossing of San Diego River; Impacts to Other Waters of the U.S.
San Diego Regional Water Quality Control Board	401 Water Quality Certification or Waiver (in association with the 404 permit); NPDES Permit; Waste Discharge Permit for impacts to vernal pools; Compliance with General Permit for dewatering
California Department of Fish and Game	1602 Streambed Alteration Agreement; ESA Permit
City of San Diego	Land Acquisition; Encroachment Permits
San Diego Unified School District	Land Acquisition
San Diego Gas & Electric	Encroachment Permit



Basemap Legend

- Freeways
- Rivers
- Lake/Reservoir/Lagoon

N
W E
S

0 13
Miles

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
Date Created: September 8, 2005
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San Diego County Water Authority

Project Vicinity

Figure 2-1

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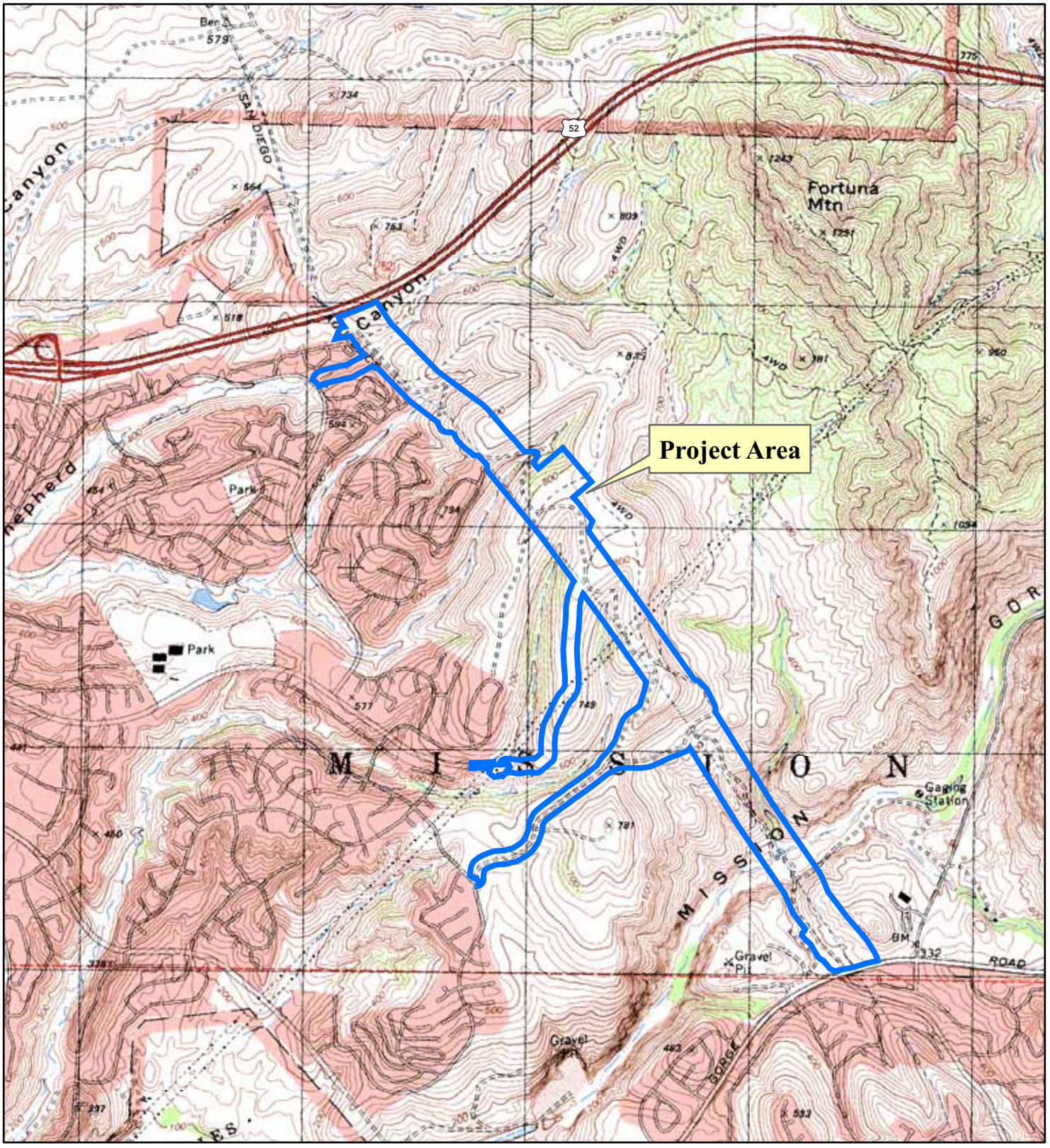

USGS 7.5 Minute La Mesa Quadrangle

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
File: t:\projects\mission_trails\plots\figures\EIR USGS.mxd
Date: Mar 09, 2006

Project Location

Figure 2-2

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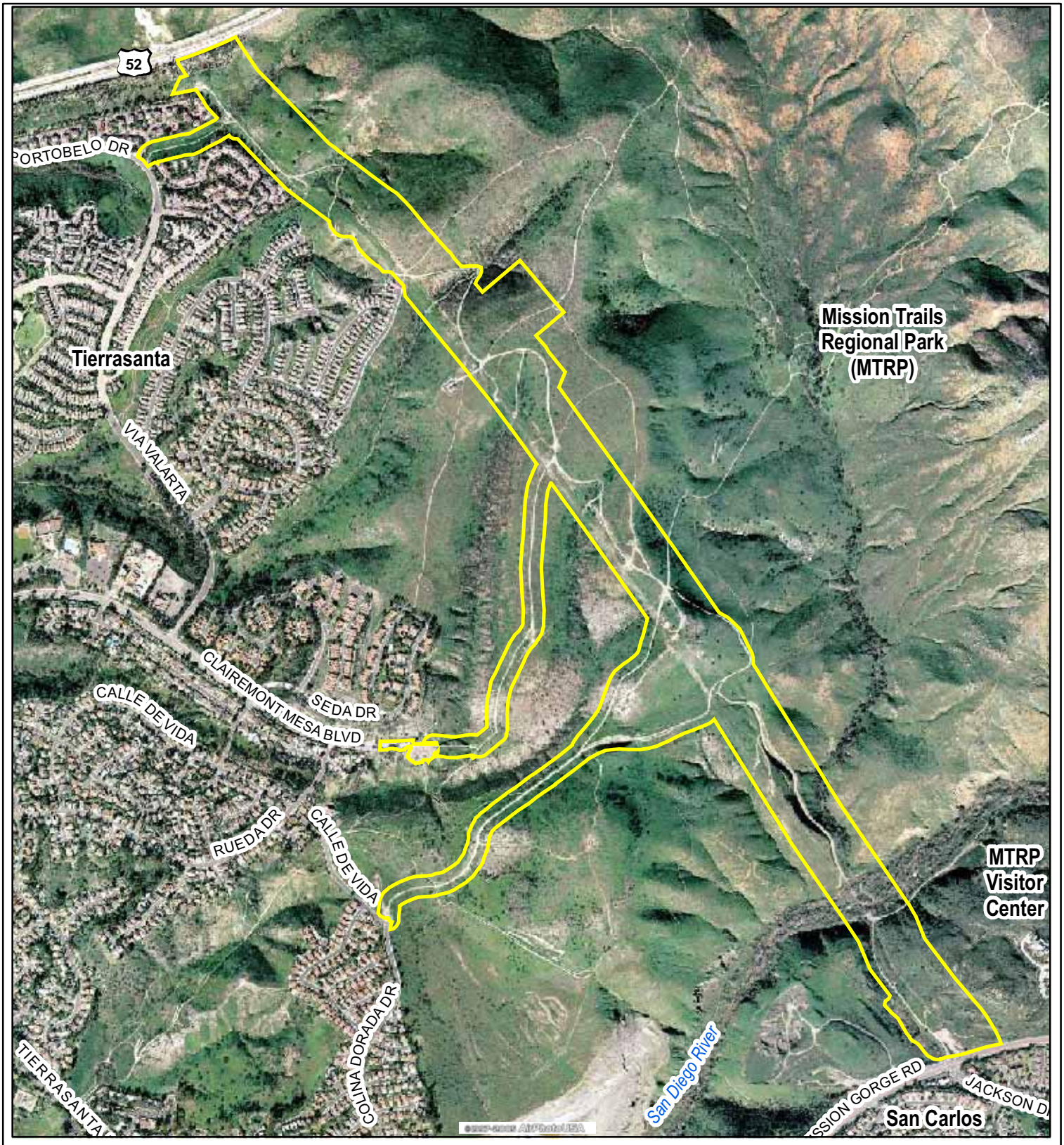

Legend

Project Study Area

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

File: \mission_trails\plots\figures\EIR Project Study Area.mxd
Date: Mar 03, 2006

San Diego County Water Authority

Project Study Area **Figure 2-3**

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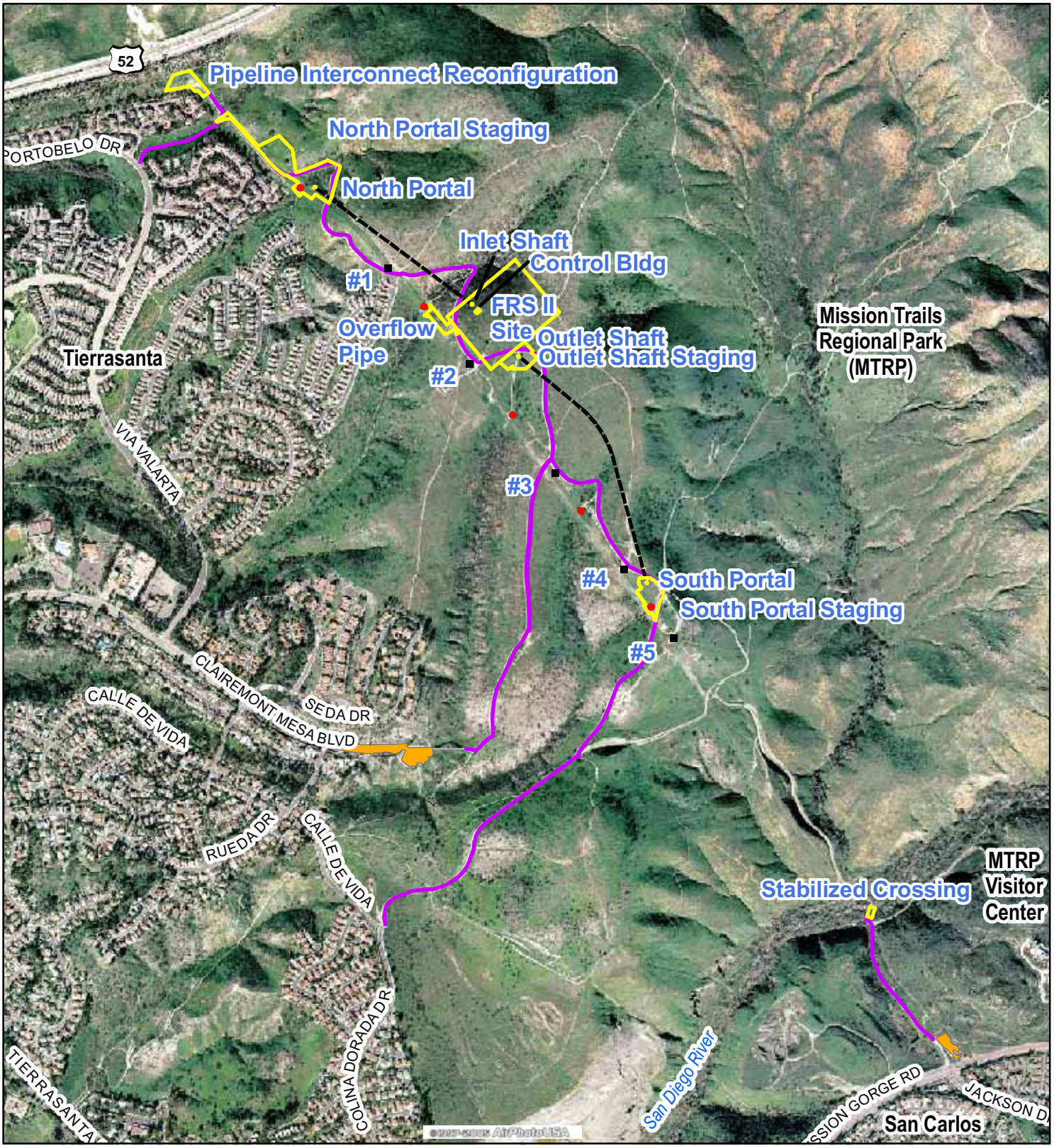

Legend

- Project Features
- Tunnel Alignment
- Elliott Vents
- Blow Off
- Proposed Ingress/Egress Routes
- Access Staging Areas

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
File: t:\projects\mission_trails\plots\figures\Project Components.mxd
Date: Mar 03, 2006

San Diego County Water Authority

Project Components **Figure 2-4**

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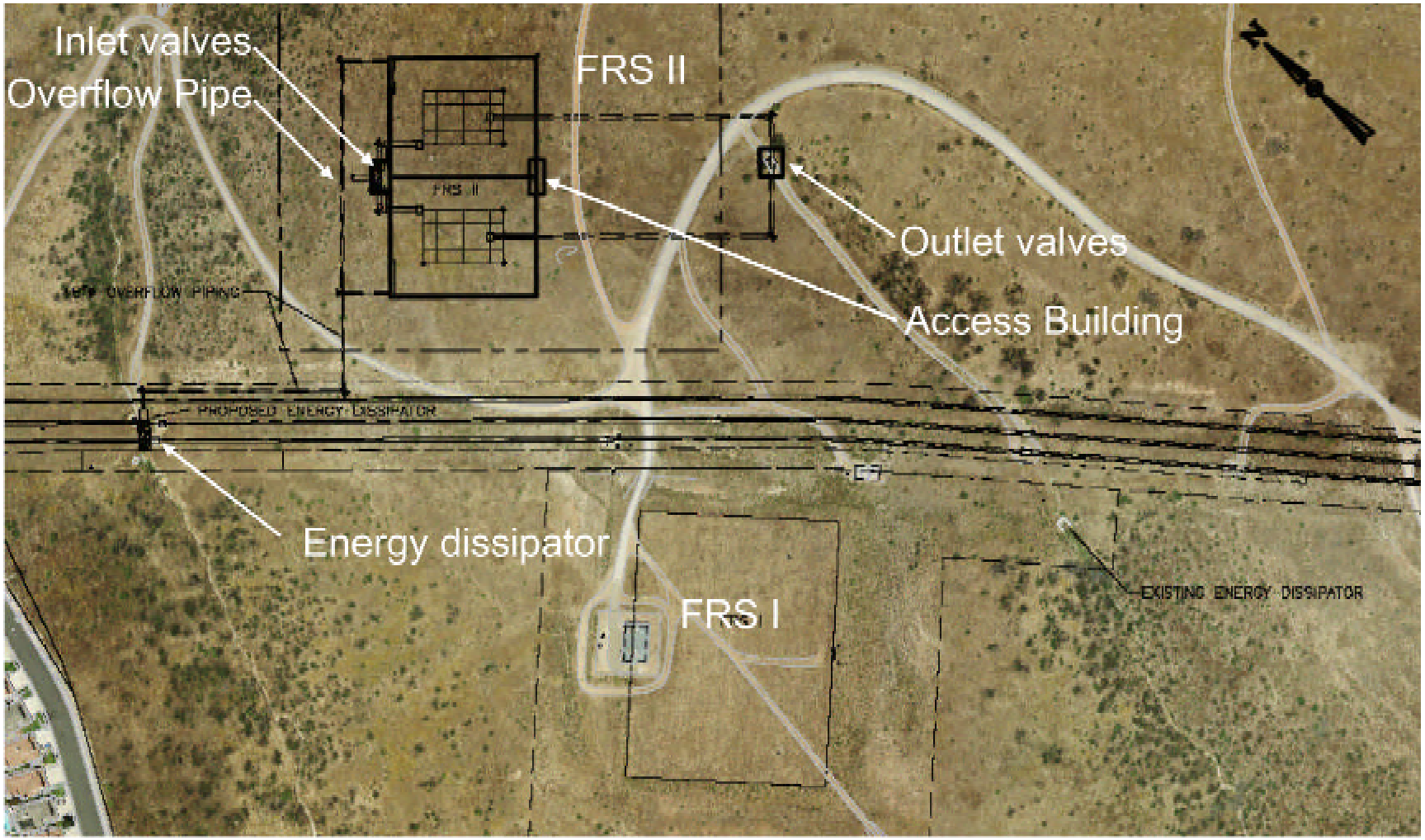

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Site/Grading Layout for FRS II

Figure 2-5

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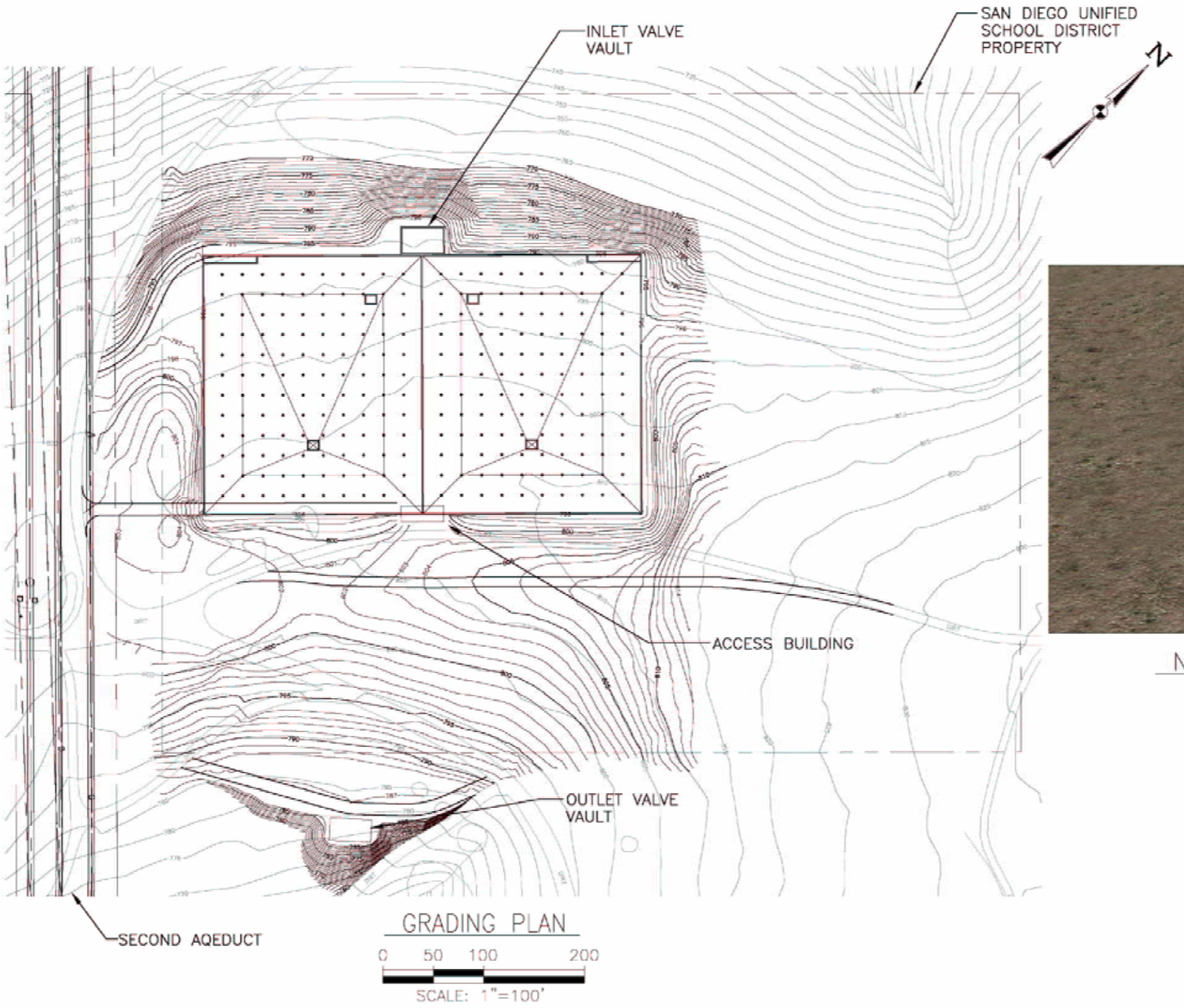

GRADING PLAN

0 50 100 200

SCALE: 1"=100'

NATURAL ACCESS BUILDING

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

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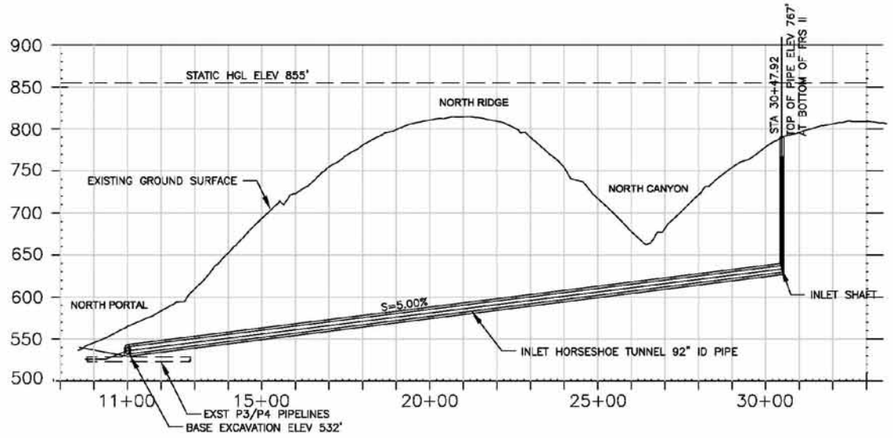
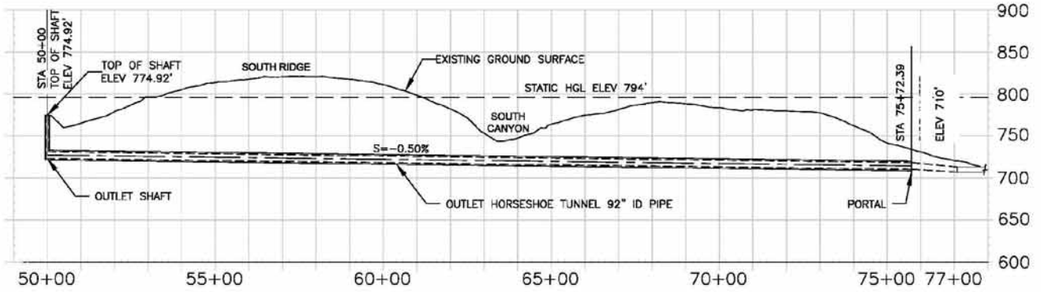
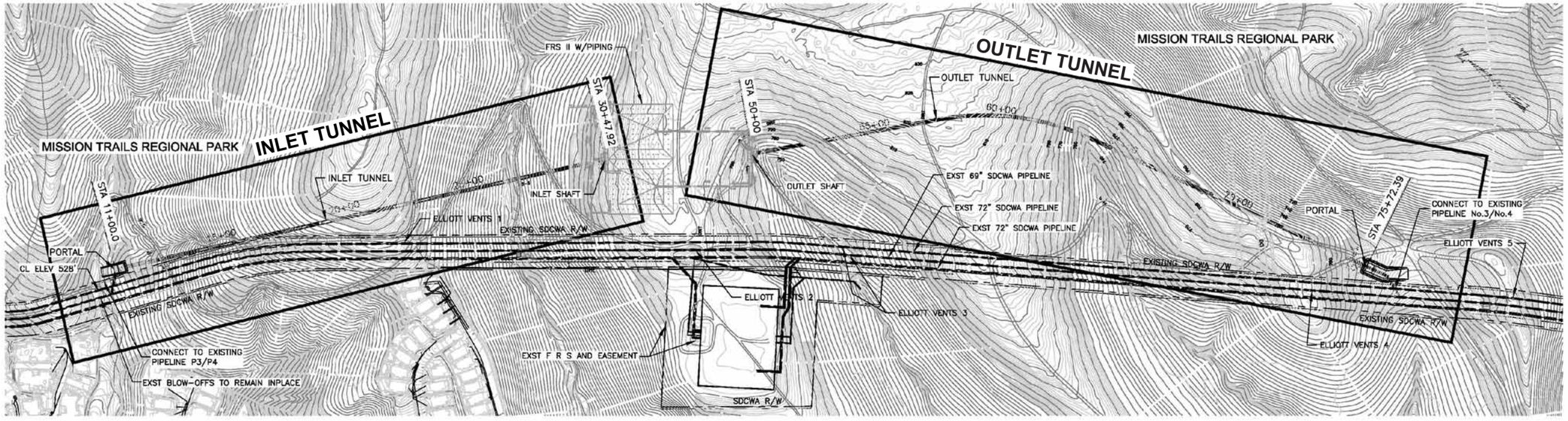


INLET TUNNEL (NORTH)



OUTLET TUNNEL (SOUTH)



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VERT SCALE: 1"= 80'

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HORIZ SCALE: 1"= 200'

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
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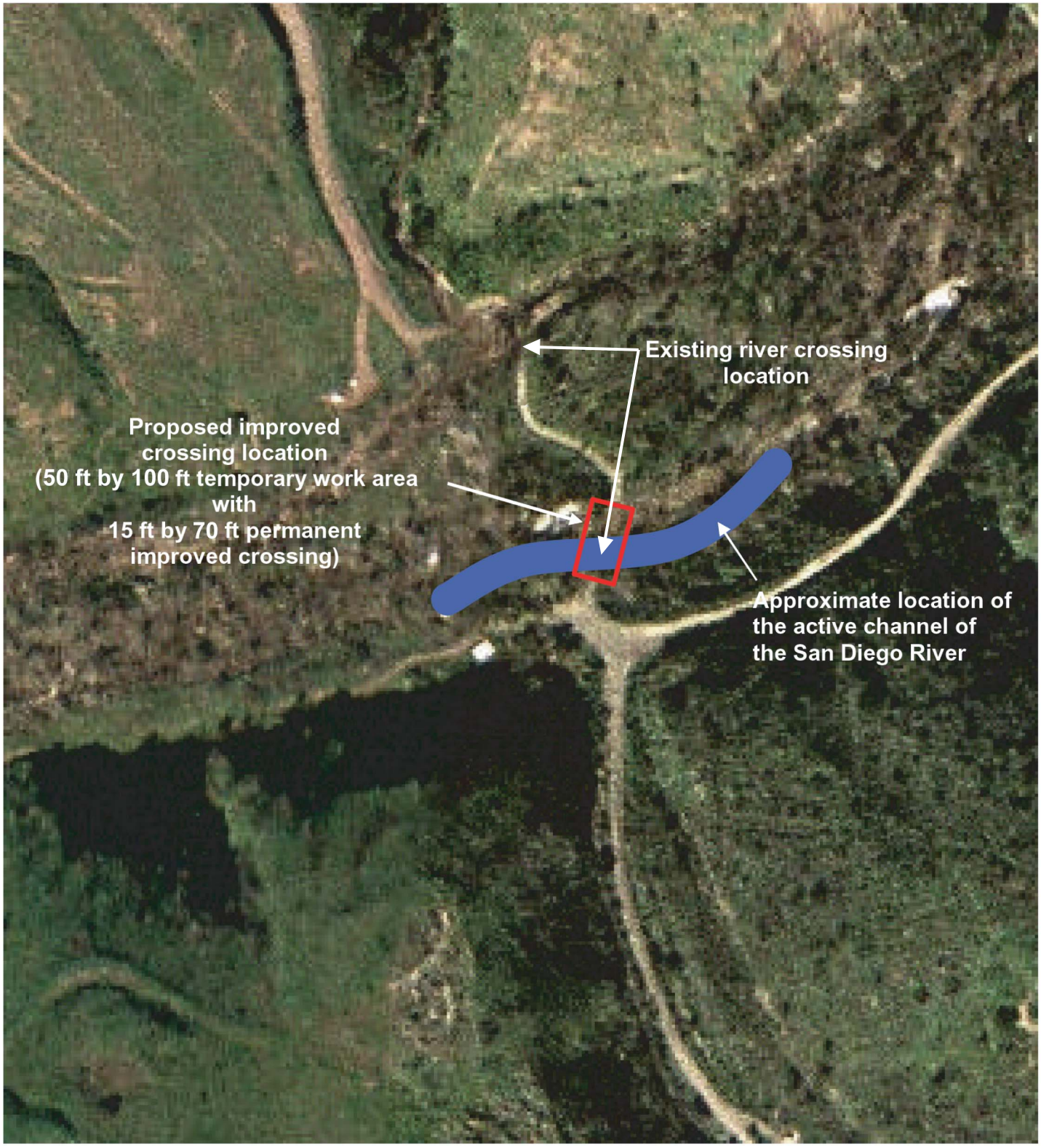

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Stabilized River Crossing

Figure 2-8

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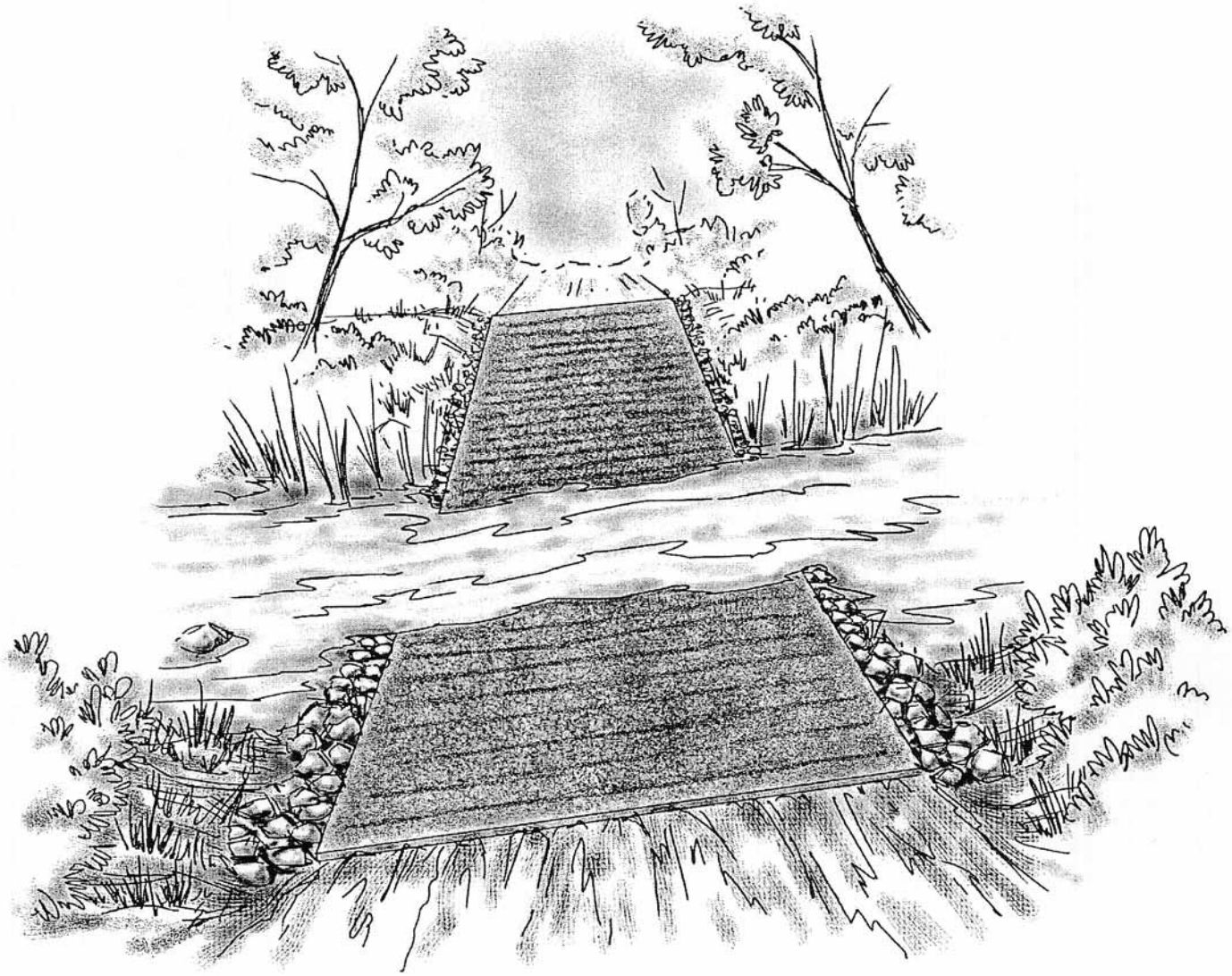

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Visual Representation of Stabilized San Diego River Crossing **Figure 2-9**

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Proposed Construction Access/Haul Routes

Figure 2-10

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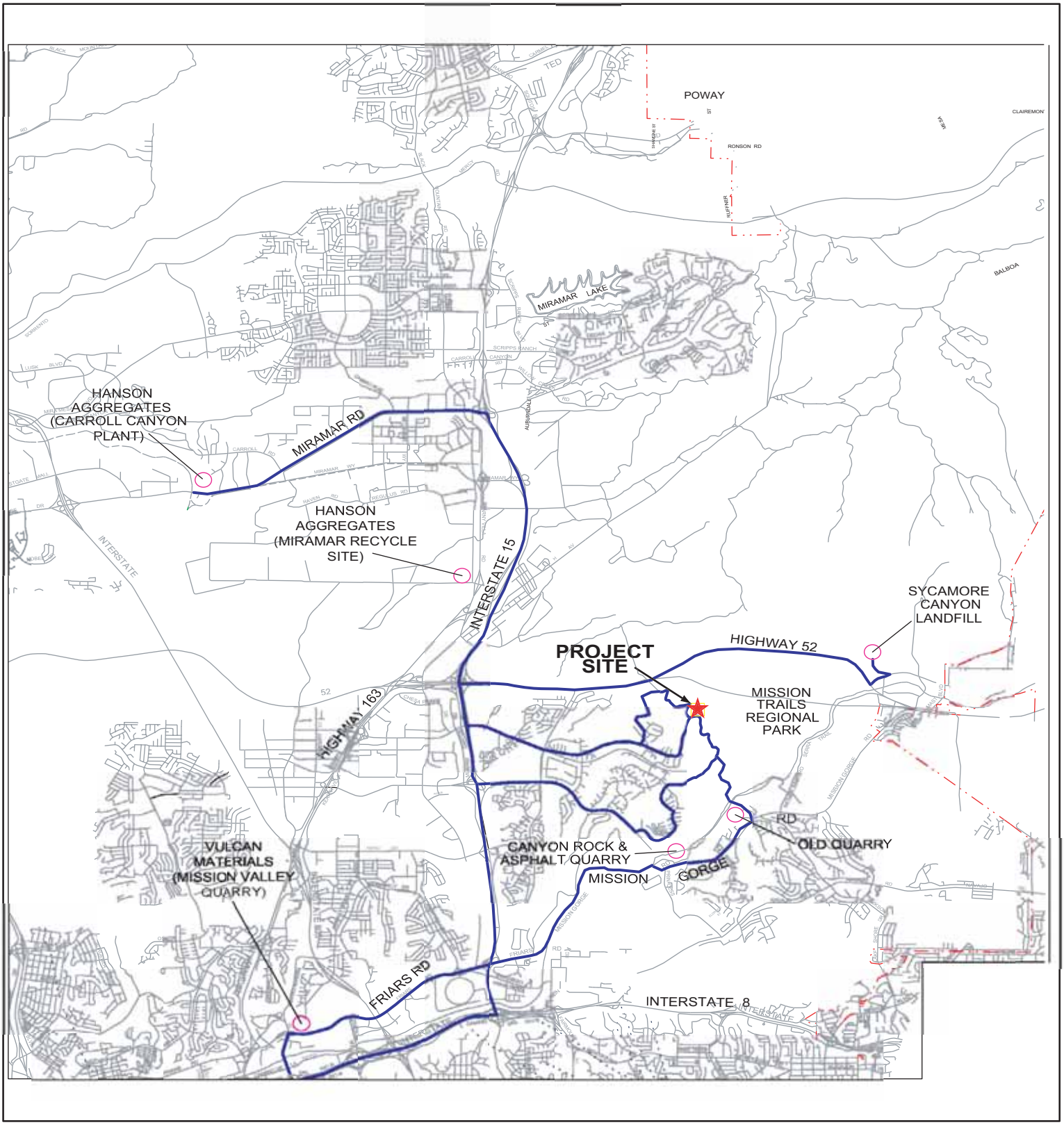

Legend

- POTENTIAL DISPOSAL SITE
- POTENTIAL HAUL ROUTE

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No Scale

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Potential Disposal Site Locations

Figure 2-11

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SECTION 3.0
ENVIRONMENTAL ANALYSIS

3.1 LAND USE

This section evaluates the potential impacts of the proposed project on land use. The evaluation is based on a review of the existing and planned land uses in the vicinity of the proposed project. The project area and vicinity are currently in public ownership by the Water Authority, SDUSD, and the City of San Diego. The transfer of ownership of the school district parcel proposed as the location of the FRS II from the SDUSD to the Water Authority would not occur without project approval. All property included in the proposed project is managed by the City of San Diego Park and Recreation Department as part of MTRP.

3.1.1 Existing Conditions

On-Site and Surrounding Land Uses

The project site is located in the northwestern portion of MTRP, generally east and north of the terminus of Clairemont Mesa Boulevard, south of SR-52, and west of Fortuna Mountain. The proposed stabilized crossing of the San Diego River is located in the Mission Gorge area of the park, north of Mission Gorge Road and west of the Visitor's Center.

MTRP was established in 1974 and includes nearly 5,800 acres of natural and developed areas. Along with Balboa Park and Mission Bay, MTRP has been called the third jewel in the City of San Diego's Park System. The addition of over 1,000 acres to the northern portion of the park as part of the Stonebridge Estates residential development project has made MTRP one of the largest urban parks in the United States.

MTRP includes a portion of Camp Elliott, an area used by the U.S. military from 1917 to 1960. The area was first used as an artillery target during World War I training exercises and later as part of U.S. Marine Corps Camp Elliott when it was used for infantry, tank, and artillery training during World War II and the Korean War. Between 1960 and 1963, approximately one-third of Camp Elliott was declared excess land by the military and was given to the City of San Diego and San Diego State University. The discovery of unexploded ordnance on these lands led to an intensive sweep by the U.S. Army Corps of Engineers (Corps) in 1993. The ordnance sweep resulted in the removal of tons of unexploded materials from MTRP. Military lands continue to abut MTRP, as Marine Corps Air Station (MCAS) Miramar is located north of the project site, immediately north of SR-52.

MTRP takes its name from the fact that it was part of the San Diego de Alcalá Mission lands. Originally occupied by the Kumeyaay Indians, the lands within MTRP later were associated with the Mission and include the site of the Old Mission Dam and flume, built to store and transport water for use at the Mission. The Mission was subsequently disbanded, the former Mission lands opened to farming in 1885, and a number of ranches and farms were purchased in the area. Mining came to Mission Gorge when granite mines were opened in 1873. Evidence of this

historic mining within what is now MTRP can still be found along the San Diego River and mining continues within Mission Gorge just beyond the boundaries of MTRP.

The project area is within the West Fortuna Mountain area of MTRP, which consists of the western portion of the park that is located adjacent to the Tierrasanta neighborhood and extends southward towards Mission Gorge Road and the Navajo and San Carlos neighborhoods. Travel is limited to existing roads and trails, which are designated for hiking only, hiking and biking, or hiking, biking, and equestrian use. The terrain consists of a series of ridges and valleys, with the San Diego River flowing through the deepest valley, Mission Gorge.

The proposed FRS II facility would be located on property currently owned by the SDUSD. The Water Authority owns a 130-foot-wide right-of-way through MTRP and, along with SDG&E and the City of San Diego, maintains utilities within the boundaries of MTRP. The City of San Diego Park and Recreation Department manages and patrols all land within MTRP's borders. Formal gated access points to MTRP within the project area include, from north to south, Mast Boulevard, Portobelo Drive, Seda Drive, Clairemont Mesa Boulevard, Calle de Vida, and Mission Gorge Road at Jackson Drive and at Father Junipero Serra Trail. Each of these access points can be used by authorized motor vehicles, which are limited to Park Rangers, park maintenance staff and contractors, law enforcement, fire protection, and utility providers with facilities within MTRP. While motor vehicles operate within the project area on a daily basis, the number of trips is typically low.

Single- and multi-family residences are located in close proximity to the project area, just west of MTRP boundaries. Single- and multi-family homes, schools, parks, community centers, churches, commercial areas, and open space are all found along the proposed construction access routes through Tierrasanta.

Land Use Plans and Policies

The project site is located within the jurisdictional boundaries of the City of San Diego, on publicly owned land. As noted above, the Water Authority owns a right-of-way through MTRP where portions of the proposed project would be built. The Water Authority would acquire land adjacent to the right-of-way from the City of San Diego and the SDUSD prior to construction. This would allow the entire project to be located on land owned by the Water Authority. As a Special District, the Water Authority is not subject to local land use plans, policies and ordinances. Furthermore, water supply facilities are exempt from local zoning per California Government Code Section 53091. The Water Authority, however, strives to attain consistency with local land use plans when proposing development of public water facilities. The following discussion addresses local land use plans and policies that would otherwise apply to the proposed project.

City of San Diego Progress Guide and General Plan. Land use and development policies for the City of San Diego are governed by the City of San Diego Progress Guide and General Plan, which is divided into a number of primary elements. The West Fortuna, East Fortuna, and Mission Gorge areas of MTRP, including the project site, are located within the adopted Tierrasanta Community Plan. In fact, 42 percent of Tierrasanta is generally designated for open

space and preservation, with MTRP as a separate land use category. The adopted land use plan constitutes the land use element of the Progress Guide and General Plan.

The Open Space Element supports the conservation and enhancement of San Diego's existing communities and seeks to aid in the creation of new communities, which strive to retain and enhance natural amenities. The goal of this element calls for establishing "an open space system which provides for the preservation of natural resources, the managed production of resources, the provision of outdoor recreation, the protection of public health and safety, and the utilization of the varied terrain and natural drainage systems of the San Diego community to guide the form of urban development."

The Recreation Element interrelates in a variety of ways with many of the other elements. Recreation is one of the major uses for open space lands and resource-based parks are a major part of the City's open space system. Both the Recreation Element and the Conservation Element are concerned with the preservation and use of beaches, water bodies, and wildlands. Goals of the Recreation Element include the development of an extensive and varied system of open space and recreation facilities. The Conservation Element addresses land resources, water resources, mineral resources, ecological resources, and air resources. Present within the Conservation Element's discussion of land resources are environmental considerations such as landforms, soils, and erosion.

Specific land uses within the MTRP boundaries are guided by the MTRP Master Development Plan, adopted in 1985. The Master Development Plan shows the project area as "natural open space," with a number of multi-use trails and park access points in the vicinity.

City of San Diego Multiple Species Conservation Program. The City of San Diego MSCP was prepared to implement the state-wide Natural Communities Conservation Program (NCCP). The NCCP was developed to streamline the permitting process and to facilitate a regional approach to habitat conservation. The MSCP Subarea Plan is specifically designed to facilitate the implementation of a regional habitat preserve while allowing "take" of endangered species or habitats at the individual project level (City of San Diego 1997). The City's MHPA and lands within it have been designated for conservation of biological resources considered sensitive by the resource agencies and by the City of San Diego. The entire project area is located within the MHPA. Although the Water Authority is currently preparing a Subregional NCCP/Habitat Conservation Plan and is not a participant in the MSCP, this EIR evaluates the compatibility of the proposed project with the City's MSCP.

3.1.2 Thresholds of Significance

Thresholds used to evaluate potential land use impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant land use impact would occur if the proposed project would:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan,

local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

- Conflict with any applicable habitat conservation plan or natural community conservation plan.

3.1.3 Impact Analysis

Would the proposed project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The Water Authority is the Lead Agency for the proposed project and has jurisdiction over all existing Water Authority facilities and rights-of-way within MTRP. The City of San Diego is responsible for the management of MTRP and retains jurisdiction over all activities within the park outside of existing utility rights-of-way and easements. The SDUSD currently owns the parcel proposed as the site of the FRS II, although the Water Authority would arrange to purchase the property upon approval of the project. The proposed project is consistent with the Water Authority's Master Plan and with the City of San Diego's MTRP Master Plan. The SDUSD has determined that the 12.78-acre parcel proposed as the FRS II site is surplus land, because it has been surrounded by MTRP and there is no easy access to paved public roads.

The City of San Diego prepared the MTRP Master Plan to establish their goals, objectives, and long-term management plans for MTRP. Along with the preservation of open space and natural resources and the provision of opportunities for passive recreation, the Master Plan acknowledges the importance of hosting regionally important utilities, such as SDG&E lines, City of San Diego sewer lines, and the Water Authority's pipelines. While the proposed project would result in the temporary direct disturbance of the West Fortuna Area of MTRP in the form of road and trail closures and the intrusion of construction impacts such as noise, dust, and aesthetics, these impacts would be temporary (access to MTRP and trail closure is anticipated to range from 2 months at the stabilized crossing of the San Diego River to 2 years at the Clairemont Mesa Boulevard staging area). No new trails or roads would be constructed within MTRP, either to facilitate construction or to provide detour routes during construction. This would minimize impacts to the natural areas of the park. Trail detours would utilize existing roads and trails only.

MTRP is designated as parkland in the Tierrasanta Community Plan with the understanding that land uses within the park are regulated by the City of San Diego through the Park and Recreation Department. The Master Plan recognizes the importance of the utilities that cross MTRP and no conflicts have been identified. Therefore, no significant conflicts with applicable land use plans, policies, or regulations have been identified.

The proposed project would not conflict with the Tierrasanta Community Plan or the MTRP Master Plan as all passive recreational uses would continue as planned within the project vicinity following construction. Furthermore, the proposed water distribution facilities would be within or adjacent to the existing Water Authority easements or land ownership. The proposed

stabilized river crossing would provide a benefit to park rangers, maintenance staff, and law enforcement, fire, and emergency personnel.

The impact on land use plans, policies, or regulations would not be significant.

Would the proposed project conflict with any applicable habitat conservation plan or natural community conservation plan?

MTRP is included within an MHPA as designated by the City of San Diego's MSCP. Although the Water Authority is currently preparing its own Habitat Conservation Plan (HCP) for Water Authority lands and does not participate in the City's MSCP, conformance with the City's plan has been evaluated for the proposed project.

According to the City, land uses that are conditionally compatible with the MSCP objectives include utility lines and limited water facilities. The guidelines of Section 1.4 of the Subarea Plan are presented below.

1. All proposed utility lines (e.g., sewer, water, etc.) should be designed to avoid or minimize intrusion into the MHPA. These facilities should be routed through developed or developing areas rather than the MHPA, where practicable. If no other routing is feasible, then the lines should follow previously existing roads, easements, right-of-ways, and disturbed areas, minimizing habitat fragmentation.

2. All new development for utilities and facilities within or crossing the MHPA shall be planned, designed, located and constructed to minimize environmental impacts. All such activities must avoid disturbing the habitat of MSCP covered species, and wetlands. If avoidance is infeasible, mitigation would be required.

The following land use considerations regarding construction and maintenance policies would apply to the proposed project:

1. Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable. If temporary habitat disturbance is unavoidable, then restoration of, and/or mitigation for, the disturbed area after project completion would be required.

2. Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage. Training of construction crews and field workers must be conducted.

3. Roads in the MHPA would be limited to those identified in Community Plan Circulation Elements, collector streets essential for area circulation, and necessary maintenance/emergency access roads. Local streets should not cross the MHPA except where needed to access isolated development areas.

4. Development of roads in canyon bottoms should be avoided whenever feasible. If an alternative location outside the MHPA is not feasible, the road must be designed to cross the shortest length possible of the MHPA in order to minimize impacts and fragmentation of sensitive species and habitat. If roads cross the MHPA, they should provide for fully functional wildlife movement capability. Bridges are the preferred method of providing for movement, although culverts in selected locations may be acceptable. Fencing, grading and plant cover should be provided where needed to protect and shield animals, and guide them away from roads to appropriate crossings.

The following land use considerations regarding fencing, lighting, and signage would apply to the proposed project:

1. Fencing or other barriers shall be used where it is determined to be the best method to achieve conservation goals and adjacent to land uses incompatible with the MHPA. For example, use chain link or cattle wire to direct wildlife to appropriate corridor crossings, natural rocks/boulders or split rail fencing to direct public access to appropriate locations, and chain link to provide added protection of certain sensitive species or habitats (e.g. vernal pools).

2. Lighting shall be designed to avoid intrusion into the MHPA and effects on wildlife. Lighting in areas of wildlife crossings should be of low-sodium or similar lighting.

3. Signage would be limited to access and litter control and educational purposes.

The MSCP allows for utility impacts within an MHPA where no viable alternatives exist. In the case of the proposed project, the Water Authority's right-of-way was established long before the MHPA boundaries were drawn and nearly all of the permanent impacts associated with the water conveyance facilities are belowground. Therefore, although the proposed project would result in impacts to sensitive biological resources within the City's MHPA, the project would be considered compatible with the biological objectives of the MSCP as long as access and construction activities conform to the guidelines of Section 1.4 of the MSCP. Construction would conform to these guidelines, and appropriate biological mitigation would be provided. The following paragraphs describe how the project would conform to the guidelines contained within Section 1.4 of the MSCP.

Impacts to habitats within the MHPA cannot be avoided due to the locations of existing Water Authority facilities within MTRP. However, project components would be located in areas adjacent to existing roads and trails and much of the habitat affected by the proposed project is already disturbed. Approximately 9 acres of the proposed project would be constructed within the existing Water Authority's 130-foot-wide easement. Areas supporting Diegan coastal sage scrub habitat within the easement have been mitigated as part of a previous project. Therefore, impacts to this habitat would not require mitigation.

Impacts to habitat for species covered by the MSCP and wetlands within the MHPA would not be avoided but would be minimized through project design such as restricting the project footprint to areas adjacent to existing trails and roads. Impacts associated with a previous project

(the Pipeline 4BII project) within the Water Authority's easement in MTRP were considered permanent and mitigation was provided in the Water Authority's Crestridge Habitat Management Area. That mitigation allows the Water Authority to conduct work within the right-of-way without the need for additional off-site mitigation. This applies to temporary impacts and requires 1:1 revegetation of disturbed areas within the right-of-way with a native seed mix.

Impacts to Diegan coastal sage scrub, coastal sage-chaparral scrub, valley needlegrass grasslands, San Diego mesa claypan vernal pools, southern willow scrub, southern cottonwood-willow riparian forest, mule fat scrub, and open waters of the U.S. are considered significant. Mitigation measures for impacts to biological resources are described in Section 3.8.

Temporary construction and staging areas inside the MHPA would result in temporary impacts to sensitive upland habitat. These areas would be revegetated with native plant species once project construction is completed.

In the project area, the San Diego River and associated riparian vegetation serve as a wildlife corridor due to the presence of year-round water and extensive vegetative cover. Most project impacts would occur in upland areas away from the river. The exception would be the stabilized river crossing which is a minor project component. The river crossing would be constructed only during daylight hours and would not affect wildlife movement. Training of construction crews and field workers by a qualified biologist would be provided to avoid unnecessary impacts to biological resources in the area during construction (see Section 3.8). Once constructed, the biological resources at the stabilized crossing would not be very different from those associated with the existing unimproved road that crosses the river.

The proposed project does not include the construction of new roads. Existing roads would be used to access construction areas and during project operation. All disturbed areas associated with the proposed river crossing would be revegetated following completion of construction.

Permanent signage, other than to keep unauthorized personnel outside the fenced area surrounding the FRS II control building, is not proposed as part of the project. Temporary signs would be erected to notify the public of trails that are closed during construction.

Appropriate fencing and/or other barriers have been included in the project design. Lighting associated with the proposed project is limited to emergency lighting at the FRS II control building. The lights would only be used in the event of an emergency and could only be activated by Water Authority staff.

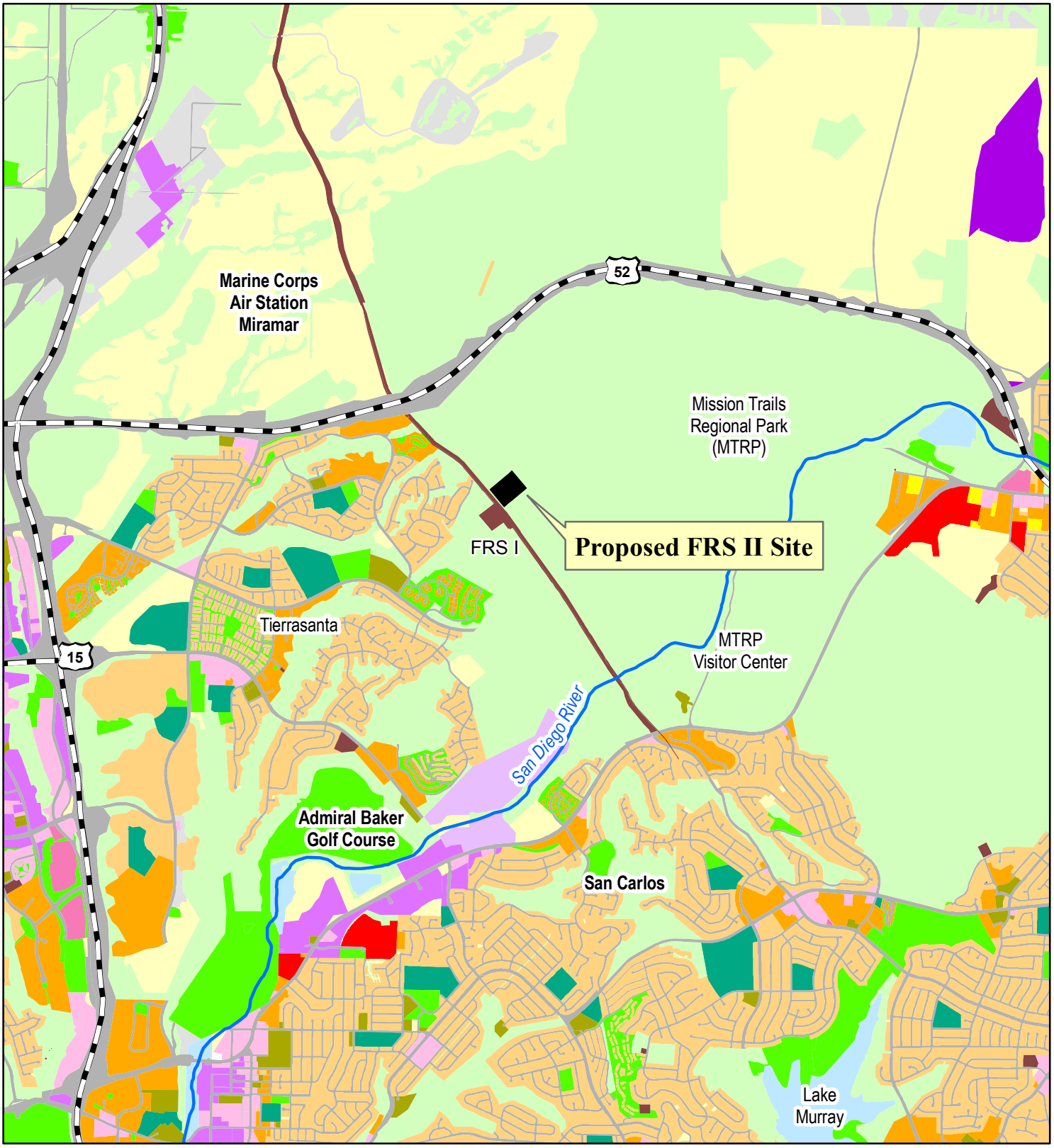
Conformance with the guidelines contained within Section 4.1 of the Subarea Plan, as described above, would avoid significant land use impacts associated with conformance with an applicable habitat conservation plan or natural community conservation plan. Therefore, there would be no significant impact.

3.1.4 Mitigation Measures

Impacts to land use would be less than significant. Therefore, no mitigation measures are required. See Sections 3.6 and 3.8 for discussions of significant impacts to recreation and biological resources, respectively.

3.1.5 Residual Impacts after Mitigation

No residual impacts would occur.



Legend

- Commercial Recreation
- Commercial and Office
- Education
- Extractive Industry
- Freeway-Roads
- Institutions
- Junkyard/Dump/Landfill
- Light Industry
- Military
- Mobile Homes
- Multiple Family
- Open Space Reserves/Preserves
- Parks
- Shopping Centers
- Single Family
- Spaced Rural
- Transportation/Communication/Utilities
- Undeveloped
- Water

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
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Date: Nov 16, 2005

San Diego County Water Authority

Existing Land Use

Figure 3.1-1

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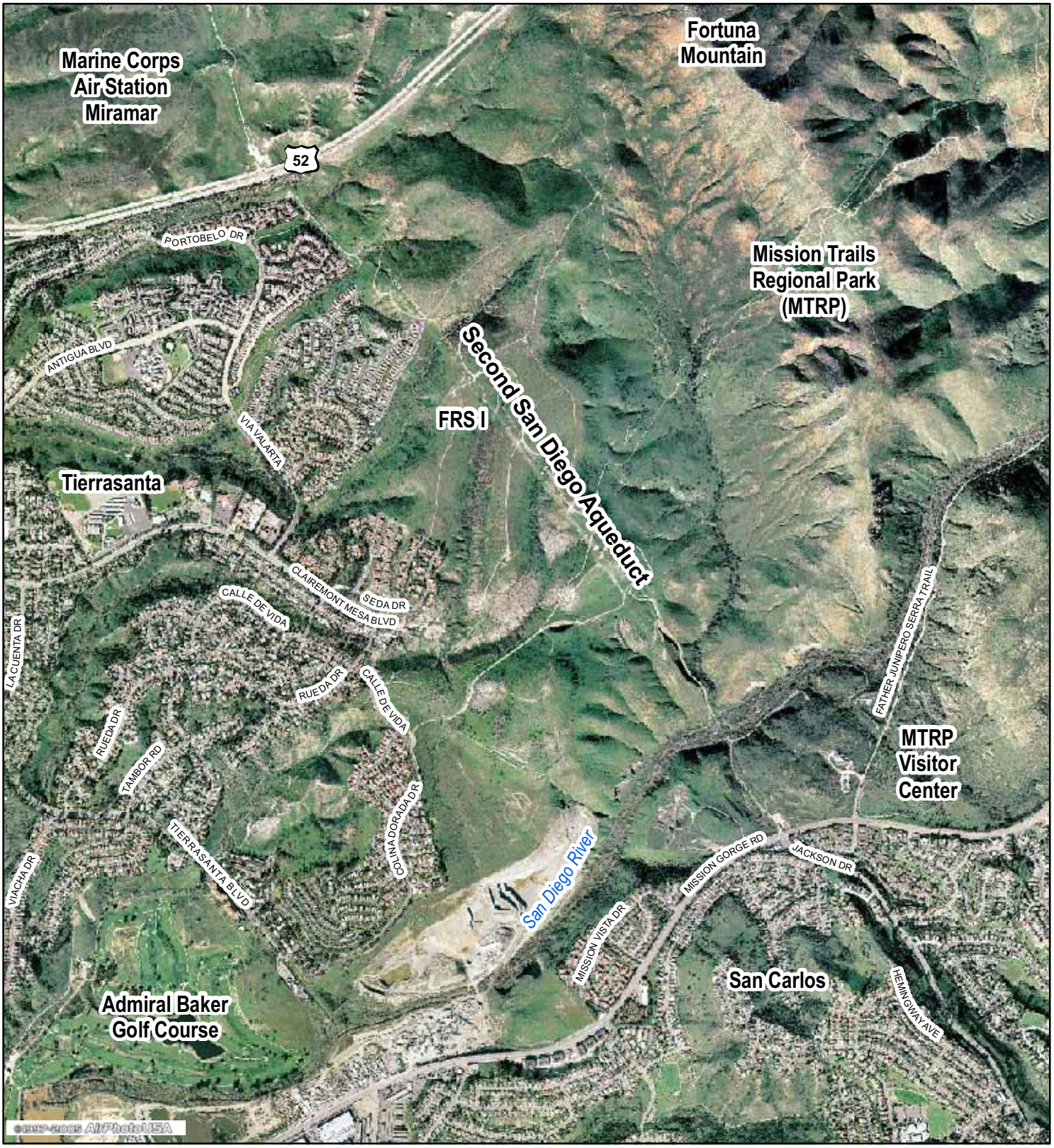

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

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Date: Mar 03, 2006

San Diego County Water Authority

On-Site and Surrounding Land Uses

Figure 3.1-2

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3.2 AESTHETICS/VISUAL QUALITY

This section evaluates the potential impacts of the proposed project on the existing visual conditions within MTRP. Design features proposed to reduce or avoid adverse effects to visual quality have been considered as part of the proposed project and their effectiveness is discussed. Most of the project features would be placed belowground, thus avoiding long-term visual impacts. Short-term visual impacts, however, would be evident throughout the project area.

3.2.1 Existing Conditions

In general, the visual quality of an area is defined by its physical characteristics or elements, including landforms, vegetation, water features, color, and diversity. In addition, the perceived visual quality of the region is influenced by other factors including harmony, vividness, adjacent scenery, cultural modifications, and scarcity.

The proposed project area extends from near SR-52 south to Mission Gorge Road, within and adjacent to the existing Water Authority aqueduct easement (Figure 2-3). The project area consists of a series of northeast to southwest trending ridgelines interspersed with mesas and canyons. The Water Authority's easement is covered with native vegetation, which is dominated by Diegan coastal sage scrub. Chaparral covers the north slopes of canyon areas and southern willow riparian scrub lines the San Diego River. Slopes within the project area range from gentle to very steep, with many over 50 percent in gradient. The highest point of the project site is at an elevation of approximately 820 feet AMSL, and the lowest point is the crossing of the San Diego River at an elevation of approximately 160 feet AMSL.

In addition to the natural terrain and vegetation, the project area includes the existing Water Authority aqueduct appurtenances, including an FRS similar in size to the one proposed, SDG&E steel towers and high power lines, and a series of utility roads, fire roads, and recreational trails. The project area offers views to the north of the landscaped SR-52 fill slope and berm, to the east of Fortuna Mountain, to the south of the San Carlos and Navajo neighborhoods, and to the east of Tierrasanta.

Residential development dominates the western boundary of MTRP within the project area. This development is immediately adjacent to the Water Authority's easement at the northern end of the project area, near the proposed North Portal, and is over 0.5 mile to the west at the southern end of the alignment, near the proposed FRS II structure (Figure 2-4). Residential development is also located on the south side of Mission Gorge Road at the intersection of Jackson Drive.

SR-52, which runs in an east/west direction just north of the project area, is not a designated California Scenic Highway, but has been designated as eligible for California Scenic Highway status by Caltrans. The North Portal may be visible to westbound motorists on SR-52 at a distance of approximately 1 mile. Views of the North Portal by eastbound motorists would be precluded by a landscaped berm.

California's Scenic Highway Program was created by the California Legislature to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of land

adjacent to those highways. When a city or county nominates an eligible scenic highway for official designation, it must adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances make up a scenic corridor protection program.

Scenic corridor protection programs include policies intended to preserve the scenic qualities of the highway corridor, including regulation of land use and density of development, detailed land and site planning, control of outdoor advertising (including a ban on billboards), careful attention to and control of earthmoving and landscaping, and careful attention to design and appearance of structures and equipment.

The combination of the relatively undisturbed natural open space of MTRP adjacent to residential neighborhoods results in a highly sensitive visual area where removal of vegetation, grading, and development would have the potential to result in significant aesthetic impacts.

Regulatory Framework

The Final PEIR for the Master Plan (Water Authority 2003) concludes that where facilities are proposed within visually sensitive open spaces areas, such as MTRP, those facilities could result in significant aesthetic impacts. Program-level mitigation measures are to be applied as appropriate to future capital improvement projects. Implementation of these mitigation measures at a project level is determined in the Final PEIR to be very likely to reduce aesthetic/visual impacts to less than significant levels. The final level of significance and the project-specific details of the mitigation for the proposed project are addressed in this site-specific EIR. Therefore, the proposed project is in compliance with the applicable mitigation measures adopted by the Water Authority in the Final PEIR for the Master Plan.

3.2.2 Thresholds of Significance

Thresholds used to evaluate potential aesthetic/visual quality impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant aesthetic/visual quality impact would occur if the project 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 project site and its surroundings.
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.2.3 Impact Analysis

Would the proposed project have a substantial adverse effect on a scenic vista?

While no designated scenic vistas are known to be present in the project area, MTRP does provide numerous opportunities for scenic views from surrounding streets and homes. In order to address the potential aesthetic/visual impacts typical from the surrounding community, the project was evaluated for visibility from surrounding vantage points and was divided into three viewsheds. A viewshed is an analytical tool to aid in identification of views that may be affected by a proposed project. Views within an approximately 1-mile radius were considered as close enough for viewers to observe project elements such as the temporary removal of vegetation, landform modifications and the size, color, texture, and architecture of the proposed aboveground project features. Each viewshed represents an area with similar views of MTRP and the project site. The viewsheds were selected to be representative of the greatest number of potential viewers. The selected viewsheds are: 1) the north-facing residences in the Navajo and San Carlos neighborhoods, south of MTRP, that have views of the Water Authority's easement, including the twin tall blue vent stacks at Elliott Vent #5; 2) the portions of MTRP from which the Water Authority's easement is visible, including Fortuna Mountain and the Visitor's Center; and 3) the residential areas of Tierrasanta that have views to the east of MTRP that include the Water Authority's easement. Fifteen Key Observations Points (KOPs) were identified within the three viewsheds (Figure 3.2-1). Figures 3.2-2 through 3.2-16 provide photographs taken from each KOP. The following paragraphs describe the existing views from each KOP and the potential for short- and long-term changes that would result from project construction. Conclusions are then made regarding whether or not the changes would be considered substantial and adverse.

Navajo/San Carlos Viewsheds – South of MTRP

KOP 1 – Hemingway Avenue (Figure 3.2-2). This KOP is located at the northern end of Hemingway Drive. This location is approximately 2,500 feet south of Mission Gorge Road at an elevation of approximately 600 feet AMSL. The existing easement is visible from this KOP. Elliott Vents #5 are visible at the top of the ridge. Project impacts from this location would be positive as Elliott Vents #5 would be removed. Views of work at the South Portal may be possible for some residents, but would for the most part be screened by intervening topography. Visual impacts from KOP 1 would be less than significant.

KOP 2 – Jackson Drive/Mission Gorge Road (Figure 3.2-3). This KOP is located at the intersection of Jackson Drive with Mission Gorge Road. Project impacts from this location would be positive as Elliott Vents #5 would be removed. Views of work at the South Portal would be completely screened from this location by intervening topography. Visual impacts from KOP 2 would be less than significant.

MTRP Viewsheds

KOP 3 – Mission Trails Visitor's Center (Figure 3.2-4). This KOP is located on the deck of the Mission Trails Visitor's Center. Elliott Vents #5 are visible from this location. Project

impacts from this location would be positive as Elliott Vents #5 would be removed. Views of work at the South Portal may be possible from the Visitor's Center, but would be mostly screened by intervening topography. Visual impacts from KOP 3 would be less than significant.

KOP 4 – San Diego River Crossing (Figure 3.2-5). This KOP provides a view of the existing crossing of the San Diego River that is to be improved with a stabilized low-flow crossing. Several trees would be removed and others would be trimmed to allow for the construction of the 15-foot by 70-foot crossing. This would result in a very limited change in appearance to the riparian vegetation at the crossing location. The impact would be temporary as the areas disturbed by construction would be restored to natural contours and planted with native riparian vegetation. See Section 3.8, Biological Resources, for a discussion of the significance of impacts to biological resources at this location. Visual impacts from KOP 4 would be less than significant.

KOP 5 – Top of Fortuna Mountain (Figure 3.2-6). This KOP is located at an elevation approximately 500 feet above the highest point of the proposed FRS II and at a distance of approximately 2 miles to the east. Much of the existing easement is visible as is the existing FRS I. The two tunnel portals are not visible from this location. While the FRS II construction area would be visible in the short term, long-term impacts would be limited to the FRS II control building. Based upon the vastness of the view from the top of Fortuna Mountain and the very small portion of the viewshed that would be affected by the proposed project, visual impacts from KOP 5 would not be significant. Visual impacts from KOP 5 would be less than significant.

KOP 6 – Rim Trail (Figure 3.2-7). This KOP is located on the Rim Trail, approximately 100 feet northeast of the FRS II site. The view of natural vegetation would be replaced temporarily with a view of a construction site. Short-term impacts from this KOP would be adverse because the construction site would represent a substantial change in scenery from the existing vegetated open space; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would be altered by the modified terrain above the FRS II and the presence of the FRS II control building. However, long-term visual impacts would not be significant because the site would be revegetated with a native seed mix and the FRS II control building would be constructed with an architectural design and building materials that would complement the surrounding parkland. Visual impacts from KOP 6 would be less than significant.

KOP 7 – Elliott Vents #4 and #5 (Figure 3.2-8). This KOP is located near the South Portal. The view of natural vegetation would be replaced temporarily with a view of a construction site. Short-term visual impacts at this location would be adverse due to the disturbance of existing parkland; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would be positive at this location as the existing vents would be removed and would either be capped at ground level or replaced by air valves in concrete vaults approximately 3 feet above groundlevel. Visual impacts from KOP 7 would be less than significant.

Tierrasanta Viewsheds – West of MTRP

KOP 8 - Calle de Vida/Colina Dorada Drive Access Point (Figure 3.2-9). This KOP is looking north from the intersection of Calle de Vida and Colina Dorada Drive. Short-term visual impacts at this location would be minimal because there would be limited road improvement. There would not be any long-term visual impacts at this location as no permanent features are proposed and all areas temporarily disturbed by construction would be restored to their original contours and planted with a native seed mix. Visual impacts from KOP 8 would be less than significant.

KOP 9 – Eastern Terminus of Clairemont Mesa Boulevard Access Point (Figure 3.2-10). This KOP shows the bridge that was constructed for the FRS I Project, which is currently used by park visitors utilizing the eastern terminus of Clairemont Mesa Boulevard for access to MTRP. Short-term visual impacts would be limited to the paved area of Clairemont Mesa Boulevard beyond Rueda Drive and the dirt parking/staging area between Clairemont Mesa Boulevard and the bridge. These impacts would not be significant as these areas are already developed or disturbed and are currently used for the parking of motor vehicles. There would be no long-term visual impacts at this location as no permanent features are proposed at this location and the dirt parking lot/staging area would be restored to approximate existing conditions. Visual impacts from KOP 9 would be less than significant.

KOP 10 – Portobelo Drive/Belsera Access Point (Figure 3.2-11). This KOP shows the existing access road off of Portobelo Drive at the Belsera community. Improvements at this location would consist of the installation of a wider gate and the widening of the access road from approximately 8 feet to 12 feet. This would be a minor change that would not result in significant visual impacts. Visual impacts from KOP 10 would be less than significant.

KOP 11 – North Portal (Figure 3.2-12). This KOP shows the residential area that is visible from the North Portal. All residences visible from this location would be able to view the construction at the North Portal. Short-term views of construction at the North Portal would be adverse due to the close proximity of the residents to the construction site and the proposed area of MTRP immediately adjacent to the Belsera community that would be disturbed; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would not be significant because the disturbed areas would be restored to natural contours and planted with a native seed mix. A 12-foot-diameter concrete vault that would house a possible isolation flange, extending no more than 3 feet above ground level, would be the only permanent feature at this location. Visual impacts from KOP 11 would be less than significant.

KOP 12 – Corte Playa Catalina (Figure 3.2-13). This KOP is located at the northeastern end of Corte Playa Catalina, approximately one-quarter mile west of the proposed FRS II site. The grading for the proposed FRS II and the aboveground control building would be most visible from this street and from the front yards and windows of homes along this residential cul-de-sac. The FRS II site and proposed aboveground control building represent a small portion of the overall viewshed and the control building would be designed to complement the surrounding open space and vegetation. Visual impacts from KOP 12 would be less than significant.

KOP 13 – Belsera at North Portal (Figure 3.2-14). This KOP is located in the shared open space behind condominiums located in the Belsera neighborhood, along the western boundary of MTRP and adjacent to the Water Authority's right-of-way and proposed North Portal. These homes are within several hundred feet of the North Portal and are immediately adjacent to the North Portal staging area and haul route. Short-term views of construction at the North Portal would be adverse due to the close proximity of the residents to the construction site and the proposed area of MTRP immediately adjacent to the Belsera community that would be disturbed; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would not be significant because the disturbed areas would be restored to natural contours and planted with a native seed mix. Visual impacts from KOP 13 would be less than significant.

KOP 14 – Belsera Along North Portal Haul Route (Figure 3.2-15). This KOP is located just north of the intersection of the North Portal access road from Portobelo Drive and to the Water Authority's pipeline right-of-way. Views from this location would be of construction traffic and activity at the North Portal staging area. These homes are within several hundred feet of the haul route and the northern end of the staging area. Short-term views of construction at the North Portal would be adverse due to the close proximity of the residents to the construction site and the proposed area of MTRP immediately adjacent to the Belsera community that would be disturbed; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would not be significant as the disturbed areas would be restored to natural contours and planted with a native seed mix. Visual impacts from KOP 14 would be less than significant.

KOP 15 – Belsera West of Access Road (Figure 3.2-16). This KOP is located in the landscaped open space behind the Belsera condominiums, west of the North Portal access road and staging area. Views from this location would be of the active North Portal construction and the staging area for the construction. The staging area would be used for the parking of employee vehicles, inactive construction equipment, and temporary storage of materials such as pipe. Short-term views of construction at the North Portal would be adverse due to the close proximity of the residents to the construction site and the proposed area of MTRP immediately adjacent to the Belsera community that would be disturbed; however, the impact would not be significant because the change would be temporary. Long-term visual impacts would not be significant as the disturbed areas would be restored to natural contours and planted with a native seed mix. Visual impacts from KOP 15 would be less than significant.

Summary. The proposed project would result in adverse short-term impacts to scenic views of the West Fortuna area of MTRP due to the disturbance of vegetation and topography and the presence of heavy equipment. However, the impacts would be less than significant because the changes would be temporary.

Long-term impacts to these scenic views would be less than significant because nearly all of the permanent project features would be belowground and the surface would be revegetated with native plant material. The FRS II control building would be constructed with an architectural design and building materials that would complement the surrounding parkland. The visibility of existing appurtenances within the Water Authority's easement would be reduced through the

removal of up to five pairs of vent structures (Elliott Vents #1-#5). The removal of these vent structures along Pipelines 3 and 4, some of which are very tall and painted blue, is considered to be a positive visual impact because it would reduce the visibility of infrastructure within MTRP. Ground-level air valves would be installed in place of the vents. The stabilized crossing of the San Diego River would be designed to be visually attractive, similar to the existing stone and concrete dam just downstream of the proposed crossing. Upon completion of construction, the North Portal and South Portal would be low, unobtrusive concrete vault structures similar to others along the Water Authority's easement in MTRP. Permanent visual impacts of the project would be less than significant.

Would the proposed project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

As a regional open space park, all of MTRP is considered to be a scenic resource worthy of protection. There are, however, no mature trees, rock outcroppings or historic buildings at the FRS II site or the two tunnel portal sites. Mature trees line the San Diego River at the proposed stabilized crossing, several of which would need to be removed or trimmed to expand the existing 10-foot-wide road to a 15-foot improved crossing. This impact to mature trees would be minimized to the extent practical and is not a significant visual/aesthetic impact as there is already a dirt utility road crossing through the river at this location. See Section 3.8, Biological Resources, for a discussion of the significance of this impact to biological resources.

SR-52 has not been designated as a scenic highway, but has been identified as eligible for consideration for such a designation. The North Portal is the only project feature that would be visible from SR-52. Visual impacts at the North Portal staging area for drivers on SR-52 would be temporary and would not be significant. The permanent tunnel portal access vault would be no more than 3 feet tall and would resemble the existing concrete vaults visible within the Water Authority's easement. Long-term impacts to the view from SR-52 would be less than significant.

Would the proposed project substantially degrade the existing visual character or quality of the project site and its surroundings?

The proposed project would temporarily degrade the existing visual character of approximately 20 acres of MTRP, an urban park that covers nearly 5,800 acres. The project would not substantially degrade the project site and its surroundings in the long-term, due to the limited area of disturbance compared to the surrounding area, the placement of project facilities belowground, and restoration of the site topography and vegetation. This impact would be less than significant.

Would the proposed project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Temporary lighting would be used at the tunnel portals and within the tunnels during construction. Night work at the North Portal would be limited to a 10-day period near the end of the project when the new tunnel pipeline is connected to the existing pipelines. Night work at

the South Portal would occur throughout the approximately 2-year construction period. No night work is proposed at the FRS II site.

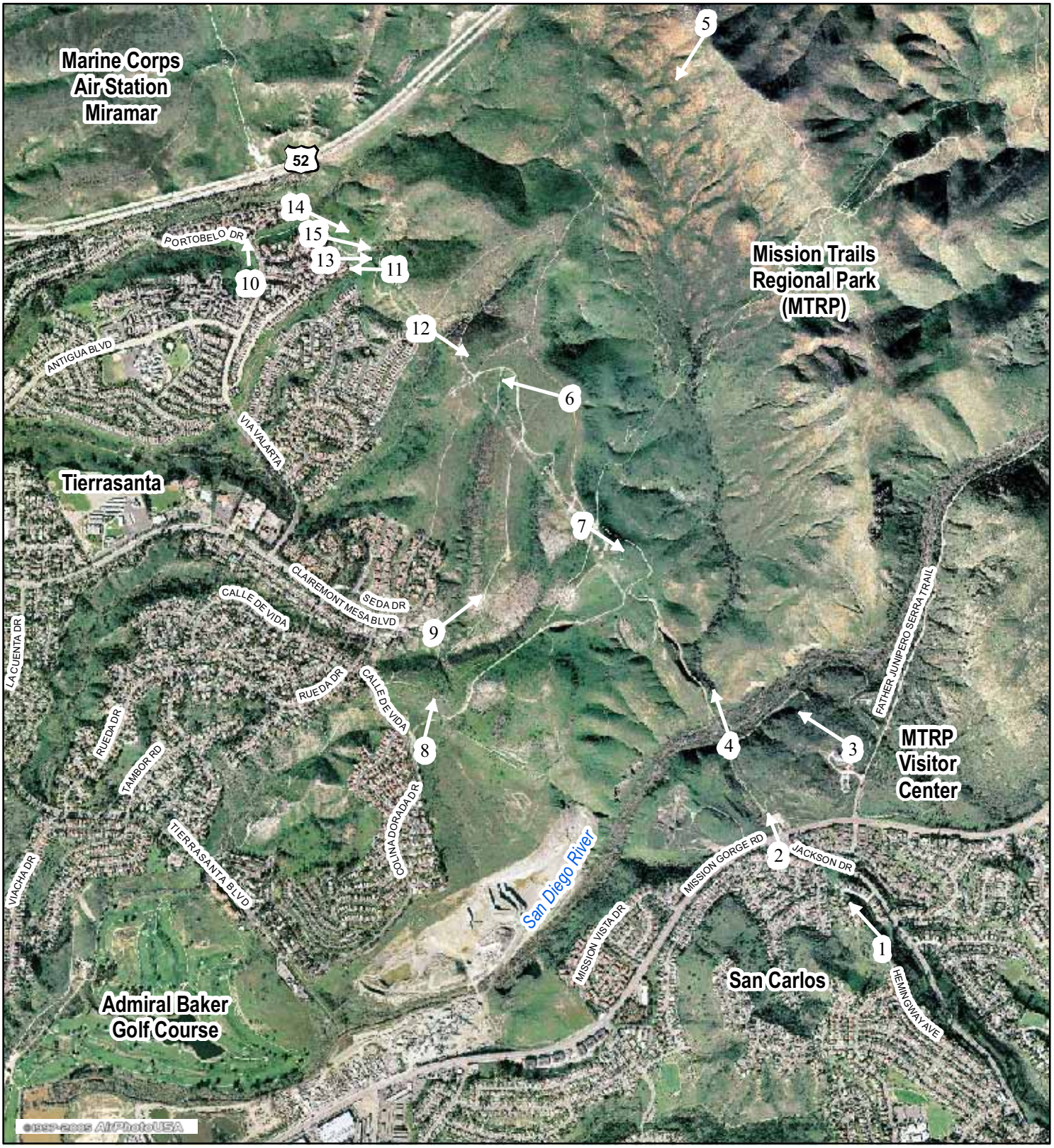
The lights needed for night construction would be projected downward towards the tunnel portals or would be within the tunnels. Light spill toward the residential properties to the west would be avoided through the location of the lights and angle of projection. Permanent lighting associated with the project would be limited to the FRS II control building and would only be used by Water Authority employees during emergency night work. No glass, chrome or other reflective surfaces would be used on aboveground structures. Therefore, the proposed project would not introduce a new source of substantial light that would affect nighttime views in the area or glare that would affect daytime views in the project area. This impact would be less than significant.

3.2.4 Mitigation Measures

Impacts to aesthetics/visual quality would be less than significant. Therefore, no mitigation measures are required.

3.2.5 Residual Impacts after Mitigation

No residual impacts would occur.



San Diego County Water Authority

Locations of Key Observation Points

Figure 3.2-1

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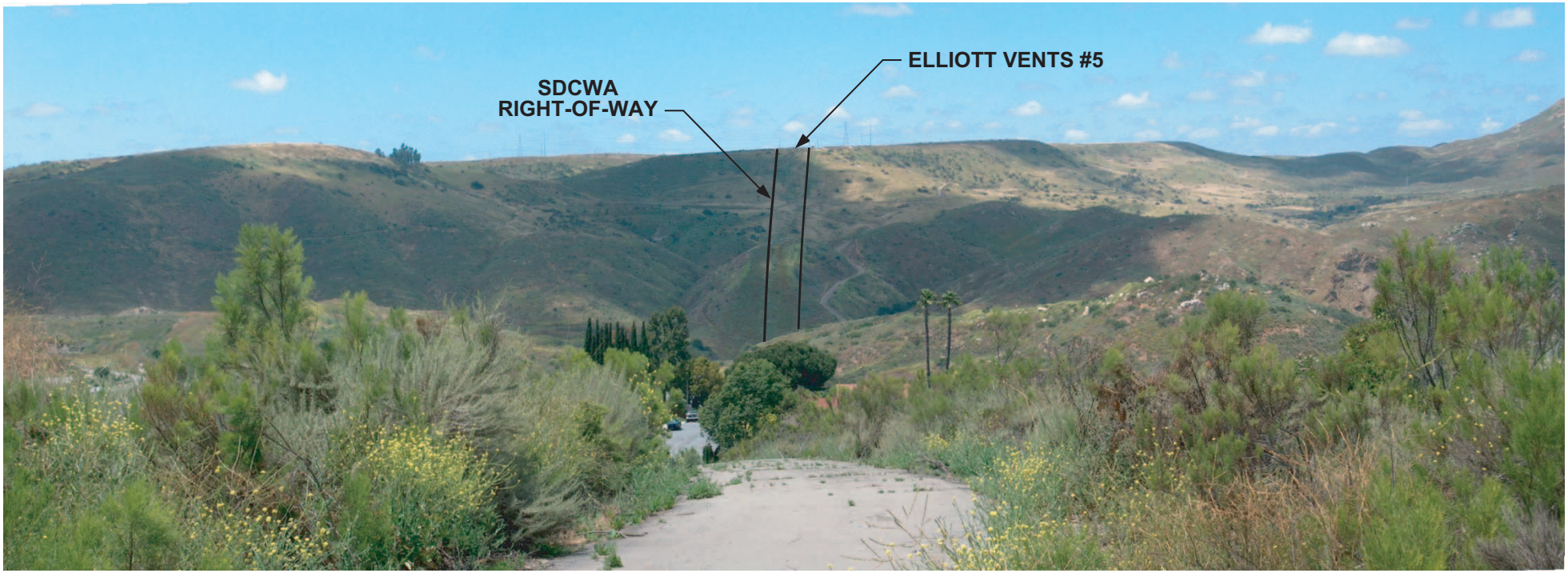

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Hemingway Avenue (KOP 1)

Figure 3.2-2

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Jackson Drive/Mission Gorge Road (KOP 2)

Figure 3.2-3

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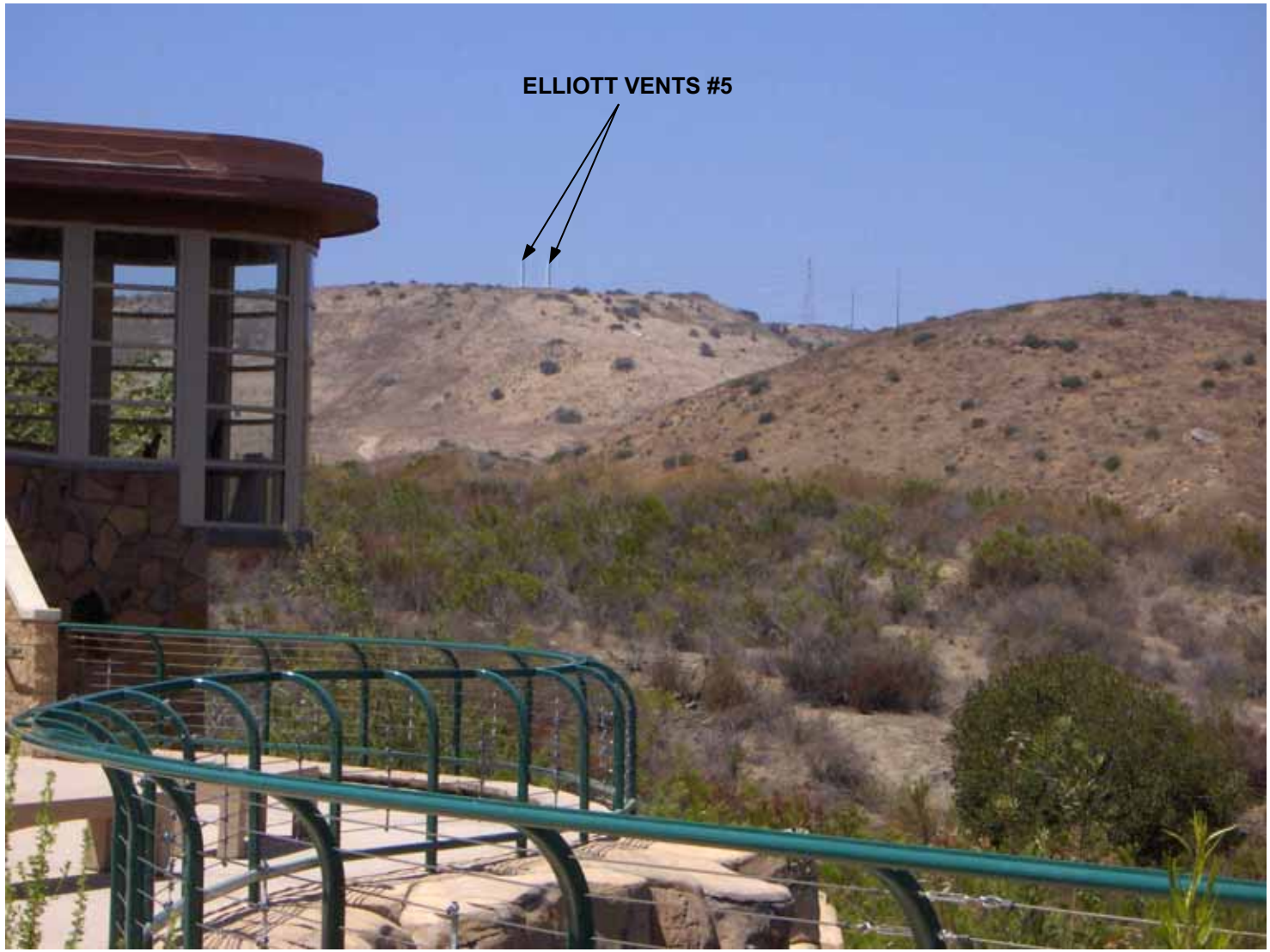

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Visitors Center (KOP 3)

Figure 3.2-4

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego River Crossing (KOP 4)

Figure 3.2-5

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

FRS Sites (KOP 5)

Figure 3.2-6

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Rim Trail Panoramic View (KOP 6)

Figure 3.2-7

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Elliott Vents #4 and #5 (KOP 7)

Figure 3.2-8

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Calle de Vida/Colina Drive Access Points (KOP 8)

Figure 3.2-9

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Eastern Terminus of Clairemont Mesa Boulevard (KOP 9)

Figure 3.2-10

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Portobelo Drive/Belsara Access Point (KOP 10)

Figure 3.2-11

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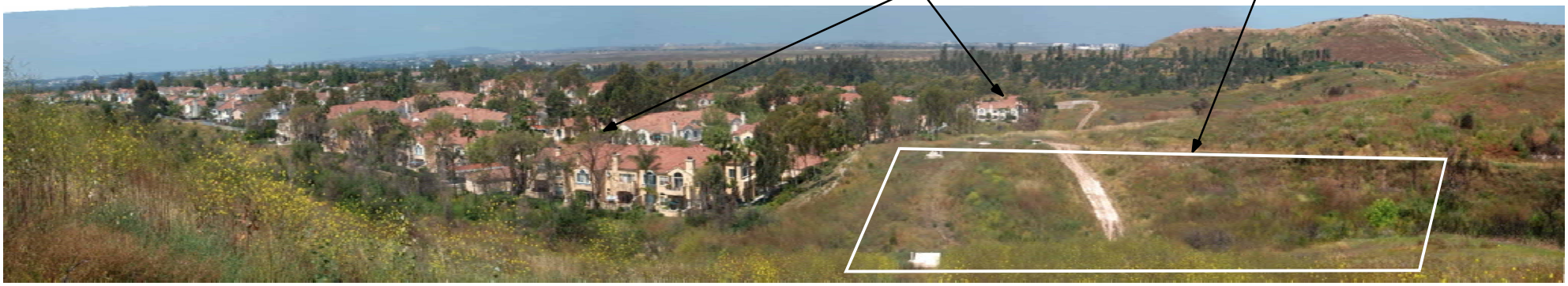

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

North Tunnel Portal (KOP 11)

Figure 3.2-12

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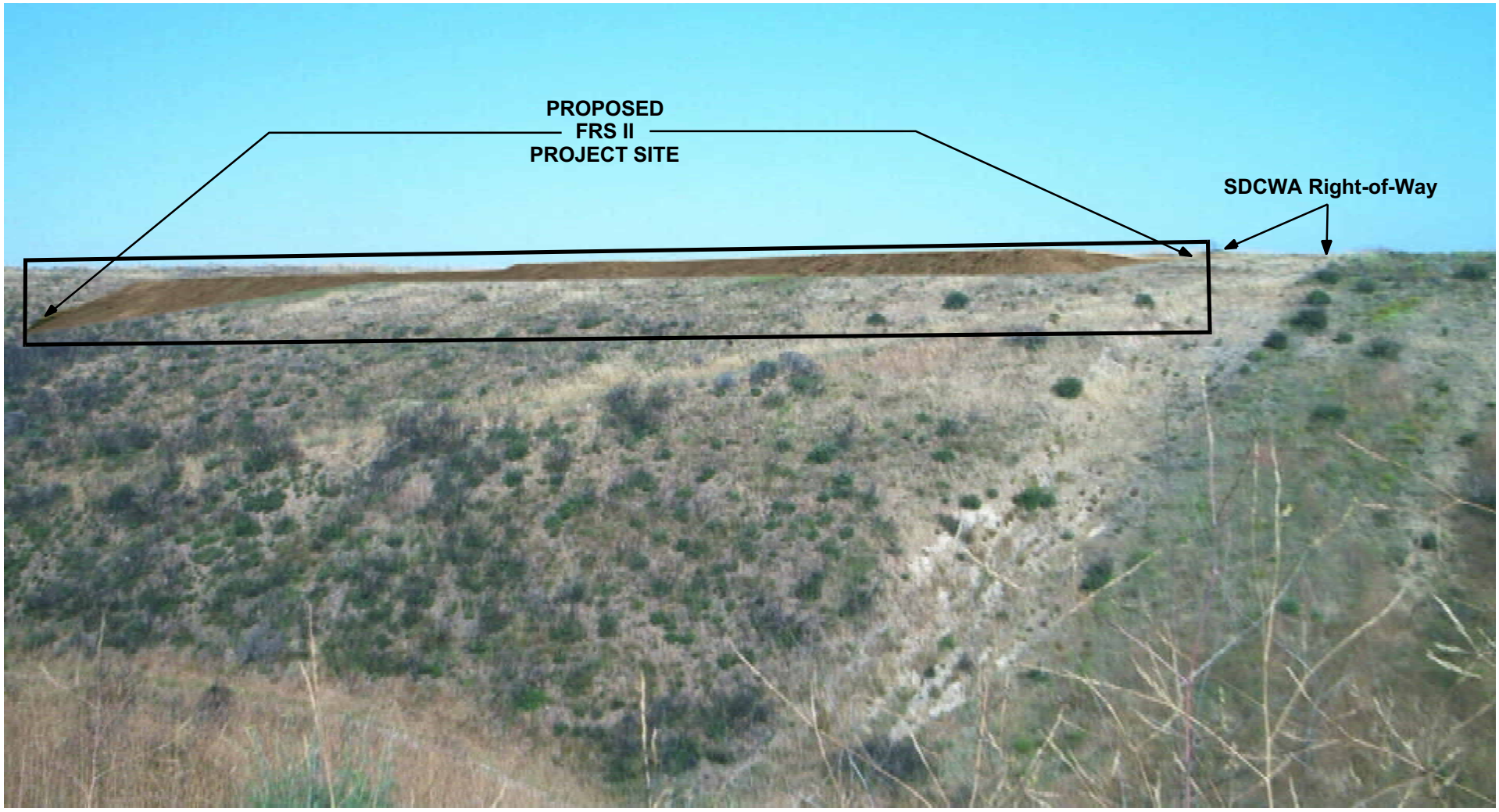

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Simulated View of FRS II Site from Corte Playa Catalina looking East

Figure 3.2-13

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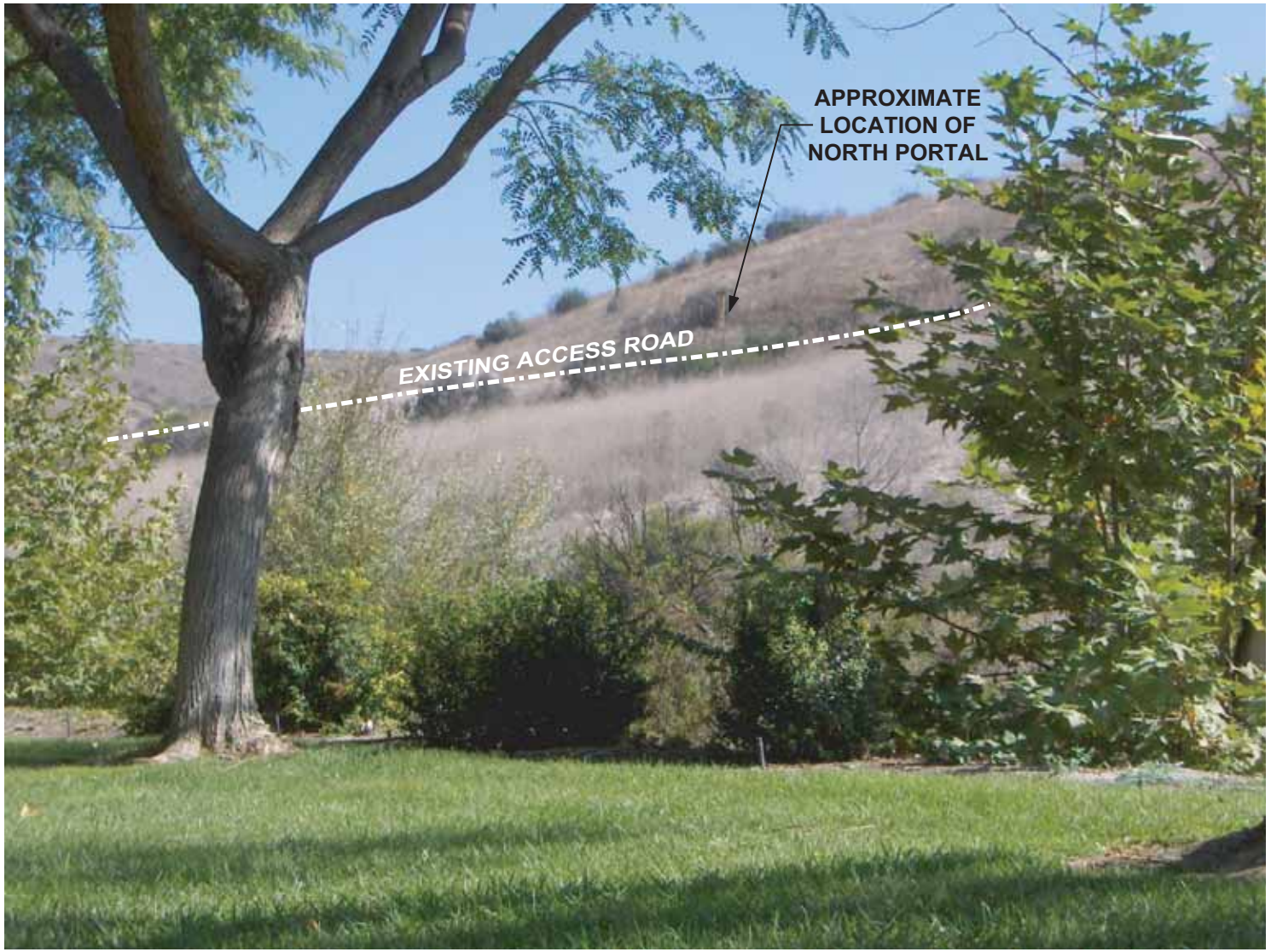

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Rear Yard of Belsera Looking East Southeast Towards North Portal (KOP 13)

Figure 3.2-14

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

View of Belsera at Corner of Access Road and SDCWA Right-of-Way (KOP 14)

Figure 3.2-15

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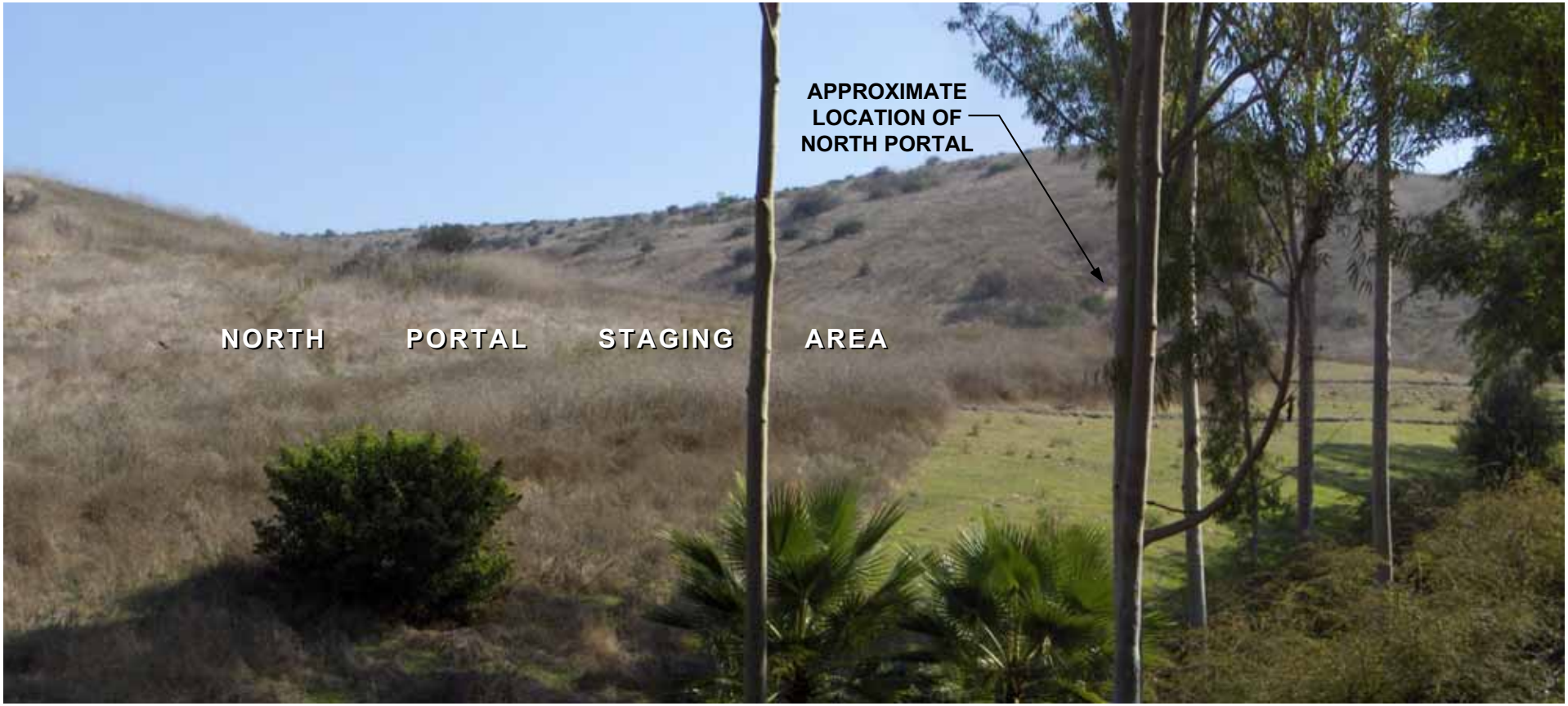

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

West of Belsera Access Road (KOP 15) Looking Southeast

Figure 3.2-16

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3.3 TRAFFIC/CIRCULATION

This section evaluates the potential impacts of the proposed project on traffic/circulation in the Tierrasanta community. The evaluation is based on the Traffic Impact Analysis (Linscott, Law & Greenspan Traffic Engineers 2006), which is included as Appendix B to this EIR.

The proposed project would generate negligible long-term operational traffic of less than 10 trips daily on area roadways and within MTRP access roads. Also, Mission Gorge Road was not included in the project analysis because construction traffic on this road would be limited to the construction of the stabilized crossing of the San Diego River. The anticipated construction time of 2 months or less for this project component, combined with the small scale of the at-grade concrete crossing, would result in minimal additional traffic on Mission Gorge Road and at the Mission Gorge Road/Jackson Drive intersection. Therefore, this analysis focuses on short-term impacts within the Tierrasanta community associated with construction-generated traffic.

3.3.1 Existing Conditions

The study area for this project includes 11 intersections and 9 street segments within the Tierrasanta community, between MTRP and I-15 and SR-52, which provide primary access to MTRP and would be utilized by construction traffic (Tables 3.3-1 and 3.3-2, and Figure 3.3-1).

Table 3.3-1
Intersections in Study Area

#	Intersection
1.	Clairemont Mesa Boulevard / I-15 Northbound Ramps
2.	Clairemont Mesa Boulevard / I-15 Southbound Ramps
3.	Clairemont Mesa Boulevard / Santo Road
4.	Clairemont Mesa Boulevard / Via Valarta
5.	Clairemont Mesa Boulevard / Rueda Drive
6.	Rueda Drive / Calle de Vida
7.	Calle de Vida / Colina Dorada Drive
8.	SR 52 Eastbound Ramps / Santo Road
9.	Santo Road/Portobelo Drive
10.	Antigua Boulevard / Santo Road
11.	Antigua Boulevard / Via Valarta

Table 3.3-2
Street Segments in Study Area

#	Street Segment
	Clairemont Mesa Boulevard
1.	I-15 to Santo Road
2.	Santo Road to Via Valarta
3.	Via Valarta to Rueda Drive
	Via Valarta
4.	MTRP Portobelo Drive Entrance to Playa Cancun
5.	Playa Cancun to Clairemont Mesa Boulevard
	Rueda Drive
6.	Clairemont Mesa Boulevard to Calle de Vida
	Calle de Vida
7.	Rueda Drive to Colina Dorada Drive
	Santo Road
8.	SR-52 to Antigua Boulevard
	Antigua Boulevard
9.	Santo Road to Via Valarta

Table 3.3-3 describes existing intersection operations in terms of traffic control (traffic light or stop sign), peak hour delay, and Level of Service (LOS). Table 3.3-4 describes the existing street segment operations in terms of the roadway classification, LOS E capacity, existing volume (ADT), volume to capacity ratio, and existing LOS.

LOS is a qualitative measure used to describe a quantitative analysis taking into account factors such as traffic volume, roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS designations range from A to F, with LOS A representing the best operating conditions (free-flowing traffic) and LOS F representing the worst operating conditions (severe congestion).

LOS is reported differently for signalized and unsignalized intersections, as well as for roadway segments. Table 3.3-5 provides LOS definitions for signalized intersections. As shown in Table 3.3-3, all key signalized intersections in the study area currently operate at LOS D or better conditions.

Table 3.3-3
Existing Intersection Operations

Intersection	Traffic Control	Peak Hour	Delay	LOS[a]
1. Clairemont Mesa Blvd./I-15 SB Ramps	Signal	AM	22.7	C
		PM	28.8	C
2. Clairemont Mesa Blvd./I-15 NB Ramps	Signal	AM	23.3	C
		PM	20.4	C
3. Clairemont Mesa Blvd./Santo Rd.	Signal	AM	32.9	C
		PM	37.4	D
4. Clairemont Mesa Blvd./Via Valarta	Signal	AM	23.5	C
		PM	19.8	B
5. Clairemont Mesa Blvd./Rueda Dr.	TWSC[b]	AM	9.2	A
		PM	9.0	A
6. Calle De Vida / Rueda Dr.	TWSC[b]	AM	9.3	A
		PM	9.8	A
7. Calle de Vida / Colina Dorada	TWSC[b]	AM	9.2	A
		PM	9.1	A
8. Santo Rd / SR 52 Eastbound Ramps	TWSC[b]	AM	9.2	A
		PM	10.3	B
9. Santo Rd / Portobelo Dr.	Signal	AM	19.1	B
		PM	17.6	B
10. Santo Rd / Antigua Blvd.	Signal	AM	29.1	C
		PM	32.9	C
11. Via Valarta / Antigua Blvd.	Signal	AM	16.7	B
		PM	10.3	B

Footnotes:

a. LOS – Level of Service

b. TWSC – Two-way Stop Controlled intersection. Minor street left turn delay is reported

Signalized		Unsignalized	
Delay	**LOS**	**Delay**	**LOS**
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

Table 3.3-4
Existing Street Segment Operations

Segment	Existing Roadway Classification	LOS E Capacity [a]	Average Daily Traffic Volume (ADT)	V/C [b]	LOS [c]
Clairemont Mesa Boulevard					
I-15 to Santo Rd.	4-Ln Major Arterial	40,000	13,200	0.33	A
Santo Rd. to Via Valarta	4-Ln Major Arterial	40,000	11,600	0.29	A
Via Valarta to Rueda Drive	4-Ln Major Arterial	40,000	4,700	0.12	A
Via Valarta					
Park Entrance to Antigua Blvd.	2-Ln Collector Road	10,000	1,200	0.12	A
Antigua Blvd. to Clairemont Mesa Blvd.	4-Ln Collector Road	15,000	2,700	0.18	A
Rueda Drive					
Clairemont Mesa Blvd. to Calle de Vida	2-Ln Sub-Collector	2,200 [d]	2,100	0.75	C+ [e]
Calle de Vida					
Rueda Dr. to Colina Dorada	2-Ln Sub-Collector	2,200 [d]	1,000	0.36	C+ [e]
Santo Road					
SR 52 Ramps to Clairemont Mesa Blvd.	4-Ln Major Road	40,000	12,900	0.32	A
Antigua Boulevard					
Santo Rd. to Via Valarta	4-Ln Collector Road	30,000	6,200	0.21	A

Footnotes:

a. City of San Diego, Table 2, Roadway Classifications, Levels of Service (LOS) and Average Daily Traffic (ADT)
b. V/C – Volume to Capacity ratio.
c. LOS – Level of Service.
d. LOS C capacity for two lane (residential) sub-collectors.
e. LOS C or better

Table 3.3-5
Level of Service Definitions for Signalized Intersections

Level of Service	Volume/Capacity Ratio	Delay (Seconds)	Definition
A	0.000 – 0.600	<10	**EXCELLENT.** No vehicle waits longer than one Red light and no approach phase is fully used.
B	0.601 – 0.700	10.1-20.0	**VERY GOOD.** An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	20.1-35	**GOOD.** Occasionally, drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	31.5-55.0	**FAIR.** Delays may be substantial during portions of the rush hour, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.00	55.1-80.0	**POOR.** Represents the most vehicles that intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	Greater than 1.000	>80.0	**FAILURE.** Backups from nearby intersections or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

For unsignalized intersections, LOS is defined for each minor movement and is not defined for the intersection as a whole. LOS F exists when there are insufficient gaps in traffic allow side street traffic to safely cross a major street. This level is generally evident from extremely long delays and queuing experienced by side-street traffic. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing. The critical movements at all unsignalized intersections in the study area are currently operating at LOS B or better conditions.

Existing morning (AM) and evening (PM) peak hour traffic volumes were obtained for the 11 intersections and 9 road segments during April, August, and October 2005. Figure 3.3-2 depicts the existing traffic volumes and the AM/PM peak hour turning movement volumes. The AM peak hour period is 7:00 to 9:00 AM; the PM peak hour period is 4:00 to 6:00 PM. Table 3.3-3 provides a summary of existing intersection operations, Table 3.3-4 provides the average daily traffic (ADT) on the roadway segments in the study area, and Table 3.3-6 provides the months in which the segment ADT counts were taken.

Table 3.3-6
Date of ADT Counts
for Street Segments

Street Segment	Date
Clairemont Mesa Boulevard	
I-15 to Santo Rd.	August 2005
Santo Rd. to Via Valarta	April 2005
Via Valarta to Rueda Dr.	April 2005
Portobelo Drive	
North of Antigua Blvd.	April 2005
Via Valarta	
Antigua Blvd. to Clairemont Mesa Blvd.	August 2005
Rueda Drive	
Clairemont Mesa Blvd. to Calle de Vida	August 2005
Calle de Vida	
Rueda Dr. to Colina Dorada	August 2005
Santo Road	
SR 52 Ramps to Clairemont Mesa Boulevard	April 2005
Antigua Boulevard	
Santo Rd. to Via Valarta	April 2005

3.3.2 Thresholds of Significance

Thresholds used to evaluate potential traffic/circulation impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; the San Diego Traffic Engineers' Council (SANTEC) Guidelines; and the City of San Diego's Significance Determination Thresholds for CEQA. A significant traffic/circulation impact would occur if the project would:

- Significantly worsen congestion at any intersection that is currently operating, or is projected to operate at LOS E or F, by adding two seconds or more to the delays experienced by motorists at intersections.
- Cause any roadway segment to be reduced to LOS E or F, or increase the volume to capacity ratio by 0.02 or more at any road segment currently operating or projected to operate at LOS E or F.
- During construction within or adjacent to public roadways, cause unannounced traffic delays of greater than 15 minutes.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency vehicle access.
- Result in inadequate parking capacity.

3.3.3 Impact Analysis

Would the proposed significantly worsen congestion at any intersection that is currently operating, or is projected to operate at LOS E or F, by adding two seconds or more to the delays experienced by motorists at intersections?

The proposed project would generate short-term traffic in terms of employee vehicle trips, the delivery of construction equipment and materials, and trucks hauling excavated material off site during construction. Most of the project-generated traffic would consist of large trucks. Therefore, a Passenger Car Equivalency (PCE) factor of 2.5 per truck was applied to the generated truck trips in accordance with the 2000 Highway Capacity Manual published by the Transportation Research Board (TRB). PCE is defined as the number of passenger cars that are displaced by a single heavy vehicle of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars since:

- They are larger than passenger cars, and therefore, occupy more roadway space; and
- Their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream (especially on upgrades), which cannot always be effectively filled by normal passing maneuvers.

Table 3.3-7 summarizes the trip generation for the proposed project, which is calculated to generate up to 1,935 ADT, using the PCE factor, with 268 trips (183 inbound and 85 outbound) in the AM peak hour and 268 trips (85 inbound and 183 outbound) in the PM peak hour. It is assumed that all trucks associated with the North Portal would enter and exit MTRP using Portobelo Drive, Via Valarta, Clairemont Mesa Boulevard and I-15; or Portobelo Drive, Via Valarta, Antigua Boulevard, Santo Road, and SR-52. Nearly all trucks associated with the FRS II and the South Portal would enter and exit MTRP using Clairemont Mesa Boulevard and I-15 or Clairemont Mesa Boulevard, Santo Road, and SR-52. The only exception would be for large equipment that would be either too wide or too heavy for the bridge into MTRP from Clairemont Mesa Boulevard. This equipment would be brought into MTRP using Rueda Drive and Calle de Vida from Clairemont Mesa Boulevard.

Table 3.3-8 shows the estimated maximum truck and construction employee vehicle trips per day estimated for the proposed project. These numbers are considered to represent the "worst case" traffic conditions, which would occur during a period of approximately 2 months during which traffic associated with the export of excavated materials from the North Portal, FRS II, and South Portal would be concurrent and at its peak. It is anticipated that the trucks would access the site and haul material over a 12-hour workday, 7:00 a.m. to 7:00 p.m., Monday through Saturday.

Figure 3.3-3 depicts the project trips (with truck trips expressed in PCE) with all project traffic distributed to the Clairemont Mesa Boulevard/I-15 route. Figure 3.3-4 depicts the scenario of all project traffic distributed to the Santo Road/SR-52 route.

Table 3.3-7
Project Construction Trip Generation

Vehicle Type	Inbound Vehicles	Rate [b]	ADT	PCE [a] Value	ADT With PCE	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
North Portal											
1. Haul Trucks	86	2	172	2.5	430	18	18	36	18	18	36
2. Staff Vehicles	24	3	72	1.0	72	22	2	24	2	22	24
Subtotal N. Portal	**110**		**244**		**502**	**40**	**20**	**60**	**20**	**40**	**60**
FRS II											
1. Haul Trucks	103	2	206	2.5	515	30	30	60	30	30	60
2. Staff Vehicles	32	3	96	1.0	96	29	3	32	3	29	32
Subtotal FRS II	**135**		**302**		**611**	**59**	**33**	**92**	**33**	**59**	**92**
South Portal											
1. Haul Trucks	126	2	252	2.5	630	26	26	52	26	26	52
2. Staff Vehicles	64	3	192	1.0	192	58	6	64	6	58	64
Subtotal S. Portal	**190**		**444**		**822**	**84**	**32**	**116**	**32**	**84**	**116**
Total Trip Generation	**435**		**990**		**1,935**	**183**	**85**	**268**	**85**	**183**	**268**

[a] The Highway Capacity Manual indicates a Passenger Car Equivalence (PCE) of 2.5 for trucks on rolling terrain (see Appendix E of Traffic Impact Analysis report).
[b] Trucks assumed to enter and leave. 50% of the employees assumed to leave the site once a day.

Table 3.3-8
Estimated Maximum Daily Truck and Construction Employee Traffic

Construction Site	Number of Trucks (One Way)	Number of Employee Vehicles (One Way)
North Portal	86	24
FRS II	103	32
South Portal	126	64
Total	**315**	**120**

Ten of the 11 intersections studied currently operate at LOS C or better. The single exception is the intersection of Clairemont Mesa Boulevard and Santo Road, which operates at LOS D during the PM peak hour. None of the intersections currently operate at LOS E or F. Projected year 2020 LOS is not relevant to this project because all impacts would be immediate and short-term. Table 3.3-9 summarizes the peak hour intersection operations for the Existing + Construction traffic condition. As seen, with the addition of project construction traffic to existing (2005) traffic, all key signalized intersections are calculated to continue to operate at LOS D or better. The critical movements at the key unsignalized intersections are calculated to continue to operate at LOS B or better. These results occur for either the Clairemont Mesa Boulevard/I-15 route or the Santo Road/SR-52 route. Addition of construction traffic would not increase the delay at any intersection by two seconds or more and would not reduce any LOS. Impacts would be less than significant with all project traffic assigned to either route. All of the intersections would operate at LOS D or better. None of the intersections in the study area would operate at LOS E or F (Table 3.3-3). The impact of construction traffic at the 11 intersections within the project study area would be less than significant.

Table 3.3-9
Existing + Construction Traffic Intersection Operations

Intersection	Control Type	Peak Hour	Existing		Existing + Construction Traffic		Delay Δ [c]	Significant Impact?
			Delay [a]	LOS [b]	Delay	LOS		
1. Clairemont Mesa Blvd./ I-15 SB Ramps	Signal	AM	22.7	C	24.3[e] 23.2[f]	C[e] C[f]	1.6 0.5	No Impact
		PM	28.8	C	30.3[e] 35.8f	C[e] D[f]	1.5 7.0	
2. Clairemont Mesa Blvd./ I-15 NB Ramps	Signal	AM	23.3	C	25.7[e] 27.0[f]	C[e] C[f]	3.7 3.7	No Impact
		PM	20.4	C	20.8[e] 22.0[f]	C[e] C[f]	0.4 1.6	
3. Clairemont Mesa Blvd./ Santo Rd.	Signal	AM	32.9	C	33.3 34.8[g]	C C[g]	0.4 1.9	No Impact
		PM	37.4	D	38.2 40.0[g]	D D[g]	0.8 2.6	
4. Clairemont Mesa Blvd./ Via Valarta	Signal	AM	23.5	C	24.0 23.7[g]	C C[g]	0.5 0.2	No Impact
		PM	19.8	B	21.7 20.9[g]	C C[g]	1.9 1.1	
5. Clairemont Mesa Blvd./ Rueda Dr.	TWSC[d]	AM	9.2	A	10.6	B	1.4	No Impact
		PM	9.0	A	9.9	A	0.9	
6. Calle de Vida/Rueda Dr.	TWSC[d]	AM	9.3	A	9.3	A	0.0	No Impact
		PM	9.8	A	9.9	B	0.1	
7. Calle de Vida/Colina Dorada Dr.	TWSC[d]	AM	9.2	A	9.2	A	0.0	No Impact
		PM	9.1	A	9.2	A	0.1	
8. Santo Rd./SR 52 EB Ramps	TWSC[d]	AM	9.2	A	12.1	B	2.9	No Impact
		PM	10.3	B	11.5	B	1.2	
9. Santo Rd./Portobelo Dr.	Signal	AM	19.1	B	19.1	B	0.0	No Impact
		PM	17.6	B	17.9	B	0.3	
10. Santo Rd./Antigua Dr.	Signal	AM	29.1	C	30.4	C	1.3	No Impact
		PM	32.9	C	43.8	D	10.9	
11. Via Valarta/Antigua Dr.	Signal	AM	16.7	B	16.7 17.1[g]	B B[g]	0.0 0.4	No Impact
		PM	10.3	B	10.9 10.6[g]	B B[g]	0.6 0.3	

a. Average delay expressed in seconds per vehicle.
b. LOS – Level of Service.
c. Δ denotes the change in delay due to the project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left-turn delay is reported.
e. Assumes all construction traffic goes Northbound on I-15.
f. Assumes all construction traffic goes Southbound on I-15.
g. Santo Road Construction Route LOS and delay.

Would the proposed project cause any roadway segment to be reduced to LOS E or F, or increase the volume to capacity ration by 0.02 or more at any road segment currently operating or projected to operate at LOS E or F?

Projected construction traffic volumes were added to existing traffic for each of the two route scenarios. Figure 3.3-5 depicts the Existing + Construction Traffic volumes for the Clairemont Mesa Boulevard/I-15 route. Figure 3.3-6 depicts the Existing + Construction Traffic volumes for the Santo Road/SR-52 route.

With the exception of Calle de Vida and Rueda Drive, which are residential streets, all roadway segments studied currently operate at LOS A. Table 3.3-10 summarizes the segment operations for the Existing + Construction traffic condition. As can be seen, for the peak time of construction traffic, which is estimated to occur during the first 6 months of the project construction period, all segments in the study area are calculated to operate at LOS C or better with the addition of construction traffic. These results occur for either the Clairemont Mesa Boulevard/I-15 route or the Santo Road/SR-52 route. This impact would be less than significant.

It is noted that the addition of more than 40 one-way truck trips per day to Rueda Drive would cause the volume/capacity ratio calculated for the street to be exceeded. Use of the Clairemont Mesa Boulevard ingress and egress for all traffic except equipment exceeding the 30-ton capacity of the bridge would avoid a significant impact to Rueda Drive between Calle de Vida and Clairemont Mesa Boulevard. This impact would be less than significant.

Would the project, during construction within or adjacent to public roadways, cause unannounced traffic delays of greater than 15 minutes.

The proposed project would not require construction within or adjacent to public roadways. With the exception of the eastern terminus of Clairemont Mesa Boulevard, which would be used for a construction staging area and would be closed to the public for the duration of construction, there would not be any road closures or interference with the normal flow of traffic on area roads that could cause unannounced traffic delays of greater than 15 minutes. This impact would be less than significant.

Would the proposed project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The proposed project would not substantially increase hazards due to a design feature as no modifications are proposed to roads outside of MTRP. The dirt roads within MTRP would be graded and crushed rock roadbed would be installed in some areas to improve the road surface. The short-term addition of truck traffic to existing roads leading to and from MTRP is not considered to be an incompatible use of the existing roads. There are schools located along the proposed truck routes and traffic safety in the vicinity of these schools always of concern. Figure 3.3-7 shows all schools located along the truck routes. Haul trucks and any other construction traffic would have to obey all traffic laws, including reducing speed in school zones where posted and when children are present. In addition, the Water Authority would conduct a public outreach program to the schools along the proposed truck routes regarding the presence of construction traffic and pedestrian safety. This impact would be less than significant.

Table 3.3-10
Existing + Construction Traffic Segment Operations

Segment	Existing Roadway Classification	LOS E Capacity [a]	Existing			Existing + Construction Traffic			V/C Δ [d]	Significant Impact?
			Volume	V/C [b]	LOS [c]	Volume	V/C	LOS		
Clairemont Mesa Boulevard										
I-15 to Santo Rd.	4-Lane Major Arterial	40,000	13,200	0.330	A	15,130	0.378	B	0.048	No Impact
Santo Rd. to Via Valarta	4-Lane Major Arterial	40,000	11,600	0.290	A	13,530 13,030[g]	0.337 0.325	A A	0.047 0.035	No Impact
Via Valarta to Rueda Drive	4-Lane Major Arterial	40,000	4,700	0.118	A	6,130	0.153	A	0.036	No Impact
Via Valarta										
Park Entrance to Antigua Blvd.	2-Lane Collector Road	10,000	1,200	0.120	A	2,580	0.258	A	0.138	No Impact
Antigua Blvd. to Clairemont Mesa Blvd.	4-Lane Collector Road	15,000	2,700	0.180	A	3,200	0.213	A	0.033	No Impact
Rueda Drive										
Clairemont Mesa Blvd. to Calle de Vida	2-Lane Sub-Collector	2,200 [e]	2,100	0.954	C+ [f]	2,150	0.977	C+ [f]	0.023	No Impact
Calle de Vida										
Rueda Dr. to Colina Dorada	2-Lane Sub-Collector	2,200 [e]	1,000	0.454	C+ [f]	1,050	0.477	C+ [f]	0.023	No Impact
Santo Road										
SR 52 to Clairemont Mesa Blvd	4-Lane Major Road	40,000	12,900	0.322	A	14,830	0.370	A	0.048	No Impact
Antigua Blvd										
Santo Rd. to Via Valarta	4-Lane Collector Road	30,000	6,200	0.206	A	6,700	0.223	A	0.017	No Impact

a. Capacities based on City of San Diego's Roadway Classification & LOS table (See Appendix B of Traffic Impact Analysis).
b. Volume to Capacity ratio
c. Level of Service
d. .Δ denotes an increase in the Volume to Capacity ratio
e. LOS C capacity of 2,200 for two lane (residential) sub-collectors.
f. Better (+) or worse (-) than LOS C
g. Santo Road Construction Route segment volume

Would the proposed project result in inadequate emergency vehicle access?

The proposed project would not cause a substantial increase in traffic or congestion on the roads being considered as truck routes to and from the project site as these roads typically provide two or more lanes in each direction and have the capacity to handle construction traffic without causing substantial delays. The construction of the stabilized crossing of the San Diego River would improve emergency access to MTRP from Mission Gorge Road. Emergency access to MTRP using the other construction routes would be maintained throughout the entire length of the project. This impact would be less than significant.

Would the proposed project result in inadequate parking capacity?

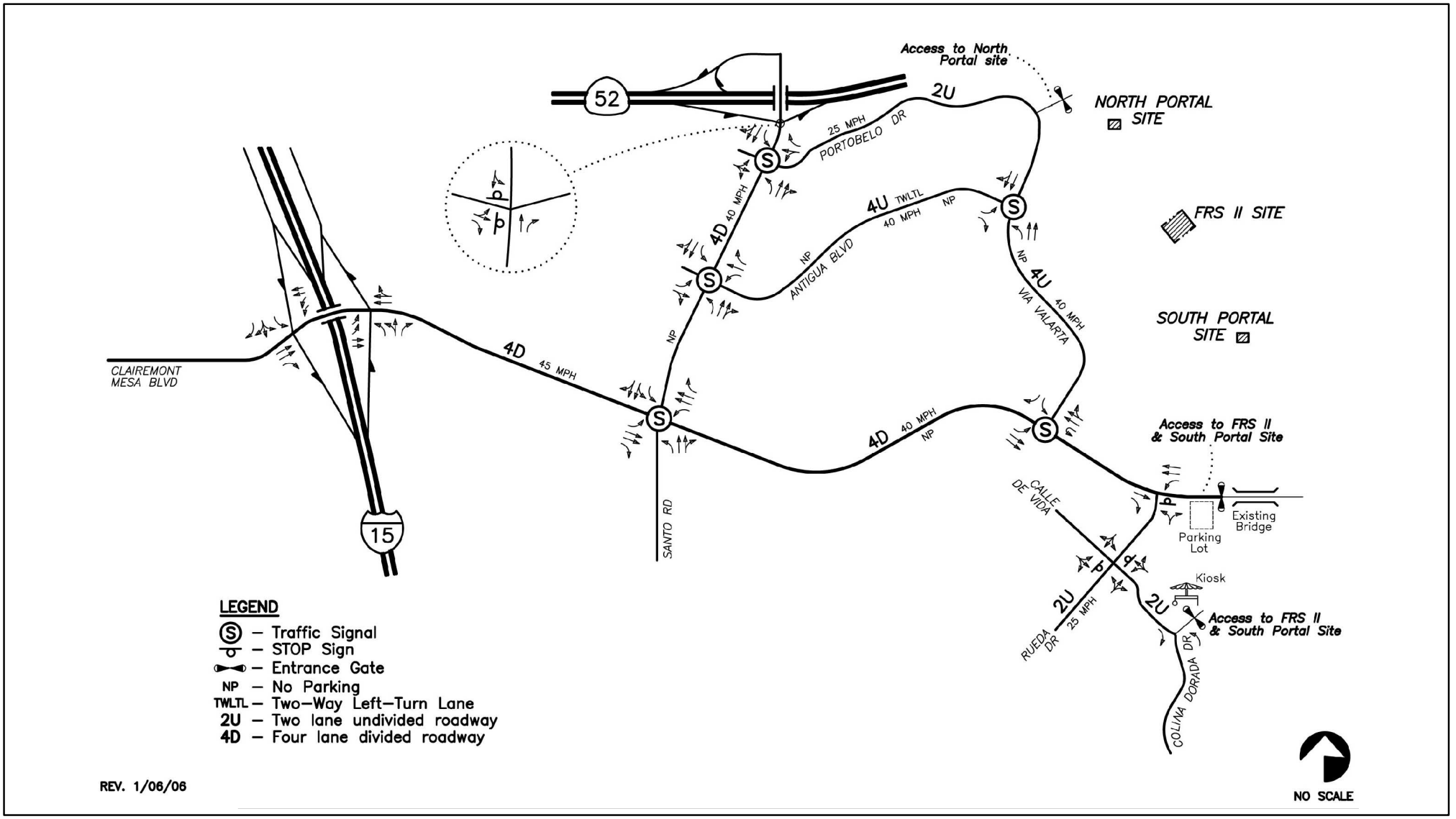
Temporary parking areas would be required for construction workers. Most of the parking would be provided at the existing Clairemont Mesa Boulevard staging area, which was constructed for the FRS I project and subsequently turned over to the City of San Diego for use by park patrons. Construction workers not parking at the staging area would park at the North Portal, FRS II, and South Portal construction sites. The proposed project would, therefore, not result in inadequate parking capacity. This impact would be less than significant.

3.3.4 Mitigation Measures

Impacts to traffic/circulation would be less than significant. Therefore, no mitigation measures are required.

3.3.5 Residual Impacts after Mitigation

No residual impacts would occur.



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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Existing Traffic Conditions Diagram

Figure 3.3-1

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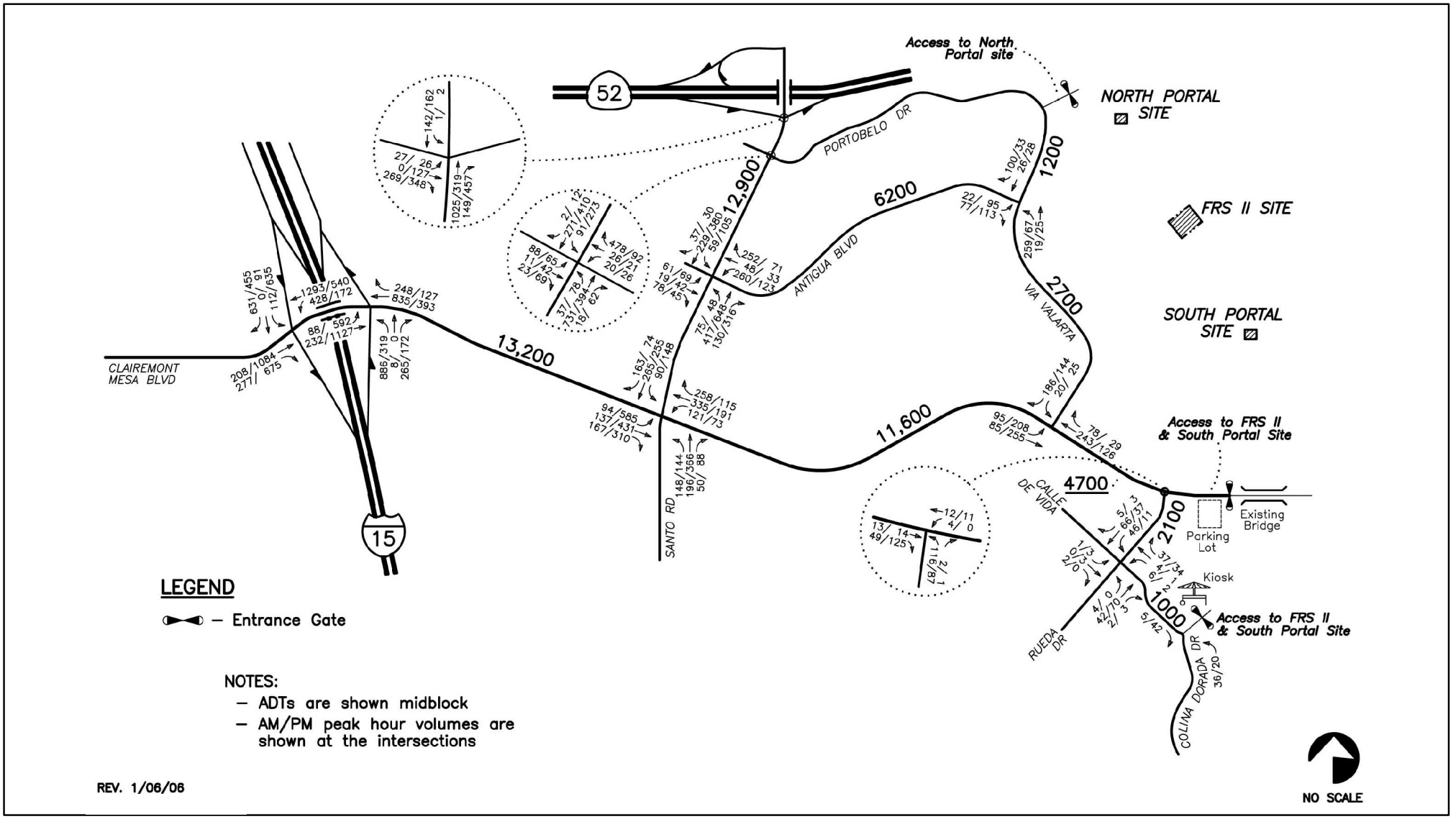

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Existing Traffic Volumes

Figure 3.3-2

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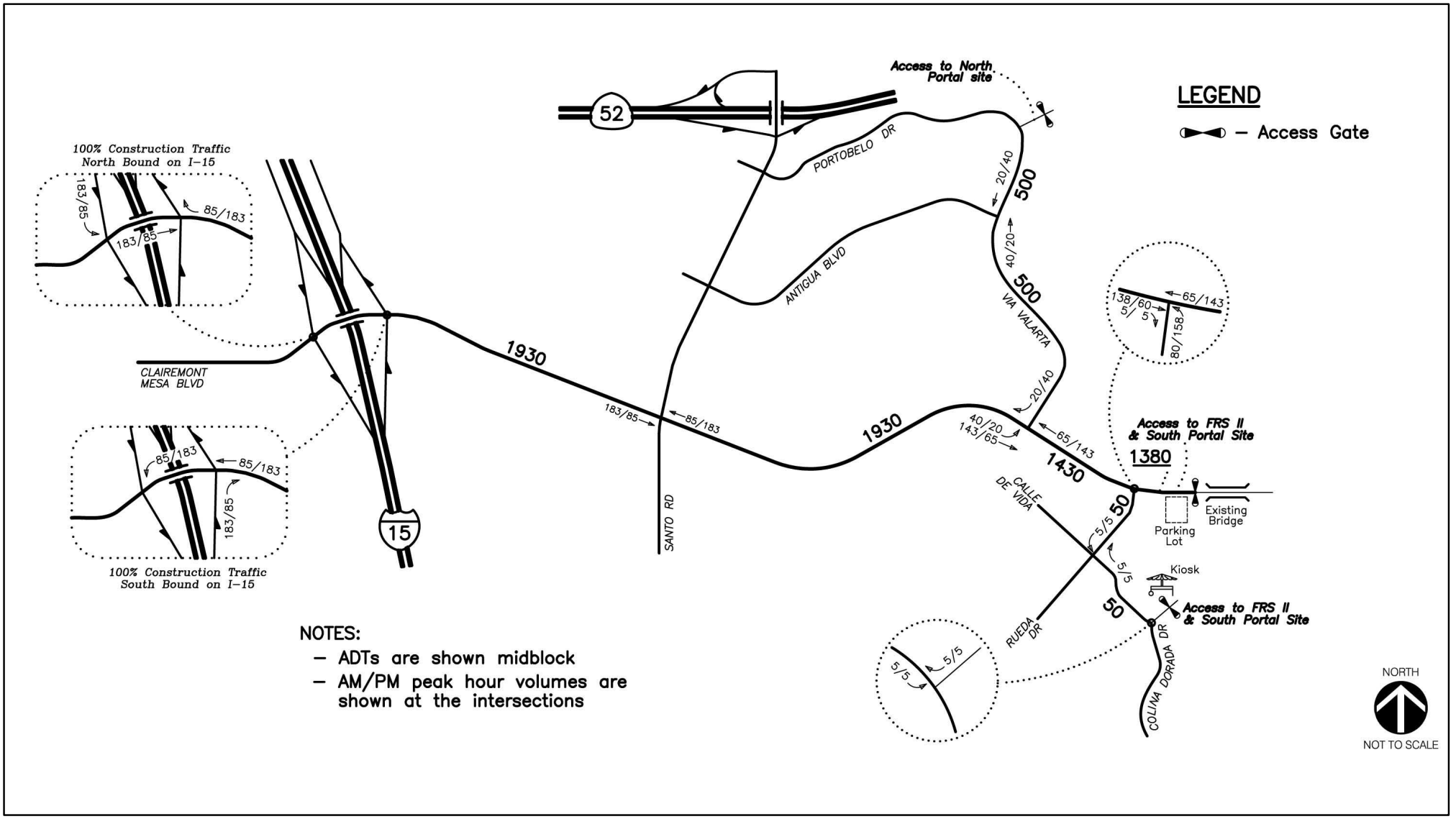

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Construction Traffic Clairemont Mesa/I-15 Route

Figure 3.3-3

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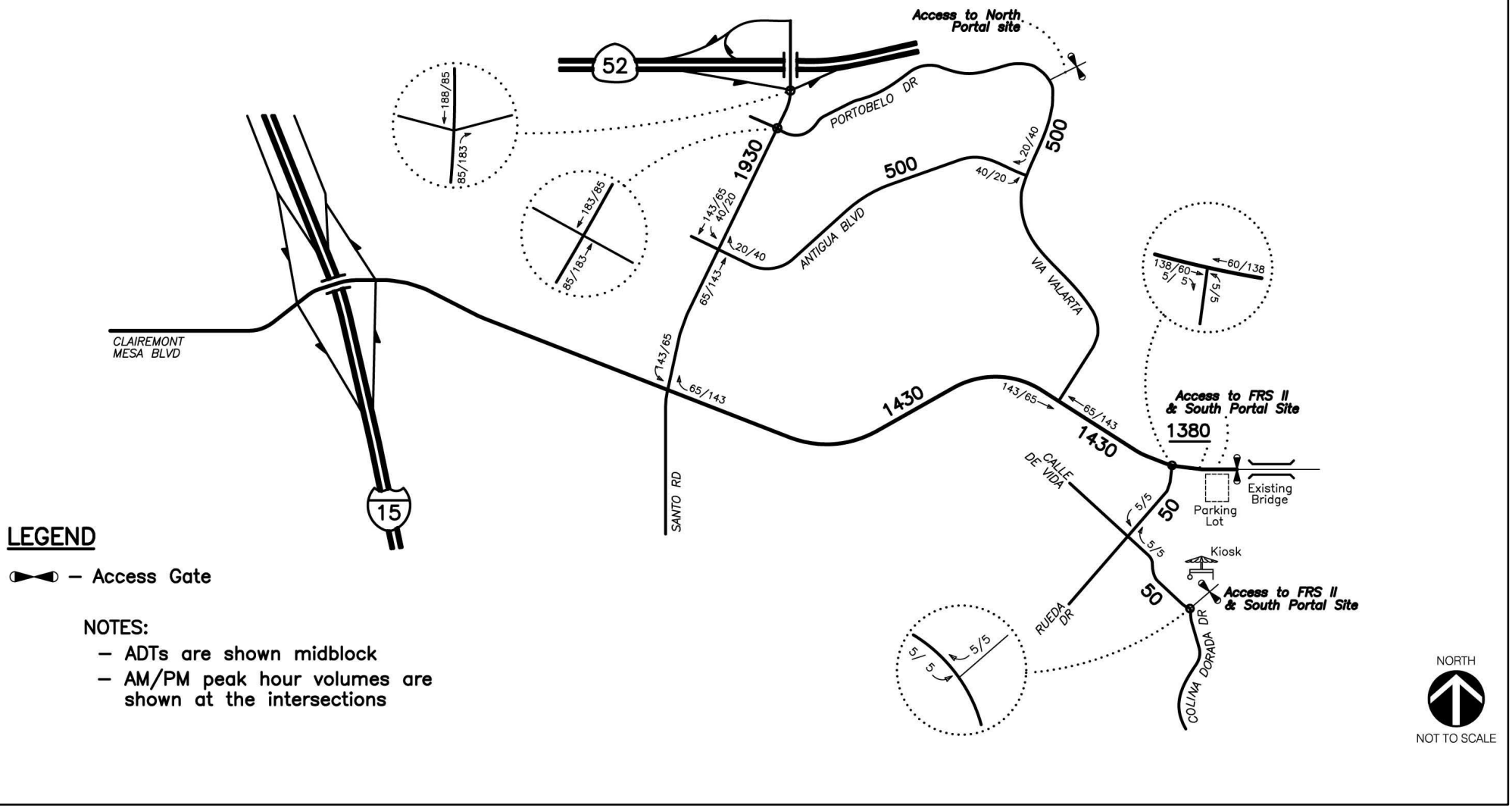

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Construction Traffic Santo/SR-52 Route

Figure 3.3-4

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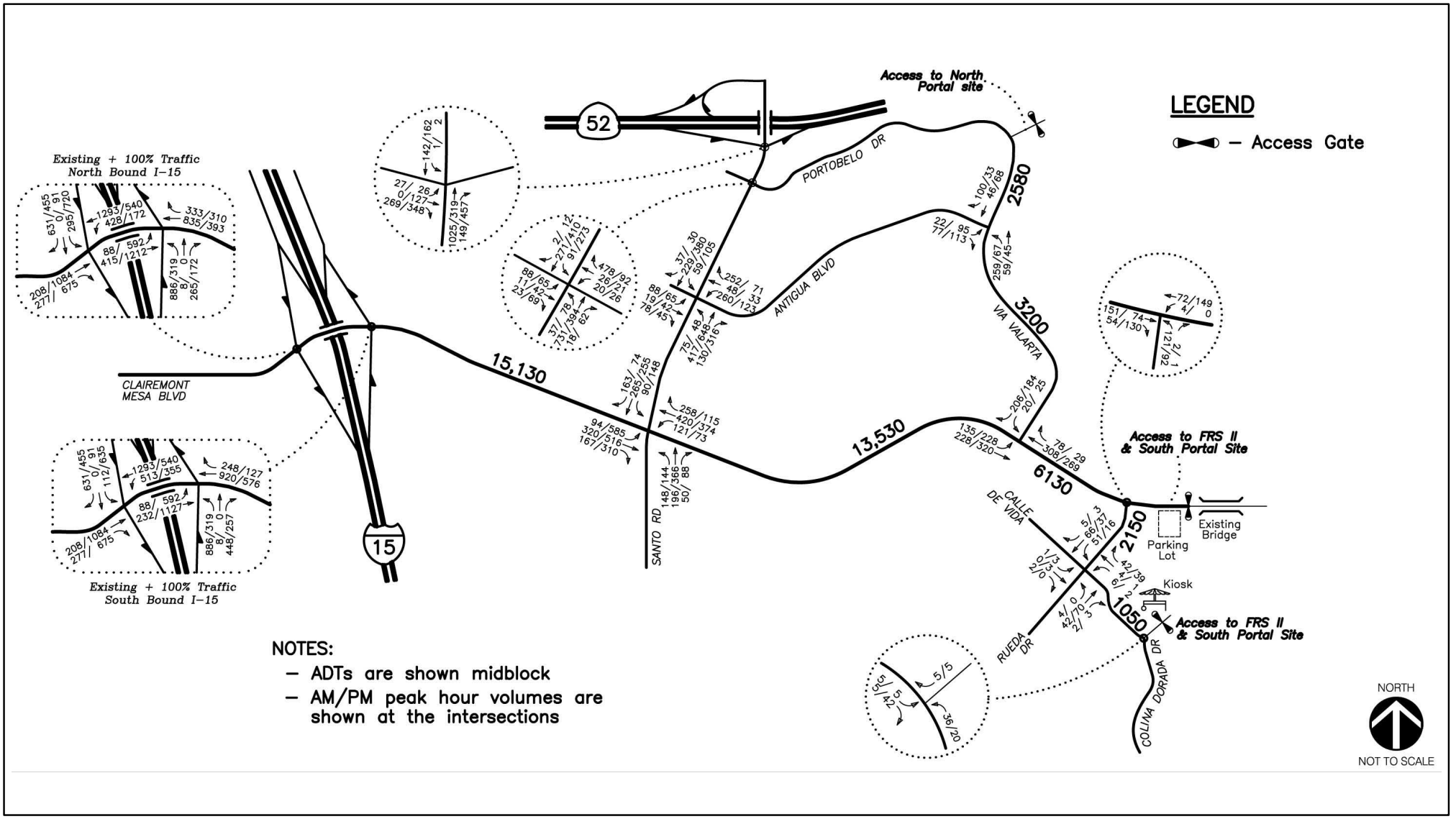

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Existing + Construction Traffic Volumes Clairemont Mesa/I-15 Route

Figure 3.3-5

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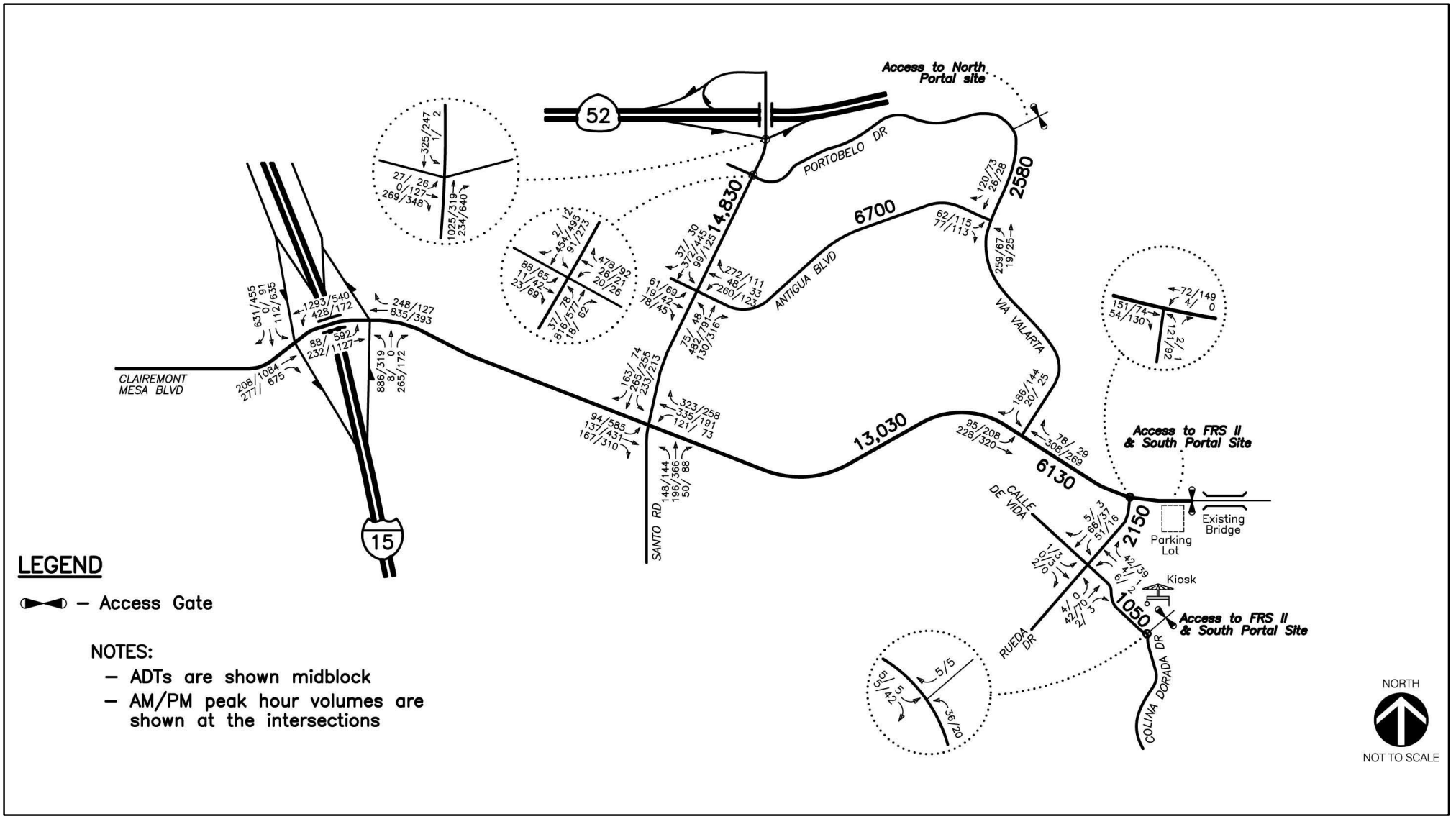

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Existing + Construction Traffic Volumes Santo/SR-52 Route

Figure 3.3-6

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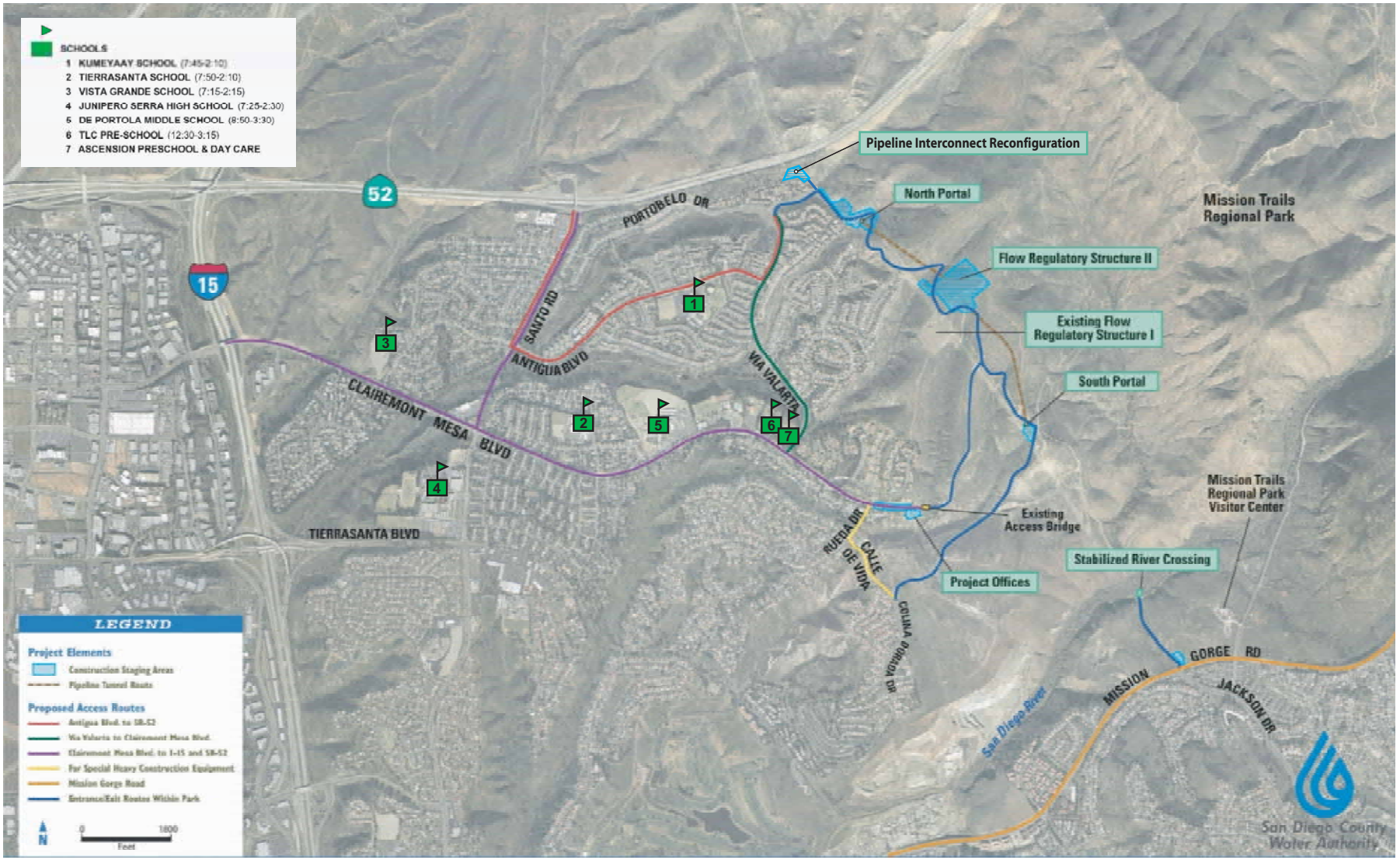

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Schools in Project Area

Figure 3.3-7

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3.4 AIR QUALITY

This section evaluates the potential impacts of the proposed project on air quality within the San Diego Air Basin. The evaluation is based on the Air Quality Technical Report prepared by Scientific Resources Associated (SRA 2006), which is included as Appendix C to this EIR.

3.4.1 Existing Conditions

Climate and Meteorology

The project site is located in the San Diego Air Basin, which encompasses San Diego County. The overall climate is characterized by warm, dry summers and mild, wet winters. The climate of the proposed project site, and all of San Diego, is dominated by a semi-permanent high pressure cell over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. The high pressure cell also creates two types of temperature inversions that may act to degrade local air quality.

Subsidence inversions occur during the warmer months as descending air associated with the Pacific high pressure cell comes into contact with cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses can also trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce ozone, commonly known as smog.

In San Diego County, the months of heaviest precipitation are November through April, averaging about 9 to 14 inches annually. The mean maximum and mean minimum temperatures are approximately 76 degrees Fahrenheit (F) and 48.5 degrees F, respectively. The predominant wind directions are westerly and west-southwesterly throughout the year.

Regulatory Setting

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish the National Ambient Air Quality Standards (NAAQS), which are concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several pollutants (called "criteria" pollutants). The primary standards are designed to protect human health with an adequate margin of safety. The secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

The USEPA established NAAQS for the protection of human health and the public welfare for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulates with an aerodynamic diameter less than 10 microns (PM_{10}) and lead

(Pb). New federal standards for particulate matter less than 2.5 microns in diameter and an 8-hour standard for O_3 were proposed in 1997; implementation of these standards is commencing, and limited data for the ambient air quality relative to the new standards are available. Ozone is not emitted directly, but is formed from a complex set of reactions involving precursors such as nitrogen oxides (NO_x) and reactive organic compounds (ROC) or reactive organic gases (ROG); ozone regulations therefore address emissions of these two compounds.

In September 1997, the USEPA promulgated 8-hour O_3 and 24-hour and annual $PM_{2.5}$ national standards (particulate matter less than 2.5 microns in diameter), and the United States Supreme Court in February 2001 upheld these standards. The USEPA is moving forward to develop policies to implement these standards.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (CARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Table 3.4-1 presents a summary of the ambient air quality standards adopted by the federal and California CAAs. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. As of July 28, 2003, the SDAB has been reclassified as an attainment area for the 1-hour NAAQS for O_3. On April 15, 2004, the SDAB was classified as a basic nonattainment area for the 8-hour NAAQS for O_3. The SDAB is an attainment area for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a nonattainment area under the CAAQS for O_3 and PM_{10}.

The CARB is the state regulatory agency with authority to enforce regulations to achieve and maintain the national and California air quality standards. The San Diego County Air Pollution Control District (APCD) is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The APCD operates a network of ambient air monitoring stations throughout San Diego County. The nearest ambient monitoring stations to the proposed project site are the Kearny Mesa station, which is located approximately 4 miles to the west of the project site (O_3, PM_{10}, NO_2, and CO); and the Downtown San Diego station, which is located approximately 10.5 miles southwest of the site (the closest monitoring station that measures CO and SO_2). Also, because of its proximity to the site and location in an area that is less congested than downtown San Diego, the Kearny Mesa monitoring station concentrations for all other pollutants except CO and SO_2 are considered most representative of the project site. The Downtown San Diego monitoring station is the nearest location to the project site where CO and SO_2 concentrations are monitored. Ambient concentrations of pollutants from these stations over the last 3 years are presented in Table 3.4-2.

Table 3.4-1
Ambient Air Quality Standards

Pollutant	Average Time	California Standards		National Standards		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Ozone (O_3)	1 hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	0.12 ppm (235 $\mu g/m^3$)	0.12 ppm (235 $\mu g/m^3$)	Ethylene Chemiluminescence
	8 hour	--		0.08 ppm (157 $\mu g/m^3$)	0.08 ppm (157 $\mu g/m^3$)	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Average	--	Gas Phase Chemiluminescence	0.053 ppm (100 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)	Gas Phase Chemiluminescence
	1 hour	0.25 ppm (470 $\mu g/m^3$)		--	--	
Sulfur Dioxide (SO_2)	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 $\mu g/m^3$)	--	Pararosaniline
	24 hours	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (365 $\mu g/m^3$)	--	
	3 hours	--		--	0.5 ppm (1300 $\mu g/m^3$)	
	1 hour	0.25 ppm (655 $\mu g/m^3$)		--	--	
Respirable Particulate Matter (PM_{10})	24 hours	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	150 $\mu g/m^3$	Inertial Separation and Gravimetric Analysis
	Annual ArithmeticMean	20 $\mu g/m^3$		50 $\mu g/m^3$	50 $\mu g/m^3$	
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	15 $\mu g/m^3$	--	Inertial Separation and Gravimetric Analysis
	24 hours	--		65 $\mu g/m^3$	--	
Sulfates	24 hours	25 $\mu g/m^3$	Ion Chromatography	--	--	--
Lead (Pb)	30-day Average	1.5 $\mu g/m^3$	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 $\mu g/m^3$)	Gas Chromatography	--	--	--

ppm= parts per million
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3= milligrams per cubic meter
Source: California Air Resources Board July 2005

Table 3.4-2
Ambient Background Concentrations
(ppm unless otherwise indicated)

Pollutant	Averaging Time	2002	2003	2004	Most Stringent Ambient Air Quality Standard	Monitoring Station
Ozone	8 hour	0.090	0.083	0.087	0.08	Kearny Mesa
	1 hour	0.112	0.107	0.105	0.09	Kearny Mesa
PM_{10}	Annual Geometric Mean	24.5 µg/m^3	29.0 µg/m^3	24.4 µg/m^3	20 µg/m^3	Kearny Mesa
	Annual Arithmetic Mean	25.0 µg/m^3	28.5 µg/m^3	24.9 µg/m^3	50 µg/m^3	Kearny Mesa
	24 hour	49 µg/m^3	289 µg/m^3	44 µg/m^3	50 µg/m^3	Kearny Mesa
$PM_{2.5}$	Annual Arithmetic Mean	12.9 µg/m^3	11.9 µg/m^3	10.9 µg/m^3	12 µg/m^3	Kearny Mesa
	24 hour	36.5 µg/m^3	170.2 µg/m^3	28.5 µg/m^3	65 µg/m^3	Kearny Mesa
NO_2	Annual	0.019	0.018	0.017	0.053	Kearny Mesa
	1 hour	0.080	0.084	0.085	0.25	Kearny Mesa
CO	8 hour	3.54	3.88	4.04	9.0	San Diego
	1 hour	5.0	5.0	4.9	20	San Diego
SO_2	Annual	0.003	0.005	0.004	0.030	San Diego
	24 hour	0.007	0.008	0.008	0.04	San Diego
	3 hour	0.015	0.019	0.020	0.05[1]	San Diego
	1 hour	0.028	0.036	0.042	0.25	San Diego

[1] Secondary NAAQS
Source: www.arb.ca.gov (all pollutants except 1-hour CO and 1-hour and 3-hour SO_2)
www.epa.gov/air/data/monvals.html (1-hour CO, 1-hour and 3-hour SO_2)

Air quality has shown improvement in the SDAB such that the 1-hour federal ozone standard was not exceeded at the Kearny Mesa monitoring station during the time period from 2002 – 2004. The 8-hour federal ozone standard was exceeded once in 2002 and twice in 2004. The federal 24-hour PM_{10} and $PM_{2.5}$ standards were exceeded once at the Kearny Mesa monitoring station in 2003; however, the exceedance occurred during the Cedar Fire event in San Diego County. The annual $PM_{2.5}$ standard was exceeded during 2002. The data from the monitoring stations indicate that air quality is in attainment of all other federal standards. Due to measured exceedances at other monitoring stations, however, the SDAB was classified as nonattainment for the 8-hour NAAQS for O_3. The Kearny Mesa monitoring station measured exceedances of the state 24-hour and annual PM_{10} standards during the period from 2002 to 2004.

Because the Downtown San Diego monitoring station is located where traffic congestion is prevalent, the station sees higher concentrations of CO than are measured elsewhere in San Diego County and the background data are not likely to be representative of background ambient

CO concentrations in the project vicinity. Use of Downtown San Diego background data will therefore provide a conservative estimate of background CO concentrations.

There are no sensitive receptors, as defined in the CEQA Guidelines (i.e., day care centers, schools, retirement homes, and hospitals or medical patients in residential homes which could be impacted by air pollutants) known to be adjacent to the project site, although home daycare facilities and medical patients may be present. The FRS II site, South Portal and the stabilized crossing of the San Diego River are each separated from the closest development by hundreds of feet. The Pipeline Interconnect Reconfiguration and North Portal, however, are located immediately adjacent to the Belsera residential neighborhood. Prevailing winds blow from west to east, into MTRP and away from the residential development to the west. The less frequent Santa Ana winds blow in from the eastern deserts, across MTRP and the proposed project site, towards the residential areas to the west.

3.4.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to air quality are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; the San Diego Air Pollution Control District (SDAPCD) regulations; and the City of San Diego's Significance Determination Thresholds for CEQA. A significant impact to air quality would occur if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.
- Exceed the pollutant emission thresholds in Table 3.4-3.

3.4.3 Impact Analysis

Impacts to the ambient air quality associated with the proposed project would mainly be attributable to construction of proposed project facilities. Construction impacts would include emissions of CO, NO_x, ROC/ROG, SO_x, and PM_{10} associated with heavy equipment exhaust, construction truck traffic, and worker travel to/from the site; and emissions of PM_{10} associated with fugitive dust created by truck travel on dirt roads and grading. Potential impacts from construction are discussed below.

In regards to long-term project operations, the main air quality impacts would be the emissions associated with periodic inspection and maintenance activities to ensure proper operation of the

FRS II and pipeline. Emissions from these activities would be restricted to vehicle emissions and fugitive dust from employee vehicles traveling to the FRS II structure and along pipelines.

Table 3.4-3
Pollutant Emission Thresholds

Pollutant	lbs/hr	lbs/day	Tons/year
Carbon Monoxide (CO)	100	550	100
Oxides of Nitrogen (NO_x)	25	250	40
Particulate Matter (PM_{10})	-	100	15
Oxides of Sulfur (SO_x) [(a)]	25	250	40
Lead and Lead Compounds [(b)]	-	3.2	0.6
Volatile Organic Compounds (VOC)	-	137[(c)]	
Reactive Organic Compounds/Reactive Organic Gases (ROC/ROG)	-	137[(e)]	15 [(d)]

Source: City of San Diego CEQA Significance Determination Thresholds, 2004.

a. San Diego Air Basin has been in attainment of SO_x standard due to sulfur-free natural gas for electricity generation and lack of heavy industrial/manufacturing uses in the region.
b. Lead emissions have steadily declined due to catalytic converters and increased use of lead-free gasoline. San Diego is no longer required to monitor for lead.
c. OC threshold based on SCAQMD levels per South Coast Air Quality Management District (SCAQMD) levels per SDAPCD (9/01).
d. Thresholds level from the South Coast Air Quality Management District (SCAQMD).

These emissions would be periodic and minor, and would not result in significant impacts to air quality for any of the thresholds analyzed below. The following discussion therefore applies only to project construction.

Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?

Construction of the project is anticipated to last for approximately 2 years. In regards to the overall implementation of long-range air quality plans, construction is a temporary impact, and construction emissions would not cause a long-term impact to the ambient air quality. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. This potential long-term impact to air quality would not be significant.

Would the proposed project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Emissions from the construction phase of the project were estimated through the use of emission factors from the ARB's OFFROAD model for heavy construction equipment, as well as methodologies and emission factors from the South Coast Air Quality Management District's CEQA Air Quality Handbook (SCAQMD 1993) and the USEPA's emission factors for fugitive dust. It was assumed that heavy construction equipment would be operating at the site for 10

hours per day, 6 days per week during project construction. Construction equipment, truck trips, and employees were estimated based on the construction requirements and schedule provided by the engineering team. This is a worst-case estimate because construction at the South Portal would be 24 hours per day, 7 days per week, meaning that the emissions from this equipment would not be concentrated during a 10-hour day.

Maximum daily emissions of CO, NO_x, ROC/ROG, SO_x, and PM_{10} were estimated for each of the individual construction phases of the FRS II, pipeline tunnel, and river crossing.

Emissions of pollutants except PM_{10} from fugitive dust generated by grading, truck travel, and blasting were estimated using the California Air Resources Board EMFAC2002 Emissions Model. The total number of construction workers per phase was estimated based on the information provided by the design engineers for the project. Average commute distances for construction personnel were estimated at 17 miles round trip based on the distance from the site to Mission Valley in San Diego. It was assumed per EMFAC2002 model results that construction personnel vehicles would be a mix of light-duty autos and light-duty trucks. Delivery truck emissions were calculated based on the assumption that concrete, delivery, pipe, and welding trucks were represented by heavy-duty vehicles in the EMFAC2002 model.

Emissions associated with fugitive dust (PM_{10}) generated by grading and earthmoving activities were estimated based on approximations of the total estimated disturbed area for the various project components, including the FRS II site (12.8 acres), North Portal (4.5 acres), South Portal (1.3 acres), and Clairemont Mesa Boulevard staging area (2.5 acres). Emissions calculations were based on an emission factor of 10 pounds/acre/day for grading with an average reduction of 51 percent included for the use of water between grading passes to control fugitive dust. This approach to the calculation of emissions is consistent with the SCAQMD CEQA Air Quality Handbook on effectiveness of fugitive dust control measures.

Blasting would be required at the North Portal site during initial North Portal and tunnel construction. Fugitive dust emissions associated with blasting were estimated based on the USEPA's emission factor for blasting for coal mining to remove overburden, which is a similar process.

The maximum daily totals for individual construction phases of the three major project components (FRS II, pipeline tunnel, and river crossing) were evaluated in terms of the thresholds (Table 3.4-3). Based on the evaluation of individual component construction, thresholds for daily emissions of CO, ROC/ROG, and SO_x would not be exceeded (Table 3.4-5). The threshold of 250 pounds per day for NO_x would be exceeded during excavation of the FRS II, pouring of structural concrete for the FRS II, and excavation of the inlet and outlet tunnels. The threshold of 100 pounds per day for PM_{10} would be exceeded during the same phases, as well as site floor construction of the FRS II, final grading of the FRS II, and construction of the North Portal. The results for NO_x and PM_{10} for these construction phases are presented in Table 3.4-4. The complete tabulated results, and assumptions regarding the equipment types, numbers, locations, and duration of use can be found in the Air Quality Technical Report, Appendix C. Based on the construction schedule in Table 2-1, emissions of NO_x and PM_{10} would exceed the thresholds from Month 3 through Month 17 of construction, or for approximately 14 months.

Table 3.4-4
Individual Construction Phase Results for NO_x and PM_{10} Where Maximum Daily Emissions Would Exceed Thresholds

Construction Phase	NO_x	PM_{10}
	lbs/day	
FRS II Phase I Excavation	407.26	372.45
FRS II Phase II Excavation	438.19	373.89
FRS II Structural Concrete	342.28	205.80
FRS II Site Floor	102.46*	196.85
FRS II Final Grading	22.12*	142.40
Inlet Tunnel Excavation (North Portal)	387.17	171.93
Outlet Tunnel Excavation (South Portal)	407.80	243.92
Pipeline Interconnect Reconfiguration Grading	387.17	177.05

*NOx threshold not exceeded

In addition, because certain construction phases would proceed simultaneously, a total project maximum daily scenario was evaluated. Based on the construction schedule, the maximum combined emissions would occur for one month during Month 6, when simultaneous excavation for the FRS II shafts, FRS II structure, and inlet and outlet tunnel excavation would occur.

The maximum daily emissions estimated for a potential worst-case time of the construction schedule are summarized in Table 3.4-5. Table 3.4-5 also provides the air quality standards for CO, NO_x, ROC/ROG, SO_x and PM_{10} that would be applicable to the proposed project.

Table 3.4-5
Estimated Potential Worst-Case Maximum Daily Construction Emissions*

Construction Phase	CO	NO_x	ROC/ROG	SO_x	PM_{10}
	lbs/day				
FRS II Structure Excavation	136.52	407.26	33.60	1.01	372.45
Tunnel Excavation – North Portal	137.32	387.17	34.85	0.86	171.93
Tunnel Excavation – South Portal	152.22	407.80	36.76	1.17	243.92
Tunnel Shaft Construction	42.08	107.79	10.36	0.21	40.45
TOTAL	**468.14**	**1,310.02**	**115.57**	**3.25**	**828.75**
Significance Criteria	550	250	137	250	100
Significant?	*No*	**YES**	*No*	*No*	**YES**

* All four construction phases listed assumed to occur simultaneously for one month during Month 6 of the project.

As shown in Table 3.4-5, potential worst-case maximum daily emissions associated with the construction phase of the project would be above the emission thresholds for NO_x and PM_{10}. Emissions would be less than the significance thresholds for CO, ROC/ROG, and SO_x. The assumptions regarding the equipment types, numbers, locations, and duration of use can be found in the Air Quality Technical Report, Appendix C.

In summary, maximum daily emissions of NO_x associated with construction of the FRS II would exceed the significance threshold during the excavation and structural concrete construction phases. Maximum daily emissions of NO_x associated with construction of the pipeline tunnel would exceed the significance threshold during excavation of the tunnels from both the North and South Portals. These NO_x emissions would cause a significant short-term impact to air quality (**Impact AQ 1**).

Maximum daily emissions of PM_{10} associated with construction of the FRS II would exceed the significance threshold during the excavation, structural concrete construction, floor construction, and final grading of the FRS II site. Maximum daily emissions of PM_{10} associated with construction of the pipeline tunnel also would exceed the significance threshold during the North Portal construction and excavation of the tunnel from the North and South Portals. These PM_{10} emissions would cause a significant short-term impact to air quality (**Impact AQ 2**).

Maximum daily emissions associated with construction of the stabilized river crossing would not exceed the significance thresholds for any of the criteria pollutants. Impacts to air quality associated with this project component would be less than significant.

The potential worst-case construction impact was estimated to occur for one month (Month 6) when simultaneous excavation for the FRS II shafts, FRS II structure, and inlet and outlet tunnels would occur. Based on this analysis, the total project worst-case emissions would also result in a significant short-term impact for NO_x and PM_{10} given the project's anticipated exceedence of air quality standards and a cumulative net increase in criteria pollutants for which the SDAB is designated non-attainment **(Impacts AQ 1 and AQ 2)**.

Would the proposed project result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (Including release emissions which exceed quantitative thresholds for ozone precursors)?

The proposed project would not result in a cumulatively considerable net increase of any criteria pollutants because the construction impacts would end within 2 years of the start of construction and there would be very little air pollutants associated with the proposed project following construction. Most of the operations and maintenance of the FRS II and pipeline tunnel would be handled by existing Water Authority crews that patrol the existing right-of-way and inspect and repair the existing FRS I and associated facilities within MTRP. This impact would be less than significant.

Would the proposed project expose sensitive receptors to substantial pollutant concentrations?

Construction impacts would be focused within the West Fortuna area of MTRP, which does not contain any developed facilities that would be considered sensitive receptors. Therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations, and would not release substantial quantities of air contaminants beyond the boundaries of the premises upon which the stationary source emitting the contaminants is located.

Diesel exhaust particulate matter is known to the state of California as carcinogenic compounds. The risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined in the California Air Pollution Control Officers' Association (CAPCOA) Air Toxics "Hot Spots" Program Risk Assessment Guidelines (CAPCOA 1993) as 24 hours per day, 7 days per week, 365 days per year, for 70 years. Diesel exhaust particulate matter would be emitted during construction from heavy equipment used in the construction process. Because diesel exhaust particulate matter is considered to be carcinogenic, long-term exposure to diesel exhaust emissions could result in adverse health impacts. However, the total project duration is 2 years and there are no sensitive receptors that would be subjected to constant exposure, so this relatively short-term risk would be less than significant.

Would the proposed project create objectionable odors affecting a substantial number of people?

The primary odor that would be created during construction would be that of diesel exhaust from trucks and construction equipment. Prevailing winds would disperse the exhaust to the east, away from the residential development in Tierrasanta. Diesel exhaust odors would be most prevalent during Santa Ana conditions, but would not be expected to rise to the level of objectionable for most persons. Furthermore, odors associated with construction activities would be focused at the construction sites within MTRP, and the proposed project would not create objectionable odors affecting a substantial number of people. Operation of the proposed project facilities would not create objectionable odors affecting a substantial number of people for three reasons. First, raw water has a faint odor that most people do not consider to be objectionable. Second, there are currently a series of vents and blow-off valves along the raw water aqueducts in MTRP that do not emit objectionable odors. Third, the proposed vents would be constructed in MTRP, which consists of thousands of acres of open space with the prevailing winds blowing from west to east, away from the closest development. This impact would not be significant.

Would the proposed project exceed the pollutant emission thresholds in Table 3.4-3?

As evaluated above, emissions from construction of certain phases of the project would exceed the thresholds for NO_x and PM_{10}. These impacts would be significant for approximately 14 months when these construction phases would occur (**Impacts AQ 1 and AQ 2**).

3.4.4 Mitigation Measures

To reduce significant NO_x impacts caused by emissions generated by construction equipment during construction, the Water Authority shall implement the following mitigation measure:

AQ 1-1 Heavy-duty diesel equipment engines shall be properly tuned and maintained in compliance with State of California emissions regulations to ensure minimum emissions under normal operation. The Water Authority shall require its construction contractors to implement this measure to the extent practical.

AQ 2-1 Vehicles hauling dirt or fill shall be covered with a tarp or by other means.

3.4.5 Residual Impacts after Mitigation

Implementation of the mitigation measures recommended above would reduce short-term impacts to air quality, but given the emissions estimated in Tables 3.4-4 and 3.4-5, the impacts would not be expected to be reduced to below a level of significance by the above measures. In addition, the estimates incorporated a 51 percent reduction in fugitive dust from watering as part of PM_{10} modeling. Therefore, the impact of peak emissions would remain significant during the approximately 14 months when the construction of individual components would cause NO_x and PM_{10} thresholds to be exceeded. A Statement of Overriding Considerations would be necessary for project approval. This significant impact to air quality would be temporary because it would cease upon the completion of construction.

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3.5 NOISE AND VIBRATION

This section evaluates the potential impacts of the proposed project resulting from noise and vibration. The evaluation is based on the Noise Technical Report prepared by URS (2006), which is included as Appendix D to this EIR.

3.5.1 Existing Conditions

Noise

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day and the type of activity during which the noise occurs, and the sensitivity of the individual.

The project site is located within undeveloped parkland, and is adjacent to residential land uses in some areas. Noise levels at the three primary construction areas, the FRS II site and the North and South Portals, are low for an urban area and reflect a rural environment. This is primarily the result of the size of MTRP and the lack of developed areas within the park. An exception is the North Portal area, where traffic noise from SR-52 can overwhelm the natural noise level.

Construction access is through primarily residential neighborhoods along arterial roadways. Existing sources of noise within the park and along the construction routes consist of traffic on SR-52 to the north, military aircraft from MCAS Miramar to the north, civilian aircraft from Montgomery Field to the west, and traffic, construction, maintenance, and landscaping activities within adjacent residential neighborhoods.

Land uses that are considered sensitive to noise are typically associated with indoor and outdoor activities that may be subject to stress or significant interference from noise. They often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. In the case of this project, single- and multi-family residences are located approximately 50 feet from the Pipeline Interconnect Reconfiguration site, approximately 250 feet from the North Portal, approximately 800 feet from the FRS II site, and over 2,000 feet from the South Portal. Single- and multi-family homes, schools, parks, community centers, churches, and commercial areas, and open space are all found along the proposed construction access routes through Tierrasanta. The zoning in the project area is RM-1-1 (Residential-Multiple Unit), which replaced the R-2 designation.

The intensity of sound describes the sound's loudness and is measured in decibels (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

Sound from a tuning fork (a pure tone) contains a single frequency, but most sounds consist of a broad band of frequencies. The method commonly used to quantify sounds in the general environment is called "A" weighting, which corrects for the fact that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. The decibel level measured is called the A-weighted sound level (dBA).

Noise measurements for construction projects are expressed in term of Community Noise Equivalent Level (CNEL), which is defined as the A-weighted average sound level for a 24-hour day. It is calculated by adding a 5-dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10-dB penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The CNEL is used by the State of California and the City of San Diego to define acceptable land use compatibility with respect to vehicular traffic noise.

The existing noise levels were measured at several locations along the MTRP boundary and the haul routes. The purpose of the measurements was to quantify the existing noise environment near the proposed project. Two types of sound level measurements were conducted: short-term (1-hour duration) and long-term (24-hour duration). Because measured sound levels typically vary within a wide range, all measurements are expressed as Leq or "equivalent sound level." The Leq is the equivalent constant sound level that would have to be produced by a given source to equal the fluctuating level measured.

Sound measurements were taken at the following locations, which represent residential uses near various construction locations of the proposed project:

- Along Corte Playa Catalina, approximately 800 feet southwest of the proposed FRS II structure (short-term measurement) (**ST 1**)
- At the intersection of Seda Drive and Renovo Way, approximately 2,300 feet from the South Portal (short-term measurement) (**ST 2**)
- Along Portobelo Drive in the Belsera condominium complex, overlooking the proposed Portobelo Drive access route near the North Portal and the Pipeline Interconnect Reconfiguration site (long-term measurement) (**LT 1**)
- Along Portobelo Drive in the Belsera condominium complex, overlooking the North Portal (long-term measurement) (**LT 2**)

Daytime noise sources at each site consisted of vehicular traffic on SR-52; heating, ventilation and air conditioning (HVAC) units on residences, jets from MCAS Miramar, small aircraft overflights, birds vocalizing, dogs barking, and people talking. Nightime noise sources at each site were dominated by HVAC units and crickets.

Table 3.5-1 provides the results of the short-term sound measurements taken along Corte Playa Catalina and Seda Drive and Table 3.5-2 provides the range and average results of the two long-term (24-hour) sound measurements taken in Belsera.

Table 3.5-1
Short-Term Sound Level Measurements (dBA)

Measurement Identification	Location Description	Time	L_{eq}
ST1	5190 Corte Playa Catalina	12:55-13:55	42.2
		23:05-00:05	38.9
ST2	Seda Drive	11:45-12:45	43.0
		22:00-23:00	44.4

September 1, 2005

Table 3.5-2
Long-Term (24-Hour) Sound Level Measurements (dBA)

Measurement Identification*	Location Description	Range in 24 hours, L_{eq}	Average L_{eq}
LT1	Belsera 11390 Portobelo Drive	39.5 – 68.9	48.9
LT2	Belsera 11360 Portobelo Drive	42.9 – 72.0	53.0

*LT1 taken between 10:30 a.m. on September 1 and 11:30 a.m. on September 2.
LT2 taken between 11:00 a.m. on September 1 and 12:00 p.m. on September 2

Vibration

Mechanical or structural vibrations are generally unwanted and, depending on their magnitude, can produce physical discomfort, misalignment of equipment, and damage to structures. The peak ground velocity produced by sources such as trucks, trains, pile driving, blasting, or earthquakes can range from less than 0.01 inches per second (in/sec), which would be barely perceptible to humans, to more than 10 in/sec, which would be sensed as very unpleasant to intolerable by humans.

Regulatory Framework

The City of San Diego's Noise Ordinance has established maximum noise levels for construction-related noise (Chapter 5, Article 9.5, §59.5.0404). The Noise Ordinance states:

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or

structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator.

(b) It shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

3.5.2 Thresholds of Significance

Thresholds used to evaluate potential noise and/or vibration impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; and the City of San Diego's Significance Determination Thresholds for CEQA. A significant noise and/or vibration impact would occur if the project would:

- Expose sensitive land uses to construction noise, which exceeds 75 dBA L_{eq} between the hours of 7:00 a.m. and 7:00 p.m. If the project vicinity ambient level is currently at or exceeds 75 dBA L_{eq}, noise level increases greater than 3 dB would be considered significant.
- Expose sensitive land uses to construction noise between the hours of 7:00 p.m. and 7:00 a.m.
- Exceed the significance thresholds in Table 3.5-3 for interior and exterior noise impacts from traffic generated noise.
- Result in a permanent increase in ambient noise levels in the project vicinity, which exceed the significance thresholds in Table 3.5-4.
- Expose persons to or generate excessive vibration that:
  - Results in peak particle velocities in excess of 2 in/sec at the nearest structure.
  - Results in a daily average particle velocity in excess of 0.5 in/sec at the nearest sensitive receptor.

3.5.3 Impact Analysis

Would the project expose sensitive land uses to construction noise, which exceeds 75 dBA L_{eq} between the hours of 7:00 a.m. and 7:00 p.m.? If the project vicinity ambient level is currently at or exceeds 75 dBA L_{eq}, noise level increases greater than 3 dB would be considered significant.

The proposed project would require approximately 2 years to construct, with varying levels of intensity and numbers and types of construction equipment. The analysis of noise impacts assumed the peak level of construction during which the FRS II site would be excavated, the tunnel portals would be excavated, and excess spoils would be hauled from MTRP. This peak level of activity and noise would take place for several months although construction noise would occur at the North Portal, FRS II, and South Portal for up to 2 years.

Table 3.5-3
Thresholds for Interior and Exterior Noise Impacts

Structure of Proposed Use that would be impacted by Traffic Noise	Interior Space	Exterior Usable Space[a]	General Indication of Potential Significance
Single-family detached	45 dB CNEL	65 dB CNEL	Structure or outdoor useable area[b] is < 50 feet from the center of the closest (outside) lane on a street with existing or future ADTs > 7,500[c]
Multi-family, schools, libraries, hospitals, day care, hotels, motels, parks, convalescent homes.	45 dB CNEL pursuant to Title 24	65 dB CNEL	
Offices, Churches, Businesses, Professional Uses	n/a	70 dB CNEL	Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs $\geq$ 20,000
Commercial, Retail, Industrial, Outdoor Spectator Sport Uses	n/a	75 dB CNEL	Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs $\geq$ 40,000

Source: City of San Diego Acoustical Report Guidelines (December 2003) and 2) City of San Diego Progress Guide and General Plan (Transportation Element)

a. If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

b. Exterior usable areas do not include residential front yards or balconies, unless the areas such as balconies are part of the required usable open space calculation for multi-family units.

c. Traffic counts are available from:
   - San Diego Regional Association of Governments (SANDAG) Regional Economic Development Information System (REDI): http://cart.sandag.cog.ca.us/REDI/
   - SANDAG Traffic Forecast Information Center: http://pele.sandag.org/trfic.html

Table 3.5-4
Land Use Noise Thresholds

Land Use Zone	Time of Day	Threshold[a,b] One-hour dBA Leq
Residential: All R-1	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
All R-2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
R-3, R-4 and all other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
All Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
Manufacturing all other industrial including Agricultural and Extractive Industry	any time	75

Source: City of San Diego, SDCWA

a. Measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

b. If the project vicinity ambient level is currently at or exceeds the significance thresholds described above, noise level increases greater than 3 dB would be considered significant

Sound levels of typical noise sources and environments are provided in Table 3.5-5 to provide a frame of reference.

Table 3.5-5
Sound Levels of Typical Noise Sources and Noise Environments
(A-Weighted Sound Levels)

Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft) Civil Defense Siren (100 ft)	140 130	Aircraft Carrier Flight Deck	
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 (1,000 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
	10		
	0		Threshold of Hearing

Construction activities at the proposed site would result in a short-term, temporary increase in the ambient noise level from the operation of construction equipment. The increase in noise level would be primarily experienced by receptors close to the noise source. The magnitude of the impact would depend on the type of construction activity, noise level generated by various pieces

of construction equipment, duration of the construction phase, and distance between the noise source and receiver. As discussed in Appendix D (URS 2006), acoustical calculations were performed to estimate noise from construction/demolition activities for each of the project components. Sound levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source (U.S. EPA 1971).

Construction activities for the project would include earthwork, building structures, tunneling, trenching, pipe installation, and landscaping. Tunneling noise would be concentrated at the portals, where equipment such as ventilation fans, diesel generators, and materials transport vehicles would be operating. All mobile construction equipment would be required to have properly operating mufflers. The worst-case number of equipment operating at any one time would be during the grading and excavation and building construction phases. Worst-case sound levels at the closest residential uses are summarized in Table 3.5-6 for each of the project components.

Table 3.5-6
Calculated Sound Levels from Construction/Demolition (dBA)

Description of Activity	Distance to Closest Residences (ft)	Calculated Sound Level (dBA)
FRS II construction	700	42 – 72
North Portal construction	250	51 – 81
Pipeline Interconnect Reconfiguration	40	67 - 97
South Portal construction	1,900	33 - 63
Elliot Vent #1 demolition	200	53 – 83
Elliot Vent #2 demolition	850	40 – 70
Elliot Vent #3 demolition	1,900	33 – 63
Elliot Vent #4 demolition and replacement	1,900	33 – 63
River crossing construction	500	45 - 75

Noise levels would range from 67 to 97 dBA at the residences closest to the Pipeline Interconnect Reconfiguration site, located approximately 40 feet to the south; 42 to 72 dBA at the residences closest to the FRS II site, located approximately 700 feet west; 51 to 81 dBA at the closest residences to the North Portal construction area, approximately 250 feet to the southwest; and 33 to 63 dBA at the residences closest to the South Portal, approximately 1,900 feet to the west. Noise levels may range from 33 to 83 dBA at the closest residential uses to the vent demolition sites, approximately 200 to 1,900 feet to the south and west. Sound levels would range from 45 to 75 dBA at the closest residences to the stabilized river crossing, approximately 500 feet to the south.

In addition to noise from construction equipment, the sudden and intense airborne noise potential created by a blast could create adverse reactions for nearby sensitive receptors. While the noise level of a blast is typically not very loud, it is sudden and can therefore startle persons not expecting it. For that reason, and to maintain site safety, an audible pre-blast warning is sounded prior to blasting.

Because of the intermittent nature of construction work, the average sound level for an 8-hour workday would be less than predicted in Table 3.5-6. The majority of the construction activity would be limited to the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. During this time, the construction noise generally would comply with the thresholds criteria. This is because the calculated sound levels stated in Table 3.5-6, when averaged over an 8-hour day, would likely be less than 75 dBA. An exception to this conclusion would be at the North Portal and adjacent to the Pipeline Interconnect Reconfiguration, where the proximity of sensitive receptors to the proposed work site and the estimated sound levels from construction equipment may cause average daily sound levels to exceed 75 dBA, resulting in a significant noise impact **(Impact N 1)**.

Would the project expose sensitive land uses to construction noise between the hours of 7:00 p.m. and 7:00 a.m?

Nighttime construction would occur at the North Portal for 10 consecutive days during the connection of the new pipeline, and for the same duration at the Pipeline Interconnect Reconfiguration site. Nighttime construction would occur at the South Portal for approximately 1 year. Construction during nighttime hours (7:00 p.m. through 7:00 a.m.) would not be in conformance with the nighttime hourly average threshold of 45 dBA in residential zones (shown in Table 3.5-4). Noise impacts between 7:00 p.m. and 7:00 a.m., Monday through Saturday, and all day Sunday, would be significant **(Impact N 2)**.

Would the project exceed the significance thresholds in Table 3.5-3 for interior and exterior noise impacts from traffic generated noise?

The California Department of Transportation (Caltrans) Sound32 Traffic Noise Prediction Model (based on FHWA RD-77-108) with California Reference Energy Mean Emissions Levels was used to calculate existing and existing plus project noise levels at 50 feet from the centerline of Calle de Vida, Rueda Drive, Via Valarta, Portobelo Drive, and Clairemont Mesa Boulevard for the purpose of estimating the change in sound level resulting from project construction traffic at off-site receptors.

Data from the traffic analysis prepared by Linscott, Law & Greenspan (Appendix A) was used in the noise analysis. The worst-case scenario for traffic was used in the traffic analysis; therefore, the highest potential traffic numbers associated with any project alternative were used for the noise calculations. The actual sound level at any receptor location is dependent on such factors as the source to receptor distance and the presence of intervening structures, barriers, and topography. The modeling effort considered estimated average vehicle speed and the ADT. It was assumed that the peak hour traffic volume is 10 percent of the ADT. A vehicle mix of 98 percent autos, 1.5 percent medium trucks, and 0.5 percent heavy trucks for all roadways was assumed for the existing conditions. Of the traffic generated by the project, it was assumed that approximately 65 percent of the ADT was heavy trucks and that the trucks would operate between 7:00 a.m. and 7:00 p.m., Monday through Saturday. The remaining 35 percent of the ADT would be light trucks and the personal vehicles used by construction workers to commute to and from the jobsite. The following vehicle speeds were used: 25 miles per hour (mph) for Rueda Drive, 30

mph for Calle de Vida, 35 mph for Portobelo Drive, 40 mph for Via Valarta and for Clairemont Mesa Boulevard between Rueda Drive and Via Valarta, 45 mph for Clairemont Mesa Boulevard between Via Valarta and Santo Road, and 50 mph for Clairemont Mesa Boulevard between Santo Road and I-15.

Table 3.5-7 summarizes the results of the acoustical calculations. A review of the table shows that worst-case sound levels along all roadways would increase by approximately 1.1 dBA CNEL along Via Valarta, 1.5 dBA CNEL along Clairemont Mesa Boulevard, 1.7 dBA CNEL along Portobelo Drive, 3.2 dBA CNEL along Calle de Vida, and 3.3 dBA CNEL along Rueda Drive for the duration of the worst-case traffic condition. The worst-case condition for traffic is anticipated to last for approximately 2 months, when traffic associated with the export of excavated materials from the North Portal, FRS II, and South Portal would be at its peak.

Table 3.5-7 shows that calculated sound levels along all roadways, except Clairemont Mesa Boulevard, would remain below the 65 dBA CNEL threshold at residential land uses. Therefore, there would be no significant impact to residences along Calle de Vida, Rueda Drive, Via Valarta, and Portobelo Drive as a result of the project, as long as the trucks are not utilized during the nighttime period. Calculated sound levels along Clairemont Mesa Boulevard already exceed the 65 dBA CNEL under the existing conditions and the project would increase sound levels by approximately 1.5 dBA CNEL. However, the residences along Clairemont Mesa Boulevard are at a greater distance than 50 feet from the centerline and most residences have an existing noise barrier along the property line. In addition, the typical human ear cannot perceive changes in sound level by less than 3 dBA. Therefore, the noise impact to residences along Clairemont Mesa Boulevard as a result of truck traffic would be less than significant.

Table 3.5-7
Calculated Traffic Sound Levels at 50 feet from Roadways (dBA CNEL)

Roadway	Speed Limit	Existing		With Project		Delta[1]
		ADT	Calculated Level (dBA CNEL)	ADT	Calculated Level (dBA CNEL)	
Clairemont Mesa Blvd						
Rueda to Via Valarta	40 mph	4,700	63.4	6,130	64.9	1.5
Via Valarta to Santo Road	45 mph	11,600	68.8	13,530	69.2	0.4
Santo Road to I-15	50 mph	13,200	70.5	15,130	71.1	0.6
Calle de Vida	30 mph	1,000	54.9	1,715	58.2	3.3
Rueda Drive	25 mph	2,100	55.3	2,815	58.5	3.2
Portobelo Drive	35 mph	1,200	56.5	1,700	58.2	1.7
Via Valarta	40 mph	2,700	61.0	3,200	62.1	1.1

[1]Difference between existing and with project. Calculated Level is 50 ft from centerline of roadway

Calculations were also performed to estimate the sound levels resulting from the proposed project at off-site receptors near the North Portal ingress/egress route on the Portobelo Drive access road. There are residences on either side of the access road. The multi-family residences to the north are approximately 10 feet above the road and approximately 160 feet from the road. The single-family residences to the south are approximately 25 feet above the road and

approximately 165 feet from the road. The worst-case scenario for traffic impacts at the North Portal was used for the noise calculations. The actual sound level at any receptor location is dependent on such factors as the source to receptor distance and the presence of intervening structures, barriers, and topography. The modeling effort considered estimated average vehicle speed and the ADT (172 haul trucks and 72 worker vehicles). It was assumed that the peak hour traffic volume is 10 percent of the ADT, the trucks would only operate between 7:00 a.m. and 7:00 p.m. Monday through Saturday, and the speed of the trucks would be 10 mph. Based on these assumptions, the residences to the north and south would experience sound levels of approximately 40 dBA CNEL. Therefore, sound levels do not exceed the 65 dBA CNEL guideline for traffic noise or the 75 dBA CNEL City guideline for construction noise. In addition, calculated sound levels would be below the measured average sound level of 49 dBA at the monitoring location along the Portobelo Access Road. The impact of noise from construction traffic to and from the North Portal and the Pipeline Interconnect Reconfiguration site would be less than significant.

Would the project result in a permanent increase in ambient noise levels in the project vicinity, which exceed the significance thresholds in Table 3.5-4?

The primary noise impacts associated with the operation of project facilities would be from employee vehicles traveling to the FRS II structure and the Water Authority's right-of-way to ensure proper operation of project facilities. These noise impacts would be periodic and minor, and would not result in a significant impact to the ambient noise levels. Water Authority employees currently patrol the right-of-way and inspect the FRS I on a daily basis and would add the FRS II to their route. There would not be a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. This impact would be less than significant.

Would the project expose persons to or generate excessive vibration that:

- *Results in peak particle velocities in excess of 2 in/sec at the nearest structure?*
- *Results in a daily average particle velocity in excess of 0.5 in/sec at the nearest sensitive receptor?*

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods. Operation of construction equipment causes ground vibrations that propagate through the ground and diminish in strength with distance. Ground vibrations from construction activities very rarely reach the levels that can damage structures, but can be audible/perceptible in buildings very close to the site. The construction activities that typically generate the most severe vibrations are blasting and pile driving. Blasting would be required for the proposed project; pile driving is not anticipated.

Various types of construction equipment have been measured under a variety of activities with an average of source levels reported in terms of velocity levels (FTA 1995). These measurements converted to peak particle velocities (in/sec) are shown in Table 3.5-8. Based on these measurements, large dozers generate a peak particle velocity (PPV) of approximately 0.089 in/sec at 25 feet. At the closest home to the North Portal (approximately 250 feet from the construction activities), the equipment would generate a PPV of less than 0.01 in/sec. At the

closest home to the Pipeline Interconnect Reconfiguration site (40 feet), vibration would still be less than the threshold of 0.5 in/sec. The vibration level is considered acceptable for both humans and structures. Therefore, ground-bourne noise impacts would be less than significant.

Blasting is planned for the tunnel and North Portal excavations in hard rock within the Santiago Peak Volcanics where excavation by roadheader would result in excessively slow progress rates and excessive wear. Blasting may also be required at the FRS II site or other areas where the hardness of the rock encountered during excavation may require its use. Blasting would create local ground-borne vibrations. The character of the blast and ground vibrations would be dependent on such factors as type of soil/rock, type of explosive, amount of explosive used, depth of explosion and meteorological conditions. Drill-and-blast methods would generally consist of the following steps: 1) drilling a pattern of holes in a rock face and loading the holes with explosives, 2) blasting the round and ventilating the blasting gasses, 3) mucking the blasted rock, and 4) installing initial ground support as needed.

Table 3.5-8
Vibration Source Levels for Construction Equipment

Equipment		Peak particle Velocity (PPV) at 25 ft (in/sec)
Pile Driver (impact)	Upper range	1.518
	Typical	0.644
Pile Driver (sonic)	Upper range	0.734
	Typical	0.170
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003

There are approximately 12 homes within approximately 250 and 500 feet of the North Portal. Half of these residences have a direct line-of-sight of the North Portal and the remaining are on the tunnel side of the North Portal. There is insufficient information available at this time regarding the locations and sizes of blasts to perform calculations of the airblast or ground-borne vibration from the blasting; however, due to the close proximity of the residences near the North Portal site, it is assumed that this impact would be significant **(Impact N 3)**.

3.5.4 Mitigation Measures

To mitigate significant construction noise impacts associated with substantial increases of noise levels above ambient that may exceed 75 dBA, the Water Authority shall implement the following mitigation measures:

N 1-1 No motor driven semi-stationary equipment shall be operated continuously under load within 500 feet of any residences at night (7:00 pm – 7:00 a.m.) unless a temporary noise propagation barrier is erected, and/or enhanced mufflers are used to reduce noise exposure at any adjacent building facade to 45 dB L_{eq}.

N 1-2 The contractor shall use portable noise screens or enclosures to provide shielding for high noise activities or equipment as necessary. The effectiveness of a barrier depends upon factors such as the relative height of the barrier relative to the line-of-sight from the source to the receiver, the distance from the barrier to the source and to the receiver and the reflections of sound. To be effective, a barrier must block the line-of-sight from the source to the receiver. A properly designed noise barrier can reduce noise as much as 20 dBA.

N 1-3 The Water Authority shall monitor noise levels during construction to ensure compliance with the noise thresholds.

To mitigate significant noise impacts during night construction at the North Portal and Pipeline Interconnect Reconfiguration, the Water Authority shall implement the following mitigation measure:

N 2-1 The Water Authority shall construct a temporary sound wall along the western boundary of the North Portal staging area and the Pipeline Interconnect Reconfiguration site to reduce construction noise levels at the Belsera property line. A properly designed noise barrier can reduce noise as much as 20 dBA.

N2-2 The Water Authority shall monitor noise levels during construction to ensure compliance with the noise thresholds.

To mitigate the potential vibration impacts associated with blasting, the Water Authority shall implement the following mitigation measures:

N 3-1 The Water Authority shall monitor all blasting activities to confirm that they are consistent with the Water Authority's General Conditions and Standard Specifications, Section 02229, including:

- Blasting shall only be conducted during construction when other practicable excavation methods are not available.
- Advanced written notification of the date and time of any blasting activities shall be provided to all residents and businesses within 400 feet of the blast area.
- A Blast Plan will be developed and approved by the local regulatory authority in the event that blasting is necessary.

N 3-2 Blast monitoring shall be required for all blasting operations within the City, including monitoring of ground motions, peak particle velocity, and air blast levels.

N 3-3 The hours of blasting shall be determined by site specific requirements and blasting shall be limited to daytime hours between 7:00 a.m. and 7:00 p.m., Monday through Saturday.

N 3-4 If the blasting results in vibration or blast levels with a PPV in excess of 2.0 inches/second, modifications to the procedures shall be implemented, such as using different delay patterns, reduction in size of the individual blasts, shorter and/or smaller diameter blast holes, closer spacing of blast holes, reduction of explosives, blast mats, sound walls, or a combination. A properly designed noise barrier can reduce noise as much as 20 dBA.

N 3-5 A public outreach program shall be implemented to alert the public to the potential for vibrations and noise associated with blasting.

3.5.5 Residual Impacts after Mitigation

Implementation of the mitigation measures recommended above would reduce short-term impacts due to construction noise by 20 dBA, but these impacts would not be expected to be reduced to below a level of significance by the above measures. Therefore, the impacts due to construction noise would remain significant during the construction period. A Statement of Overriding Considerations would be necessary for project approval. This significant noise impact would be temporary because it would cease upon the completion of construction.

No residual impacts would remain after implementation of the proposed mitigation measures for potential vibration impacts associated with blasting.

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3.6 RECREATION

This section evaluates the potential impacts of the proposed project on recreation within MTRP. The evaluation is based on field observations, a review of maps of MTRP and the MTRP Master Plan, and discussions with park rangers.

3.6.1 Existing Conditions

MTRP provides numerous opportunities for recreation, including the use of utility roads and easements. Over 40 miles of roads and trails within MTRP are available to hikers, equestrians, and mountain bikers. In addition to hosting utility corridors for water, sewer, electricity, telephone, and gas, and providing roads and trails, MTRP provides natural open space for the support of native plant and animal species. The project area is used mostly for passive recreation with limited fencing and signage to protect sensitive resources.

The project area is within the West Fortuna Mountain portion of the MTRP, which consists of the western portion of the park that is located adjacent to the Tierrasanta neighborhood and extends southward towards Mission Gorge Road and the Navajo and San Carlos neighborhoods. Travel is limited to existing roads and trails, which are designated for hiking only, hiking and biking, or hiking, biking, and equestrian use. Typical recreational use of this portion of the park consists of walking, dog walking, jogging, running, hiking, mountain biking, horseback riding, nature study, photography, and the general enjoyment of natural open space. The terrain consists of a series of ridges and valleys, with the San Diego River flowing through the deepest valley, Mission Gorge.

Access points to MTRP within the project area, from north to south, are generally limited to Portobelo Drive, Corte Playa Catalina, Seda Drive, Clairemont Mesa Boulevard, Calle de Vida, and Mission Gorge Road, although other informal access points are possible from adjacent residential areas. With the exception of Corte Playa Catalina, each of these access points can be used by authorized motor vehicles, which are limited to park rangers, park maintenance staff and contractors, law enforcement, fire protection, and utility providers with facilities within the park. While motor vehicles operate within the project area on a daily basis, the number of trips is typically low and vehicle speeds are limited to 15 mph.

3.6.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to recreation are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; and the thresholds established for the Water Authority's Program Environmental Impact Report for the Regional Water Facilities Master Plan. A significant impact to recreation would occur if the project would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Result in the direct disturbance or displacement of established recreation facilities

3.6.3 Impact Analysis

Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The project would reduce the use of portions of the West Fortuna Area of MTRP, which represents the western edge of the park, during construction where access points and trails would be closed to maintain visitor safety. However, because the regional park offers multiple access points and trails, the inaccessibility to this part of MTRP is not expected to substantially increase the use of existing neighborhood parks or other portions of MTRP. Furthermore, the maximum period of closure would be approximately 2 years, a duration that would be unlikely to result in physical deterioration to other portions of MTRP or other facilities due to a redirected demand for passive recreation in an open space setting. This impact would be less than significant.

Would the proposed project result in the direct disturbance or displacement of established recreation facilities?

The proposed project would result in the temporary closure of dirt roads and trails within the West Fortuna Area of MTRP. These dirt roads and trails are used for recreation on a daily basis and are established recreation facilities for walking, running, jogging, hiking, nature study, mountain biking, and equestrian use. Closure of park trails and access areas is anticipated to range from 3 months at the San Diego River crossing to 2 years at the Clairemont Mesa Boulevard staging area, FRS II site, and North and South Portals. Access to park trails and roads through construction areas and on some roads used for truck routes would be prohibited for the duration of construction. The Clairemont Mesa Boulevard and Portobelo Drive access routes would be closed while the Calle de Vida access route would be open with public access restricted only while trucks and equipment are present. Figure 3.6-1 provides a map of the existing roads and trails in MTRP. Figure 3.6-2 shows the proposed road and trail closures that would be required to protect public safety during project construction. Active construction areas would be fenced and access would be restricted to authorized personnel. This would result in the direct disturbance of a portion of MTRP, which is an established, regional recreational facility.

The direct impact to these recreational facilities would only occur during construction and would be limited to the extreme western part of the large regional park. Access to the park would be open during construction from many other points, including Mission Gorge Road at the Visitor's Center and at the Kumeyaay Lake Campground, as well as Deerfield Street, Navajo Road, Barker Way, Mesa Road, Big Rock Road, and Mast Boulevard. All trails from these access points would be open, including the BMX Track at the Deerfield Loop. As illustrated in Figure 3.6-3, Calle de Vida access would be a limited use access route for oversized construction equipment, and would typically remain open to the public for recreational use during construction. The Clairemont Mesa and Portobello access would be closed during construction. However, an alternative Portobello access, Corte Playa Catalina, Seda Drive, and Calle de Vida would allow continued recreational access to the Fortuna Mountain portion of MTRP. In addition, the entrance at Mission Gorge Road and Jackson Drive and the hike and bike trail to the river would be open except for a 2-month period during construction of the San Diego River

crossing. The Water Authority will continue to distribute community newsletters to residents within the 92124 Zip Code, MTRP staff, and other interested parties describing the project components, schedule, impacts to recreational uses, and suggested alternative park areas and trails that may be used for recreational purposes during construction. Direct impacts of the access point and trail closures would be adverse. However, the impacts would be less than significant due to the availability of other portions of the park for recreation and the limited duration of the project.

Secondary or indirect impacts to recreational uses of the park would result from the intrusion of construction noise and dust and a change in park aesthetics due to the construction activities. Mitigation measures related to dust control are described in more detail in Section 3.4, Air Quality. Mitigation measures related to construction noise are described in Section 3.5, Noise and Vibration. These secondary impacts would be adverse, but less than significant, due to the availability of other portions of the park for recreation and the limited duration of the project.

All existing roads and trails would be restored to their existing condition or better following construction. All road and trail restoration would be coordinated with the MTRP Senior Park Ranger. Because the proposed project would be almost entirely below ground, there would not be any long-term impacts to recreation.

3.6.4 Mitigation Measures

Impacts to recreation in MTRP would be adverse, but less than significant. Therefore, no mitigation measures are required. See Section 2.6.5 for a discussion of project design features that would be implemented to maintain access to the Fortuna Mountain area of MTRP during construction.

3.6.5 Residual Impacts after Mitigation

No residual impacts would occur.

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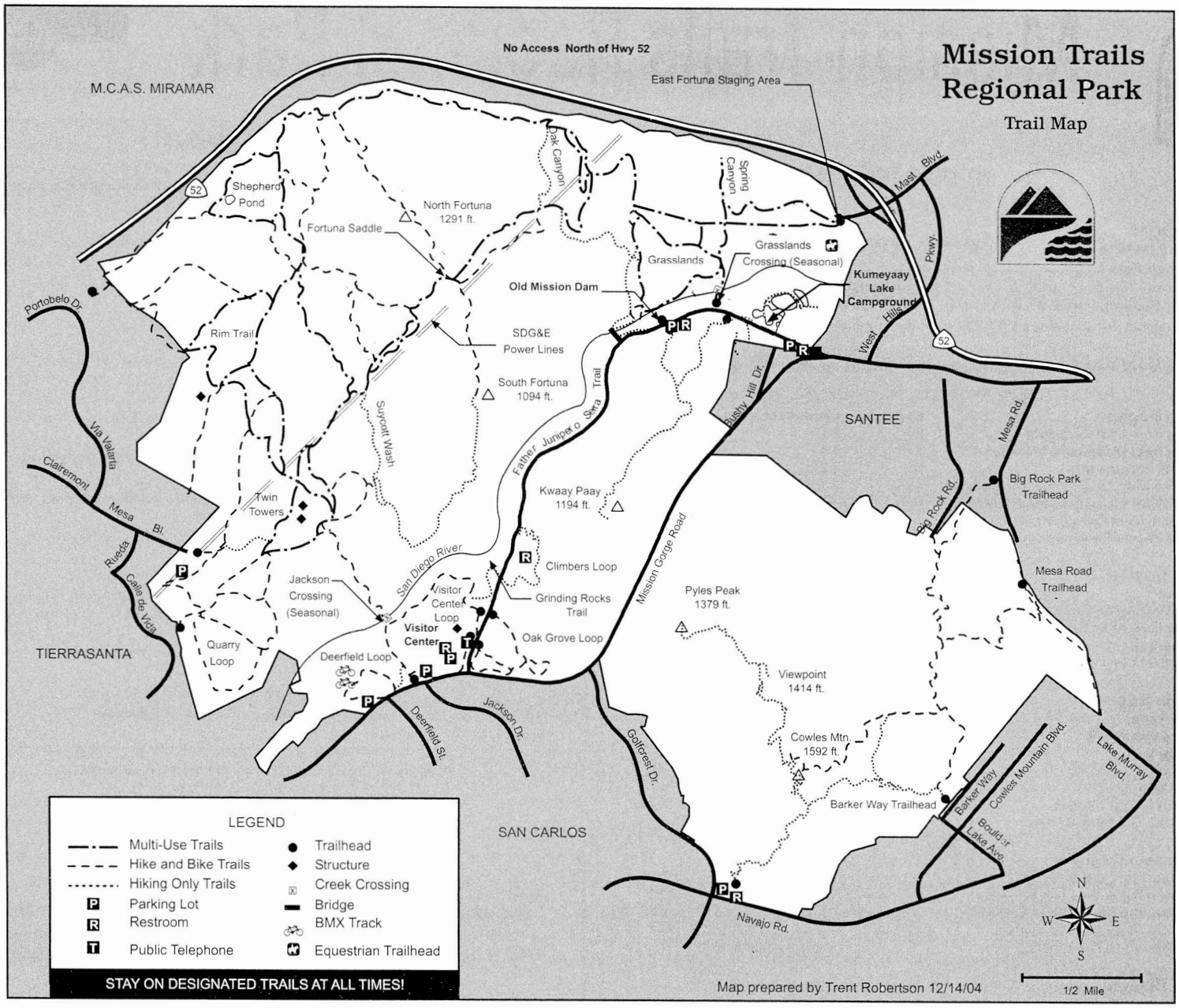

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

MTRP Trails Map

Figure 3.6-1

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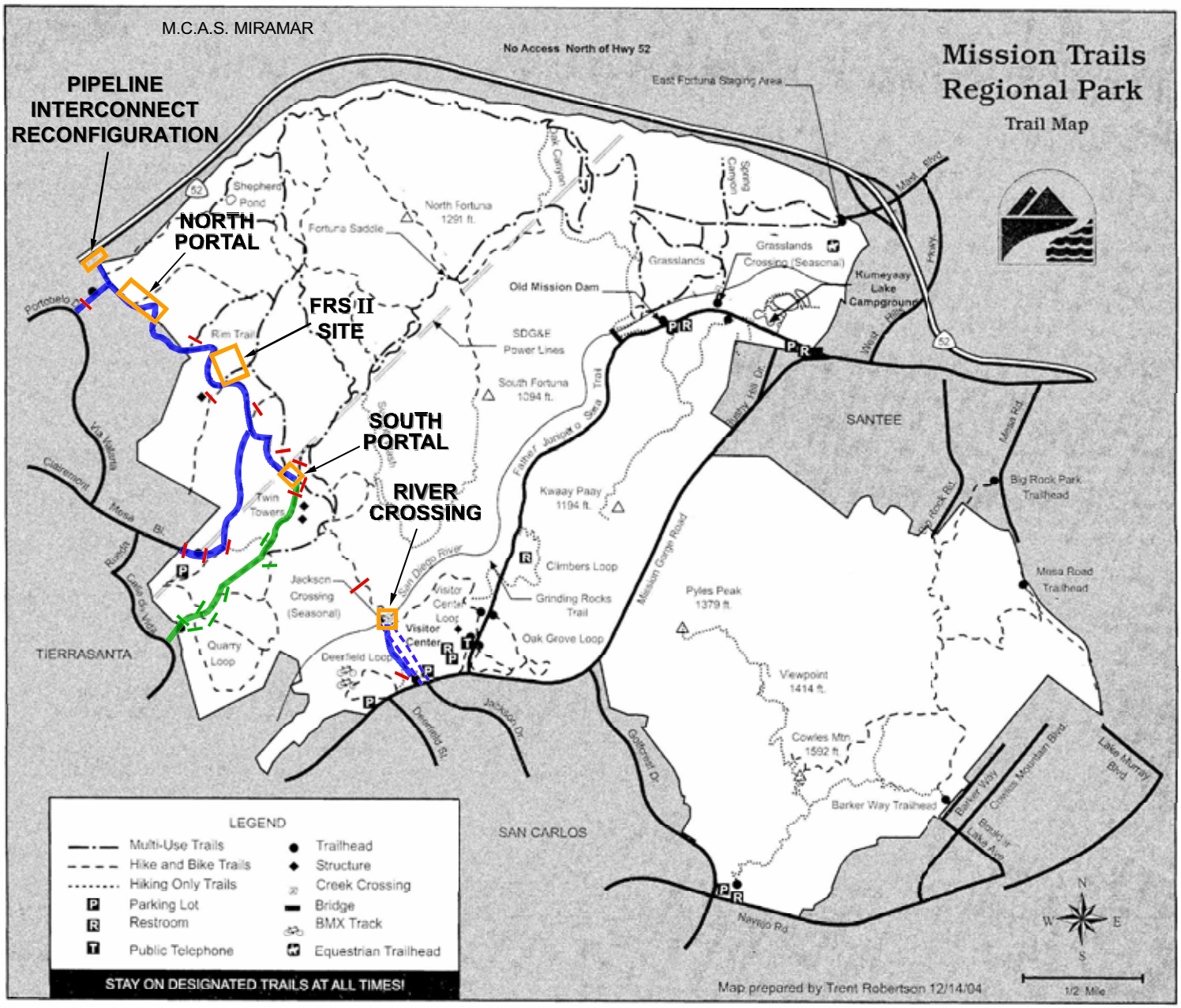

Legend

- TRAILS CLOSED DURING CONSTRUCTION
- WORK AREAS CLOSED DURING CONTRUCTION
- TRAIL CLOSURE BARRIER AND SIGN
- JACKSON DRIVE CLOSURE APPROX. 3 MONTHS (SEPT-NOV)
- LIMITED ACCESS ROUTE\BARRIER AND SIGN (Typically open to public during construction)

N W E S

0 3200

Feet

(Scale is Approximate)

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
Date: Jan 9, 2006

San Diego County Water Authority

Potential Trail Closures During Construction

Figure 3.6-2

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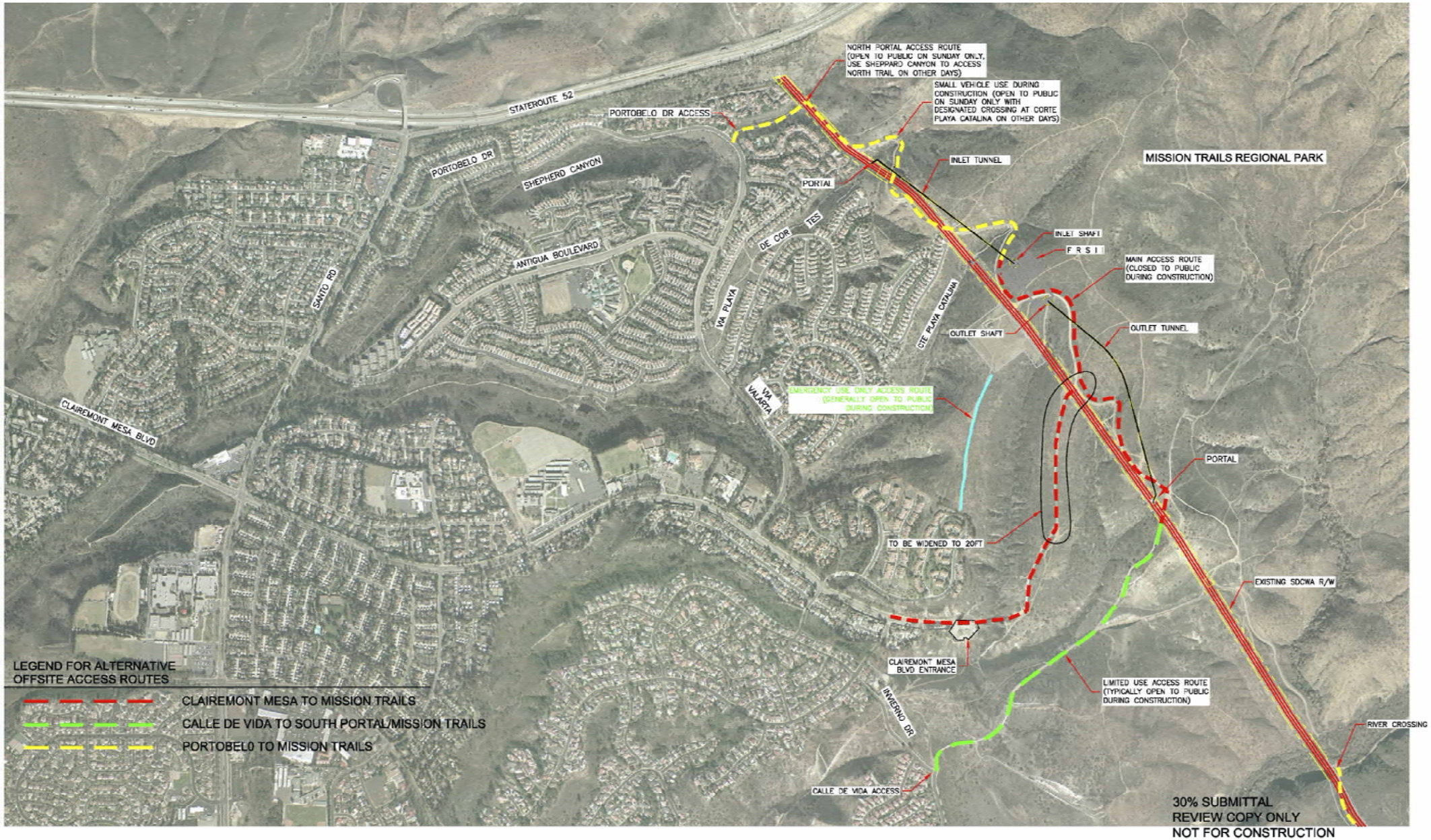

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

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3.7 WATER RESOURCES

This section evaluates the potential impacts of the proposed project on water resources, including surface water and groundwater flow patterns, flow rates, and water quality. The evaluation is based on available data relevant to the project area and regulatory information published by the San Diego Regional Water Quality Control Board (RWQCB) and other agencies.

3.7.1 Existing Conditions

San Diego River Watershed

California is divided into nine hydrologic regions to facilitate water resources management. San Diego, including the study area, is under the jurisdiction of Region 9 of the RWQCB. This region contains 11 major drainage basins that encompass most of San Diego County and parts of Riverside and Orange counties. The area of MTRP affected by the project is classified in the Water Quality Control Plan for the San Diego Basin (RWQCB 1994) as being located in the Mission San Diego Hydrologic Subarea (basin number 7.11) of the Lower San Diego Hydrologic Area, within the San Diego Hydrologic Unit (HU). The San Diego HU covers approximately 440 square miles and is drained by the San Diego River. Runoff from the project area would flow into any of three unnamed intermittent drainages that drain south-southwest to the San Diego River.

The San Diego River originates in the mountains northwest of Julian and runs southwestward through mostly undeveloped lands east of El Capitan Reservoir, then flows westward through Santee and San Diego municipalities to the San Diego River Estuary and the Pacific Ocean. Two tributaries originating on MCAS Miramar flow from north to south to feed into the San Diego River in the northeast corner of MTRP. Little Sycamore Canyon enters the river at the eastern edge of MTRP, near Kumeyaay Lake, and Oak Canyon enters the river at the Old Mission Dam Historical Site. The smaller drainages of Mission Gorge and Shepherd Canyon originate on Fortuna Mountain in the park and flow southwestward to eventually enter the San Diego River near I-15. The buried pipelines in the Water Authority Second Aqueduct easement cross under the San Diego River in the southwestern corner of MTRP, approximately 1,700 feet north of Mission Gorge Road and Jackson Drive.

Approximately 85 percent of the total surface flow in the San Diego River occurs during December to May. Annual rainfall within the San Diego River HU ranges from about 10 inches at the coast to approximately 40 inches in the Cuyamaca Mountains. According to the San Diego River Watershed Management Plan (Anchor Environmental 2004), dry season (June through November) streamflow, which was historically near zero, now occurs steadily at a low rate due to the increased use of imported water and related urban runoff.

The 100-year floodplain of the San Diego River in the study area has been mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Map (FIRM) panel 06073C1633 F dated June 19, 1997 (Figure 3.7-1). Upstream reservoirs in the watershed, including El Capitan and San Vicente, reduce peak flows along the lower San Diego River. The

San Diego River at the location of the proposed river crossing is in Zone A, which means that a detailed hydraulic study has not been completed.

Surface Water Quality

Beneficial uses of surface waters in the San Diego Region are identified by watershed in the Water Quality Control Plan (RWQCB 1994). Beneficial uses listed for the San Diego River are as follows:

- Agricultural Supply (AGR): Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Industrial Service Supply (IND): Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- Contact Water Recreation (REC 1): Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.
- Non-contact Water Recreation (REC 2): Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- Warm Freshwater Habitat (WARM): Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.
- Cold Freshwater Habitat (COLD): Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.
- Wildlife Habitat (WILD): Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- Rare, Threatened, or Endangered Species (RARE): Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

The tributaries of Little Sycamore Canyon, Oak Canyon, and Shepherd Canyon have the same beneficial uses except for the RARE classification.

The project area is within the San Diego Management Area of the San Diego River Watershed Management Plan (Anchor Environmental 2004). The Baseline Assessment of this plan notes that bioassessment data has indicated "degraded benthic communities in the lower watershed, which may be the result of urban runoff with pesticides, nutrients, oil and grease, and sediment, leading to decreased dissolved oxygen (DO) and increased TDS (total dissolved solids)."

Section 303(d) of the federal Clean Water Act requires states to identify waters that do not meet water quality standards after applying certain required technology based effluent limits. Waters that do not meet the water quality standards are referred to as "impaired" water bodies. On July 25, 2003, the USEPA gave final approval to California's 2002 Section 303(d) List of Water Quality Limited Segments. The lower portion of the San Diego River (12 miles) is currently identified on the Section 303(d) list for fecal coliform (6 miles), low dissolved oxygen, phosphorous, and TDS. The San Diego RWQCB has determined that developing total maximum daily load (TMDL) parameters for these contaminants is a lower priority for this watershed than in other watersheds.

Groundwater

According to the San Diego River Watershed Management Plan (Anchor Environmental 2004), all principal alluvial aquifers within the San Diego River Watershed are within the San Diego Management Area, and these represent the prime source of groundwater within the area. The largest alluvial aquifer in the area is the Santee/El Monte basin, which has excellent groundwater quality in the eastern portion, but lesser groundwater quality in the central and western portions. Groundwater from the western portion of the Santee/El Monte basin has high TDS and would require demineralization to make the supplies usable for irrigation or municipal use (Anchor Environmental 2004). The Mission Valley aquifer, downstream, covers approximately 11 square miles along the San Diego River and storage capacity is estimated at 40,000 acre feet of water (City of San Diego 2004). The Baseline Assessment (Anchor Environmental 2004) notes that significant groundwater supplies exist within the Mission Valley and El Cajon basins, but groundwater use is limited by TDS concentrations.

Within the river corridor, surface water moves freely to and from the alluvial aquifer. As a result, the water surface of standing water within the San Diego River channel represents the groundwater table. Due to the porous nature of the aquifer, recharge through streamflow infiltration is rapid, and substantial interchange between surface flows and groundwater flow occurs (City of San Diego 2004).

The project area is within the San Diego Hydrologic Unit, which covers approximately 440 square miles that are drained by the San Diego River. The San Diego Hydrologic Unit is divided into four hydrologic areas, with the downstream area that includes MTRP known as the Lower San Diego Hydrologic Area. The proposed project is not located within an alluvial groundwater basin but is located immediately upstream of the Mission Valley Groundwater Basin, which is fed by the San Diego River. Any drainage from the project site would end up as surface water flow in the San Diego River or would end up as groundwater within the Mission Valley Basin aquifer.

Water Quality Regulations

Federal and state laws regulate water quality. The 1972 Federal Water Pollution Control Act (Clean Water Act), and Division 7 of the 1969 California Water Code (Porter-Cologne Water Quality Control Act) both have the fundamental purpose of protecting the beneficial uses of water. The RWQCB has developed policies, rules and procedures, and has been granted the authority to implement and enforce water quality laws and regulations. The Clean Water Act also established the National Pollutant Discharge Elimination System (NPDES), which requires permits for discharges of pollutants from certain point sources into waters of the United States. California is one of the states that have the authority, delegated from the USEPA, to issue NPDES permits. The permit relevant to the proposed project is the General Construction Stormwater Permit. State Water Resources Control Board Order No. 99-08, NPDES General Permit No. CAS2000002, "General Permit for Stormwater Discharges Associated with Construction Activity," is the Active General stormwater construction activity permit for the State of California and RWQCB. All projects involving 1 acre or more of soil disturbance require this permit, which must include the following:

- Notice of Intent (NOI) – Certification to be signed by owner of the construction site.
- Stormwater Pollution Prevention Plan (SWPPP) – The plan must include the following elements: 1) site description; 2) description of BMPs for erosion and sediment controls; 3) BMPs for construction waste handling and disposal; 4) implementation of approved local plans; 5) proposed post-construction controls, including description of local post-construction erosion and sediment control requirements; 6) non-storm water management; 7) a sampling and analysis strategy and schedule for discharges from construction activities into 303(d)-listed water bodies; and 8) sampling and analysis strategy and schedule for pollutants that are not visually detectable in stormwater discharges but known to occur on the construction site and could cause or contribute to an exceedance of water quality objectives in receiving waters.
- Monitoring Program and Reporting Requirements – Dischargers of stormwater associated with construction activity that directly enters a 303(d)-listed water body must conduct a sampling and analysis program for the pollutants causing the impairment.

The RWQCB also regulates the discharge of water from construction sites, including from the dewatering of excavation areas and the release of raw water from the FRS II and pipeline tunnel during the testing of the new facilities. The Water Authority must comply with RWQCB Waste Discharge Requirements for Groundwater Remediation and Dewatering Discharges, Order Numbers 95-25 and 96-41. Refer to Section 2.6.6 of this report for details of this standard condition.

3.7.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to water resources are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant impact to water resources would occur if the proposed project would:

- Violate any water quality standards or waste discharge requirements.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner in which would result in substantial erosion or siltation on or off site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on or off site.
- Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place structures within a 100-year flood hazard area, which would impede or redirect flood flows.
- Expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Result in inundation by seiche, tsunami, or mudflow.

3.7.3 Impact Analysis

Would the proposed project result in a violation of any water quality standards or waste discharge requirements?

Construction of project components would involve extensive excavation and other activities that would disturb highly erodible soils, generate spoil piles, and create unvegetated surfaces. Temporary spoil piles on the FRS II site, at the tunnel shafts and tunnel portals, at the stabilized crossing of the San Diego River, and along the access roads could be sources of sediment. The river crossing in particular would involve construction directly within a 303(d)-listed water body. Construction equipment for other components would need to be utilized and maintained in canyons and on hillsides that drain to the San Diego River or its tributaries. Grading existing access roads and spreading gravel to stabilize the surface for heavy trucks may create edge erosion and provide loose materials that could be washed downstream. In addition to sediment and eroded soils, solvents, fuels, oils, trash, or other noxious materials could be carried downstream from the construction sites by stormwater runoff. In the San Diego River, pollutants could percolate to the groundwater basin with infiltrating surface water. However, compliance with the General Construction Stormwater Permit and provisions of the SWPPP, would assure the project would not result in significant downstream surface water or groundwater quality impacts. The SWPPP would require the use of BMPs to control erosion and prevent or reduce impacts to water quality. Examples of BMPs that could be used during construction are:

- Preservation of existing vegetation;
- Hydraulic and hand-applied straw or mulch;
- Hyroseeding;
- Silt fences;
- Fiber rolls;
- Gravel bag berms;
- Rock stabilized construction exit;

- Construction exit tire wash;
- Dust/wind erosion control;
- Stockpile management;
- Concrete waste management;
- Clear water diversion;
- Hazardous waste management; and
- Controlled vehicle fueling and maintenance areas.

With the exception of the stabilized crossing of the San Diego River, all excavation is well above the groundwater table. However, limited dewatering may be required for the river crossing, FRS II excavation, and the tunneling. The project would conform to the requirements of Waste Discharge Requirements for Groundwater Remediation and Dewatering Waste Discharges, Order Numbers 95-25 and 96-41. The quantity of water that may be discharged and the actual point of discharge as a result of dewatering operations are unknown and cannot be accurately known until construction occurs. Adherence to the Waste Discharge Permit would assure the project would not result in significant waste discharge impacts. This impact would be less than significant.

Impacts to vernal pools are regulated by the RWQCB through the issuance of Waste Discharge Permits. A Waste Discharge Permit would be required for the grading of seven vernal pools on the FRS II site (0.05 acre). Refer to Section 3.8, Biological Resources, for details regarding the impact to vernal pools and recommended mitigation measures.

Would the proposed project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner in which would result in substantial erosion or siltation on or off site?

The project would necessitate temporary alteration of drainage patterns in certain areas to accomplish construction in a safe manner. Construction of the stabilized river crossing proposes installation of a temporary cofferdam to divert river flows around the river crossing. Excavation sites at the FRS II and the tunnel elements must be protected from runoff, so diversion facilities would be installed as part of BMPs. The temporary disruption of natural drainage patterns would be limited to the construction areas, would be implemented to control erosion and siltation downstream, and would not be long term. This impact would be less than significant.

Would the proposed project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on or off site?

After construction is completed, the impermeable surface expression of the constructed facilities would be limited to the access/control building and small concrete pads covering valve vaults. These small areas would not generate additional runoff at levels that would affect the capacity of downstream drainages, or increase downstream flooding. This impact would be less than significant.

The overflow pipeline from the FRS II (Figure 2-5) would discharge into the canyon to the north of the FRS II. The overflow pipeline would only discharge raw water in the unlikely event of a stuck valve or other unanticipated situation that would cause the rate of flow into the FRS II to exceed capacity. The purpose of the discharge would be to avoid damage to the FRS II or the aqueduct system that could be caused by excessive water pressure. A maximum overflow rate of 353 cfs was assumed for evaluating this scenario, based on the capacity of the City's Miramar Water Treatment Plant's maximum flow rate from Pipeline 4B. In this emergency scenario, it was assumed that it would take 10 minutes for the flow to reach the maximum rate of 353 cfs, and the overflow would continue for the time it would take maintenance personnel to arrive at the site, identify, and correct any problems. The discharged water would follow the existing drainage in an open space corridor through Tierrasanta to I-15. The water would flow under Via Valarta, Santo Road, Clairemont Mesa Boulevard, and then I-15, turning to the south in Murphy Canyon and eventually reaching the San Diego River near Qualcomm Stadium. Culverts beneath the roads in Tierrasanta would limit the rate of downstream flow in the unlikely event of a major discharge. These culverts are surrounded by open space in deep canyons that would not be adversely affected by the temporary ponding of water. The culvert under Via Valarta is the smallest diameter, so would control the flow scenario. Hydraulic calculations indicate the culvert could pass the maximum flow for approximately 3 hours, with approximately 3 acres of open space upstream of Via Valarta flooded in this overflow event. If the overflow continued at the maximum rate of discharge for more than 3 hours, Via Valarta would be overtopped. The Water Authority estimates a response time of 30 minutes to 1 hour to stop flow into the FRS II in the event of an overflow situation. Therefore, the potential flooding of Via Valarta would not occur. Furthermore, the chance that large quantities of water would be discharged is remote and there is little downstream development, including roads or trails, which would be affected. This impact would be less than significant.

Would the proposed project create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed project would be constructed almost entirely belowground. The potential for increased runoff would exist during construction as vegetation is cleared from construction and staging areas. BMPs, such as straw wattles, gravel bags, and silt curtains, would be implemented to prevent increased runoff from leaving the work areas. There are no existing or planned stormwater drainage systems within the project area other than several culverts beneath the existing dirt roads. These culverts would be protected in place or would be improved as part of the proposed project. Equipment maintenance and fueling would take place within a specially designated containment area featuring gravel on a non-permeable liner. The containment materials would be removed and disposed of following construction in a landfill in accordance with all applicable regulations regarding the disposal of hazardous materials. The proposed project would not adversely affect stormwater quantities or quality. This impact would be less than significant.

Would the proposed project otherwise substantially degrade water quality?

Construction activities in canyons, on hillsides and in the San Diego River could cause sediment, eroded soils, solvents, fuels, oils, trash, or other noxious materials to be carried into tributaries of the San Diego River and the river itself. Sensitive biological resources, including jurisdictional wetlands and federally endangered birds such as the least Bell's vireo are in the river within the study area and downstream and could be adversely affected by the degradation of the water quality. However, nearly all construction would be away from the San Diego River and the contractor would be required to comply with provisions of the SWPPP and the General Construction Stormwater Permit. This impact would not be significant.

Would the proposed project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?

Most of the project would be well above the 100-year floodplain of the San Diego River. The FRS II, tunnel shafts and portals would not be at risk from a 100-year flood. The stabilized river crossing would be placed on the channel bed of the San Diego River. Therefore, this component of the project would be within the 100-year flood area. However, the stabilized river crossing would be constructed at grade and would be engineered to withstand the flows and velocities anticipated during a 100-year flood. This impact would be less than significant.

Would the proposed project expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The FRS II would not be a dam or a levee, but it would store water. Catastrophic failure of the FRS II is not considered likely due to the belowground location, constant monitoring of water levels by the Water Authority operations staff and their ability to quickly drain the reservoir from a remote location, and the provision of an overflow pipe to prevent overfilling and the buildup of pressure. In the unlikely event of release to the overflow pipe, excess raw water would be discharged to the canyon to the north of the FRS II where it would flow through open space and large-diameter culverts through Tierrasanta, eventually reaching the San Diego River near Qualcomm Stadium. Such an emergency flow is not expected to occur, and there is no inhabited development in the flow path. This impact would not be significant.

Would the proposed project result in inundation by seiche, tsunami, or mudflow?

A tsunami is a water wave or a series of waves generated by a sudden displacement of the surface of the ocean or other deep body of water through displacements associated with large earthquakes, major submarine slides, or exploding volcanic islands. A seiche is a periodic oscillation or "sloshing" of water in an enclosed basin, such as a reservoir. Seiche-generating disturbances include earthquakes, landslides, wave interactions, and changes of wind or air pressure. The pendulum-like movements within seiches are known to scientists as free standing-wave oscillations. They can continue for hours after the forces that created them have vanished. Seiches can create a range of water-level changes, from imperceptible to those that damage vessels or threaten lives.

The project site is located approximately 10 miles from the coast. The lowest project elevation, 180 feet AMSL, is within the San Diego River at the proposed stabilized crossing. The FRS II is proposed at an elevation of approximately 800 feet AMSL. The distance from the coast and the difference in elevation between sea level and the proposed project would prevent a seiche or tsunami from reaching the project area should one reach the San Diego coastline. Based on the inland location and elevation of the project site, the potential for damage from these hazards is considered to be very low. Also, the structural roof slab of the two up to 9-million gallon basins of the FRS II structure would be designed to resist pressure of a "sloshing" effect (HDR 2005).

A mudflow generated by rainfall is not considered to be likely at the FRS II site due to the low average rainfall and the geologic formations within MTRP. Heavy rains in the winter of 2004/2005 created substantial erosion within the park following the loss of vegetation to the October 2003 Cedar Fire; however, no mudflows are known to have occurred.

This impact would not be significant.

3.7.4 Mitigation Measures

Impacts to water resources would be less than significant. Therefore, no mitigation measures are required. Refer to Section 3.8, Biological Resources, for details regarding significant impacts to vernal pools (0.05 acre).

3.7.5 Residual Impacts after Mitigation

No residual impacts would occur.

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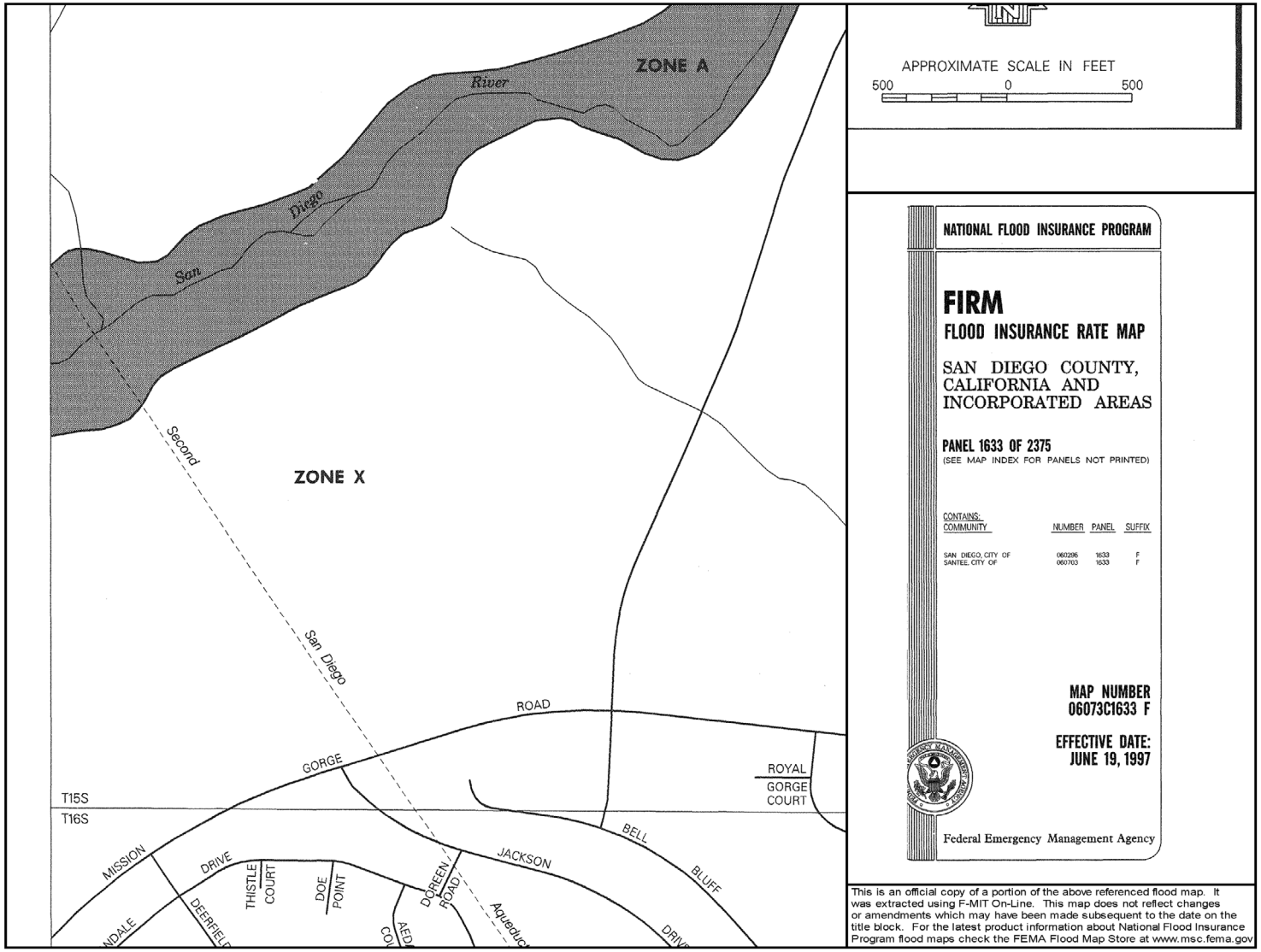

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

100-Year Floodplain in Vicinity of the River Crossing

Figure 3.7-1

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3.8 BIOLOGICAL RESOURCES

This section evaluates the potential impacts of the proposed project on sensitive biological resources. The evaluation is based on the Biological Resources Technical Report (Tierra Environmental Services 2006a), which is included as Appendix E to this EIR.

3.8.1 Existing Conditions

Surveys Conducted

A sensitive species literature search was initially conducted of the California Natural Diversity Data Base (CNDDB; CDFG 2001; CDFG 2005), a computerized inventory of endangered, threatened, or rare species occurrences maintained by the California Department of Fish and Game (CDFG). Biological field surveys were conducted of the project area to identify and map vegetation communities and associated biological resources existing on site, to determine the presence or absence of sensitive species, and to assess the potential impacts of the proposed project on these resources. The surveys also served to map the project area and evaluate the results of a previous survey conducted in 2002.

General biological field surveys were conducted on March 25, July 1, August 4 and 5 of 2005, and February 8, 2006; and a wetland delineation of the San Diego River and other potential jurisdictional habitats was conducted on September 8 and September 20, 2005. The jurisdictional limits of the river were delineated and mapped according to standards established by the U.S. Army Corps of Engineers (Corps), City of San Diego and CDFG. A detailed report discussing the findings of the wetland delineations is presented as Appendix A to the Biological Resources Report (Appendix E).

In addition, focused surveys for fairy shrimp, Quino checkerspot butterfly, arroyo toad, least Bell's vireo, coastal California gnatcatcher, and sensitive plant species were conducted for the project during the months of March, April, and May 2005. Near record rainfall during the wet season of 2004 and 2005 resulted in ideal conditions for detecting sensitive plant species, amphibians, and invertebrates. Detailed results of these surveys are presented in Appendix E.

General Conditions

The proposed FRS II site is adjacent to the Water Authority's Second Aqueduct easement, east of the existing FRS I. The easement and the FRS I site have been disturbed in the past by construction and revegetated with native plants. Several unpaved roads are located in the project area. These roads provide access to utility maintenance crews and serve as hiking/biking trails for park visitors. Much of the vegetation located adjacent to these roads is continually disturbed by road use and maintenance resulting in habitats that are dominated by exotic plant species. Approximately two-thirds of the project area burned during the 2003 Cedar Fire. Consequently, vegetation in these areas is now more open and supports an abundance of non-native and native annual plant species. The project area south of the San Diego River was not affected by the Cedar Fire.

A compete list of all habitats and wildlife species observed during the surveys is presented in Appendix E, the Biological Resources Technical Report. Table 3.8-1 presents a summary of the habitat of each sensitive species observed or reported from the site and its potential for occurrence in the project area.

Sensitive Natural Communities

Sensitive natural communities include those communities considered unique because they host species of plants and animals that are listed as threatened or endangered.

Sensitive Upland Communities. In the project area, sensitive upland communities include: Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, coastal sage-chaparral scrub, disturbed coastal sage-chaparral scrub, and valley needlegrass grassland. Sensitive plant and wildlife species were observed in areas that have been mapped disturbed Diegan coastal sage scrub and disturbed coastal sage-chaparral scrub. For this analysis, both disturbed and undisturbed habitats are considered sensitive; therefore, the term "disturbed" will not be used when evaluating these habitats.

Sensitive Wetland and Jurisdictional Communities. Sensitive wetland and jurisdictional communities occurring on site include San Diego mesa claypan vernal pools, southern willow scrub, southern cottonwood-willow riparian forest, and southern coast live oak riparian forest. On site, southern cottonwood-willow riparian forest provides habitat for least Bell's vireo. Although not considered "wetland habitat," waters of the U.S./open water are considered sensitive by the CDFG, Corps, RWQCB, and City of San Diego. This jurisdictional habitat occurs on site.

Wetlands in San Diego County are subject to jurisdiction by the CDFG pursuant to Section 1600 of the California Fish and Game Code, and by the Corps and the USEPA pursuant to Section 404 of the Clean Water Act. In California, the RWQCB assumes the responsibility of the USEPA through issuance of a Section 401 Water Quality Certification. In addition, the RWQCB regulates vernal pools under the Porter Cologne Act through the issuance of Waste Discharge Requirements (WDR) for impacts to vernal pools. The areas determined to be jurisdictional habitats for smaller drainages are shown on Figures 3.8-1 through 3.8-4; jurisdictional habitats in the vicinity of the San Diego River are shown in Figure 3.8-5.

The San Diego River is an important wetland resource in this portion of San Diego County. The river and associated southern cottonwood willow riparian forest support a diverse assemblage of wildlife, including birds, mammals, reptiles and amphibians. In the area of the proposed crossing upgrade, the state and federal listed least Bell's vireo occupies the riparian forest, as well as regional species of concern, such as the yellow-breasted chat and yellow warbler. Various waterfowl were observed on the river during surveys, including those with fledglings. Mammals including mule deer, coyote, and bobcat are known to use the river. In addition, the river acts as a major regional wildlife corridor providing connectivity from the coast to the Laguna Mountains. Within MTRP, the river provides critical water and cover for much of the park's wildlife.

Table 3.8-1
Sensitive Species Potentially Occurring in the Project Area

Species	Status	Habitat	Presence/Absence
Plants			
San Diego button celery (*Eryngium aristulatum* var. *parishii*)	Federally endangered; state endangered; narrow endemic; *	Coastal scrub, valley and foothill grassland, vernal pools.	Not detected.
Willowy monardella (*Monardella linoides* ssp. *viminea*)	Federally endangered; state endangered; *	Riparian scrub, usually at sandy locales in seasonally dry washes.	Not detected.
San Diego mesa mint (*Pogogyne abramsii*)	Federally endangered; state endangered; narrow endemic; *	Vernal pools.	Not detected.
San Diego ambrosia (*Ambrosia pumila*)	Federally endangered; no state status; narrow endemic; *	Chaparral, coastal scrub, valley and foothill grassland, non-native grassland, and vernal pools.	Not detected.
San Diego thornmint (*Acanthomintha ilicifolia*)	Federally threatened; state endangered; narrow endemic; *	Grassy openings in coastal sage scrub or chaparral; associated with vernal pools and clay depressions on mesas.	Detected in survey area.
Summer Holly (*Comarostaphylis diversifolia* ssp. *diversifolia*	No federal or state status; CNPS list 1B	Chaparral; elevation 100 to 1,800 feet.	Not detected.
Nuttall's scrub oak (*Quercus dumosa*)	No federal or state status; CNPS list 1B	Closed-cone coniferous forest, chaparral, coastal scrub/sandy, clay loam; elevation 45 to 1,300 feet.	Detected on site.
San Diego goldenstar (*Muilla clevelandii*)	No federal or state status; CNPS list 1B; *	Chaparral, coastal scrub, valley and foothill grassland, vernal pools/clay, elevation 150 to 1,525 feet.	Not detected.
Knotweed spineflower (*Chorizanthe polygonoides* var. *longispina*)	No federal or state status; CNPS list 1B	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland; often associated with clay; elevation 90 to 4,700 feet.	Not detected.
Mexican flannelbush (*Fremontodendron mexicanum*)	No federal or state status; CNPS list 1B	Closed-cone coniferous forest, chaparral, cismontane woodland/gabbroic, metavolcanic, or serpentinite soils; elevation 30 to 1,600 feet.	Not detected.
Variegated dudleya (*Dudleya variegata*)	No federal or state status; CNPS list 1B; narrow endemic; *	Clay in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools.	Detected on site.
Coast barrel cactus (*Ferocactus viridescens*)	No federal or state status; CNPS list 2; *	Chaparral, coastal scrub, valley and foothill grassland, vernal pools; elevation 10 to 1,475 feet.	Detected on site.
Blue streamwort (*Stemodia durantifolia*)	No federal or state status; CNPS list 2	Sonoran desert scrub, (often mesic, sandy); elevation 590 to 980 feet.	Not detected.
Delicate clarkia (*Clarkia delicata*)	No federal or state status; CNPS list 2	Chaparral, cismontane woodland; elevation 770 to 3,280 feet.	Not detected.

Table 3.8-1. Continued

Species	Status	Habitat	Presence/Absence
Palmer's grapplinghook (*Harpagonella palmeri*)	No federal or state status; CNPS list 2	Chaparral, coastal scrub, valley and foothill grassland/clay; elevation 60 to 2,720.	Not detected.
San Diego marsh-elder (*Iva hayesiana*)	No federal or state status; CNPS list 2	Marshes and swamps, playas; elevation 30 to 1,640.	Not detected.
San Diego sunflower (*Viguiera lacineata*)	No federal or state status; CNPS list 4	Chaparral, coastal scrub; elevation 200 to 2,460.	Detected on site.
Western dichondra (*Dichondra occidentalis*)	No federal or state status; CNPS list 4	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; elevation 160 to 1,640.	Not detected.
Engelmann oak (*Quercus engelmannii*)	No federal or state status; CNPS list 4	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland; elevation 400 to 4,260.	Not detected.
California Adder's tongue (*Ophioglossum californicum*)	No federal or state status; CNPS list 4	Chaparral, valley and foothill grassland, vernal pools (margins)/mesic; elevation 200 to 980.	Not detected.
Graceful tarplant (*Holocarpha virgata*)	No federal or state status; CNPS list 4	Chaparral, cismontane woodland,, coastal scrub, valley and foothill grassland; elevation 200 to 3,608.	Not detected.
Rush-like bristleweed (*Machaeranthera juncea*)	No federal or state status; CNPS list 4	Chaparral, coastal scrub; elevation 780 to 3,280.	Not detected.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	No federal or state status; CNPS list 4	Meadows and seeps, marshes and swamps.	Not detected.
Wildlife			
Quino checkerspot butterfly (*Euphydryas editha quino*)	Federally endangered; no state status	Foothills and coastal mesas; associated with larval hostplants dot-seeded plantain (*Plantago erecta*) and Chinese houses (*Collinsia* sp.)	Detected on site.
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	Federally endangered; no state status; *	Vernal pools.	Not detected.
Arroyo toad (*Bufo californicus*)	Federally endangered; state species of special concern; *	Rivers with slow-moving water and shallow, gravelly pools adjacent to gravelly terraces.	Not detected.
Least Bell's vireo (*Vireo bellii pusillus*)	Federally endangered; state endangered; protected by MBTA ; *	Willow woodland/scrub.	Detected on site.
Coastal California gnatcatcher (*Polioptila californica californica*)	Federally threatened; state species of special concern; *	Coastal sage scrub.	Detected in survey area.

Table 3.8-1. Continued

Species	Status	Habitat	Presence/Absence
Loggerhead shrike (*Lanius ludovicianus*)	Federal species of concern; state special concern species; protected by MBTA	Agricultural land, grassland with scattered bushes or broken chaparral.	Detected on site.
White-tailed kite (*Elanus leucurus*)	Federal species of concern (nesting); protected by MBTA	Riparian woodland, marsh habitat, partially cleared or cultivated fields and grassy foothills.	Detected on site.
California thrasher (*Toxostoma redivivum*)	Federal species of concern; protected by MBTA	Chaparral, moist woodland with dense ground cover	Detected on site.
Pacific slope flycatcher (*Empidonax difficilis*)	Federal species of concern (nesting); protected by MBTA	Breeds in woodlands especially near water.	Detected on site.
Cooper's hawk (*Accipiter cooperii*)	No federal status; state special concern species; protected by MBTA; *	Oak woodlands and in riparian habitats.	Detected on site.
Yellow warbler (*Dendroica petechia*)	No federal status; state special concern species (nesting); protected by MBTA	Breeding habitat is restricted to riparian woodland.	Detected on site.
Vaux's Swift (*Chaetura vauxi*)	No federal status; state special concern species (nesting); protected by MBTA	Migrant observed in all habitat types. Most frequently observed in coastal lowlands.	Detected on site.
Lark Sparrow (*Chondestes grammacus*)	No federal status; state special concern species (nesting); protected by MBTA	Breeds in grassland, prairie, savanna, fields with scattered trees/shrubs and cultivated areas.	Detected on site.
Northern harrier (*Circus cyaneus*)	No federal status; state special concern species (nesting); protected by MBTA; *	Breeds in grassland, prairie, savanna, slough, wet meadows and marsh habitats.	Detected on site.
Costa's hummingbird (*Calypte costae*)	No federal status; state special concern species (nesting); protected by MBTA	Breeds in desert, arid brushy foothill and chaparral habitats.	Detected on site.
Yellow breasted chat (*Icteria virens*)	No federal status; state special concern species (nesting); protected by MBTA	Breeds in dense brush or scrub especially along streams and at swamp margins.	Detected on site.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	No federal status; state special concern species; protected by MBTA; *	Dry, rocky slopes with scattered scrub and patches of grass and forbs.	Detected on site.
Mallard (*Anas platyrhynchos*)	No federal status; no state status; protected by MBTA	Ponds, lakes, rivers, creeks.	Detected on site.

Table 3.8-1. Continued

Species	Status	Habitat	Presence/Absence
Red-tailed hawk (*Buteo jamaicensis*)	No federal status; no state status; protected by MBTA	Grassland with scattered trees, open scrub or chaparral.	Detected on site.
Red-shouldered hawk (*Buteo lineatus*)	No federal status; no state status; protected by MBTA	Woodland habitat.	Detected on site.
American kestrel (*Falco sparverius*)	No federal status; no state status; protected by MBTA	Woodland, grassland, open scrub and chaparral habitats.	Detected on site.
Killdeer (*Charadrius vociferous*)	No federal status; no state status; protected by MBTA	Relatively flat areas supporting open habitat or no vegetation.	Detected on site.
Mourning dove (*Zenaida macroura*)	No federal status; no state status; protected by MBTA	Grassland, woodland, scrub, chaparral, and ornamental habitats.	Detected on site.
Greater roadrunner (*Geocyccyx californianus*)	No federal status; no state status; protected by MBTA	Open chaparral, scrub, and desert habitats.	Detected on site.
White-throated swift (*Aeronautes saxatalis*)	No federal status; no state status; protected by MBTA	Cliffs, sea bluffs, man-made vertical surfaces.	Detected on site.
Anna's hummingbird (*Calypte anna*)	No federal status; no state status; protected by MBTA	Chaparral, scrub, riparian woodland, oak woodland and ornamental habitats.	Detected on site.
Belted kingfisher (*Ceryle alcyon*)	No federal status; no state status; protected by MBTA	Near permanent bodies of water, creeks, rivers, etc.	Detected on site.
Northern flicker (*Colaptes auratus*)	No federal status; no state status; protected by MBTA	Coniferous forest, oak woodland, sycamore groves, Eucalyptus woodland.	Detected on site.
Nuttall's woodpecker (*Picoides nuttallii*)	No federal status; no state status; protected by MBTA	Woodland habitat.	Detected on site.
Black phoebe (*Sayornis nigricans*)	No federal status; no state status; protected by MBTA	Canyons with intermittent pools and ornamental areas.	Detected on site.
Say's phoebe (*Sayornis saya*)	No federal status; no state status; protected by MBTA	Areas of sparse grass or weeds with only a few scattered shrubs.	Detected on site.
Ash-throated flycatcher (*Myiarchus cinerascens*)	No federal status; no state status; protected by MBTA	Woodland habitat.	Detected on site.
Cassin's kingbird (*Tyrannus vociferans*)	No federal status; no state status; protected by MBTA	Woodland, grassland and open habitat with scattered trees.	Detected on site.
Western kingbird (*Tyrannus verticalis*)	No federal status; no state status; protected by MBTA	Woodland, grassland and open habitat with scattered trees.	Detected on site.

Table 3.8-1. Continued

Species	Status	Habitat	Presence/Absence
Warbling vireo (*Vireo gilvus*)	No federal status; no state status; protected by MBTA	Riparian and oak woodland.	Detected on site.
Western scrub jay (*Aphelocoma californica*)	No federal status; no state status; protected by MBTA	Chaparral, oak woodland and ornamental habitats.	Detected on site.
Common raven (*Corvus corax*)	No federal status; no state status; protected by MBTA	Woodland habitat.	Detected on site.
American crow (*Corvus brachyrhynchos*)	No federal status; no state status; protected by MBTA	Oak and riparian woodland near grassland habitat.	Detected on site.
Bushtit (*Psaltriparus minimus*)	No federal status; no state status; protected by MBTA	Oak woodland, riparian woodland, scrub, chaparral, and ornamental habitats.	Detected on site.
Bewick's wren (*Thryomanes bewickii*)	No federal status; no state status; protected by MBTA	Oak woodland, riparian woodland, chaparral, sage scrub and desert washes.	Detected on site.
House wren (*Troglodytes aedon*)	No federal status; no state status; protected by MBTA	Woodland, sage scrub and ornamental habitat.	Detected on site.
Canyon wren (*Catherpes mexicanus*)	No federal status; no state status; protected by MBTA	Cliffs, talus slopes, desert gorges, rocky ravines, and boulder-studded chaparral.	Detected on site.
Northern mockingbird (*Mimus polyglottos*)	No federal status; no state status; protected by MBTA	Open sage scrub, open chaparral, and ornamental habitats.	Detected on site.
Phainopepla (*Phainopepla nitens*)	No federal status; no state status; protected by MBTA	Oak and riparian woodland and open chaparral.	Detected on site.
Yellow-rumped warbler (*Dendroica coronata*)	No federal status; no state status; protected by MBTA	Winter visitor. Occurs in woodland, scrub, chaparral, and ornamental habitats.	Detected on site.
Common yellowthroat (*Geothlypis trichas*)	No federal status; no state status; protected by MBTA	Riparian woodland, freshwater and brackish marsh.	Detected on site.
Wilson's warbler (*Wilsonia pusilla*)	No federal status; no state status; protected by MBTA	Migrant. Riparian woodland.	Detected on site.
Black-headed grosbeak (*Pheucticus melanocephalus*)	No federal status; no state status; protected by MBTA	Oak and riparian woodland.	Detected on site.
Lazuli bunting (*Passerina amoena*)	No federal status; no state status; protected by MBTA	Burned chaparral and edges of riparian woodland.	Detected on site.
Spotted towhee (*Pipilo maculatus*)	No federal status; no state status; protected by MBTA	Chaparral and edges of riparian woodland.	Detected on site.

Table 3.8-1. Continued

Species	Status	Habitat	Presence/Absence
California towhee (*Pipilo crissalis*)	No federal status; no state status; protected by MBTA	Coastal scrub, chaparral, riparian scrub, ornamental areas, and oak woodland.	Detected on site.
Black-chinned sparrow (*Spizella atrogularis*)	No federal status; no state status; protected by MBTA	Steep chaparral covered slopes.	Detected on site.
Song sparrow (*Melospiza melodia*)	No federal status; no state status; protected by MBTA	Riparian and freshwater/brackish marsh habitats.	Detected on site.
Western meadowlark (*Sturnella neglecta*)	No federal status; no state status; protected by MBTA	Grassland, open sage-scrub, and weedy areas.	Detected on site.
Bullock's oriole (*Icterus bullockii*)	No federal status; no state status; protected by MBTA	Open woodland habitat and areas supporting scattered trees.	Detected on site.
Hooded oriole (*Icterus cucullatus*)	No federal status; no state status; protected by MBTA	Sycamore and eucalyptus woodlands and palm trees.	Detected on site.
House finch (*Carpodacus mexicanus*)	No federal status; no state status; protected by MBTA	All terrestrial habitats from the coastal strand to montane coniferous woodland, and sparse desert scrub.	Detected on site.
Lesser goldfinch (*Carduelis psaltria*)	No federal status; no state status; protected by MBTA	Riparian habitats, scrub, and chaparral habitats.	Detected on site.
American goldfinch (*Carduelis tristis*)	No federal status; no state status; protected by MBTA	Riparian habitats.	Detected on site.
Orange-throated whiptail (*Cnemidophorus hyperythrus*)	No federal status; state special concern species; *	Chaparral or arid environments; in sandy, rocky areas with loose soil.	Detected on site.
Red-diamond rattlesnake (*Crotalus exsul*)	Federal species of concern; state special concern species	Dense chaparral or coastal sage scrub, often near large rocks or boulders.	Detected on site.
Rosy boa (*Charina trivirgata*)	Federal species of concern; no state status	Rocky shrublands and desert habitats.	Detected on site.
Two-striped garter snake (*Thamnophis hammondii*)	No federal status; state special concern species	Near permanent fresh water, along streams with rocky beds.	Detected on site.
San Diego horned lizard (*Phrynosoma coronatum blainvillei*)	Federal species of concern; state special concern species	Scrubland, grassland, coniferous forest, and broadleaf woodland.	Detected on site.

[1] Status taken from California Department of Fish and Game (2004)

[2] Habitat taken from Hickman (1993) and CNPS (2001) for plants, Ehrlich (1988) and Unitt (2004) for birds, USFWS (1998) for invertebrates.

* Species covered by the City's MSCP

Of the five drainages in the project area, four (all unnamed) have intermittent flow, conveying water only during and immediately after rain events. The steepness of the slopes associated with these drainages and the erosive qualities of the soil account for the steeply incised banks and observed erosion. The relatively narrow and isolated patches of mule-fat scrub associated with these drainages provide limited wildlife value. Their narrowness and isolation allow access by predators to nesting birds and other wildlife species that might utilize these resources. As they occur on steep hillsides, they provide little value in the way of wildlife corridors. Only Shepherd's Canyon, the fifth drainage in the project area, appears to have a perennial source of water and, therefore, supports a larger swath of habitat for wildlife.

Sensitive Species

Sensitive species are those that have been designated as endangered or threatened by federal or state resource agencies, or by special conservation groups such as the California Native Plant Society (CNPS), or are considered rare by state and federal resource agencies or local lead agencies with resource protection responsibilities under CEQA. Information regarding these species is reported in the CNNDB maintained by the CDFG (CDFG 2001; CDFG 2005). A literature search completed prior to the surveys indicated the potential occurrence of several sensitive species in the vicinity of the project site (Table 3.8-1). In addition, the Checklist of the Vascular Plants of Mission Trails Regional Park (Simpson 2000) and the list of plant species identified by the City of San Diego as narrow endemics were reviewed for additional sensitive plants occurring in MTRP.

Sensitive Plant Species. Five federal and/or state sensitive plant species have the potential to occur on the project site: San Diego button celery, willowy monardella, San Diego mesa mint, San Diego ambrosia, and San Diego thornmint. Appropriate habitat for these species occurs throughout the project area. The ecology of these species is discussed in greater detail in the Biological Resources Technical Report.

San Diego button celery, willowy monardella, San Diego mesa mint, and San Diego ambrosia were not detected during general or focused plant surveys. San Diego button celery, willowy monardella, and San Diego mesa mint have not been previously recorded in MTRP. The nearest CNDDB reported occurrence of San Diego ambrosia, which has been recorded in MTRP, is located approximately 1.7 miles east of the project area.

Two populations of San Diego thornmint were observed within the survey area in habitat dominated by fascicled tarweed. One population is located east of the Clairemont Mesa Boulevard access road; the second population is located west of the access road (Figure 3.8-3).

Four plant species were detected in the project survey area that are listed as sensitive by the CNPS: Nuttall's scrub oak, variegated dudleya, coast barrel cactus, and San Diego sunflower (Table 3.8-1). These species occur throughout coastal sage-chaparral scrub, Diegan coastal sage scrub, and southern mixed chaparral communities in the project area.

Sensitive Wildlife Species. Five federal and/or state sensitive wildlife species detected on site or that have the potential to occur on the project site are: Quino checkerspot butterfly, San Diego fairy shrimp, coastal California gnatcatcher, least Bell's vireo, and arroyo toad. The ecology of these wildlife species is discussed in greater detail in the Biological Resources Technical Report.

An individual Quino checkerspot butterfly was observed foraging within the Water Authority's easement just south of Elliott Vents #4 (Figures 3.8-3 and 3.8-4). Focused surveys for this species were conducted between December 23 and April 20, 2005. Appropriate open habitat and larval host plants for this species occur within the easement and throughout the project area. The individual butterfly was observed within a portion of the Water Authority's easement that was revegetated following disturbance by a previous pipeline project. It is not known if the butterfly originated from this location or another area in the vicinity outside of the project area. However, the butterfly was observed on the last survey of that area and not during any of the previous surveys. The butterfly did not exhibit characteristics typical of a male butterfly such as erratic flight patterns. Therefore, it is assumed that the individual was female.

No adult San Diego fairy shrimp were observed during focused surveys of vernal pools occurring within the survey area. However, encysted embryos were detected in one of the vernal pools. Adult fairy shrimp were detected within vernal pools located in the vicinity of the project area along a recently abandoned trail (Figures 3.8-1 and 3.8-2). It is possible that fairy shrimp populations occurred on site prior to the creation of the trail and cysts are remnants of a non-viable population (ERS 2005). Alternatively, it is possible that these cysts were transported to the on-site vernal pool from viable fairy shrimp populations situated approximately 770 feet to the northeast (ERS 2005).

Two adult males and one female gnatcatcher were observed during focused surveys for this species. All three individuals were located east of the Jackson Drive staging area/parking lot at the extreme southern end of the survey area, outside of the project footprint (Figure 3.8-4). On site, Diegan coastal sage scrub north of the San Diego River was affected by the 2003 Cedar Fire and consequently does not currently provide appropriate habitat.

Three vireo pairs and two single male vireos were detected in the project vicinity during the surveys (Figure 3.8-4). In addition, fledglings were observed in association with two of the three pairs. The territory of one pair of vireos occurred within the project footprint.

No arroyo toads were detected during the focused surveys for this species.

Bird species observed within the project area that are not listed as federal and/or state endangered, threatened, or species of special concern, but that are protected under the Migratory Bird Treaty Act include: Wilson's warbler, black-headed grosbeak, lazuli bunting, spotted towhee, black-throated sparrow, white-crowned sparrow, Vesper sparrow, lark sparrow, song sparrow, western meadowlark, Bullock's oriole, hooded oriole, house finch, lesser goldfinch, and American goldfinch. A complete list is presented in Table 3.8-1.

Natural Communities Conservation Program

The City of San Diego MSCP was prepared to implement the statewide NCCP. The MSCP is designed to facilitate the implementation of a regional habitat preserve while allowing "take" of endangered species or habitats at the individual project level (City of San Diego 1997). The City's MHPA and lands within it have been designated for conservation of biological resources considered sensitive by the resource agencies and by the City. With the exception of a staging area located at the eastern terminus of Clairemont Mesa Boulevard, the project area is located within the Eastern Area of the City's MHPA. The Water Authority is not subject to the City of San Diego's MSCP, but does strive to be consistent with the intent of the program.

The City of San Diego, through the MSCP, has designated narrow endemic species that require special attention with regard to required focused surveys. Narrow endemic species are species that are especially sensitive to the impacts of development due to their limited geographic range and population size. Narrow endemic species reported as potentially occurring within MTRP by the CNDDB and the Checklist of Vascular Plants of Mission Trails Regional Park include: San Diego button celery, San Diego thornmint, San Diego mesa mint, San Diego ambrosia, variegated dudleya, and prostrate navarretia (Simpson 2000). Focused surveys for sensitive plant species, including the species listed above, were conducted between the months of March and June, when these plant species are in bloom. San Diego thornmint and variegated dudleya were the only narrow endemic plant species detected in the project area.

3.8.2 Thresholds of Significance

Thresholds used to evaluate impacts to biological resources are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant impact to biological resources would occur if the project would:

- Have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a 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, or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- 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 local policies or ordinances protecting biological resources, such as tree preservation policies or ordinances.
- Conflict with the provision of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or state HCP.

3.8.3 Impact Analysis

Would the proposed project have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS?

Sensitive Natural Communities

Sensitive upland habitats occurring on site that would be impacted by the proposed project are: Diegan coastal sage scrub, coastal sage-chaparral scrub, and valley needlegrass grassland. Direct impacts to these habitats caused by project-related construction activities would be significant.

Jurisdictional habitats that would be impacted significantly by project construction are: San Diego mesa claypan vernal pools, southern willow scrub, southern cottonwood-willow riparian forest, mule-fat scrub, and open water/water of the U.S.

Permanent and temporary impacts to on-site habitats resulting from the project components, staging areas, and temporary construction areas are shown in Table 3.8-2 and are summarized below. Table 3.8-2 also provides the impact identification number corresponding to required mitigation measures in Section 3.8.4.

Table 3.8-2
Anticipated Permanent and Temporary Project Impacts (Acres)

Habitat Type	Impacts Permanent	Impacts Temporary	Total	Impact I.D.
Upland Habitats				
Diegan coastal sage scrub	0.08	2.09	2.17	**BR 1**
Coastal sage-chaparral scrub	0.02	0.09	0.11	**BR 2**
Valley Needlegrass Grassland	0.03	0.02	0.05	**BR 3**
Subtotal	*0.13*	*2.20*	*2.33*	
Jurisdictional Habitats				
San Diego mesa claypan vernal pools	0.05	0.00	0.05	**BR 4**
Southern willow scrub	<0.01	<0.01	0.01	**BR 5**
Southern Cottonwood-Willow Riparian Forest	<0.01	0.09	0.10	**BR 6**
Mule-fat scrub	0.00	0.02	0.02	**BR 7**
Open Water/Waters of the U.S.	0.02	0.00	0.02	**BR 8**
Subtotal	*0.09*	*0.12*	*0.20*	
Total	**0.22**	**2.32**	**2.53**	**N/A**

Construction of the proposed project would result in impacts to approximately 2.53 acres of sensitive habitat. All permanent impacts to native habitats would occur within the MHPA. Permanent impacts identified in Table 3.8-2 would be significant.

Temporary impacts identified in Table 3.8-2 would be significant. With the exception of temporary impacts to 0.19 acre of Diegan coastal sage scrub at the Clairemont Mesa Boulevard staging area, all temporary project impacts to native habitats would occur within the MHPA.

Impacts to sensitive habitats would occur both inside and outside of the Water Authority's right-of-way (ROW). Table 3.8-3 provides the acreage of permanent and temporary impacts relative to the Water Authority's ROW. Impacts to Diegan coastal sage scrub and coastal sage-chaparral scrub within the Water Authority's ROW were mitigated for previous projects through the establishment of the Crestridge Habitat Management Area (CHMA). The mitigation agreement between the USFWS, CDFG, and the Water Authority allows the Water Authority to temporarily disturb these recovered habitat types within the ROW without the need for additional offsite mitigation. Temporarily disturbed areas within the Water Authority's ROW would be revegetated with coastal sage scrub mix; permanently disturbed areas would be mitigated at the Water Authority's CHMA. Temporary impacts to upland habitats outside the Water Authority's ROW would require revegetation on site; permanent impacts to upland habitats outside the Water Authority's ROWS would require additional offsite mitigation.

Table 3.8-3
Location of Project Impacts to Upland Habitats Relative to The Water Authority ROW

Habitat Type	Location of Impacts (Acres)		
	Inside ROW	Outside ROW	Total
Diegan coastal sage scrub	1.60	0.57*	2.17
Costal sage-chaparral scrub	0.09	0.02	0.11
Valley needlegrass grassland	0.03	0.02	0.05
Total	**1.72**	**0.61**	**2.33**

* Including 0.19 acres to Diegan coastal sage scrub outside of the MHPA

Sensitive Plant Species

Sensitive plant species observed in the project area included: federally threatened San Diego thornmint, CNPS list 1B species and narrow endemic variegated dudleya, CNPS list 1B species Nuttall's scrub oak, CNPS list 2 species coast barrel cactus, and CNPS list 4 species San Diego sunflower.

Two populations of San Diego thornmint were detected: one located east of the Clairemont Mesa Boulevard Access Road and the second located west of this same access road. Impacts to San Diego thornmint from project construction would be avoided with implementation of the Standard Conditions for Biological Resources presented in Section 2.6, Project Design Features. Therefore, there would be no impact.

Variegated dudleya occurs within an approximately 100-foot-diameter area within the southern mixed chaparral that would be removed on the FRS II site. Removal of this relatively small population would not represent a substantially adverse effect on the larger population within MTRP. Therefore, impacts to this species would be less than significant.

Nuttall's scrub oak, coast barrel cactus, and San Diego sunflower species are interspersed throughout the southern mixed chaparral, coastal sage-chaparral scrub, and Diegan coastal sage scrub vegetation that would be removed by the construction of the FRS II and tunnel portals. Their removal would not represent a substantially adverse effect on the overall populations within MTRP due to the relatively small size of the impact footprints. Therefore, impacts to these species would be less than significant.

Sensitive Wildlife Species

As noted above, five federal and/or state sensitive wildlife species have the potential to occur on the project site: Quino checkerspot butterfly, San Diego fairy shrimp, coastal California gnatcatcher, least Bell's vireo, and arroyo toad. Three of the five species were identified in the project area during focused surveys: Quino checkerspot butterfly, coastal California gnatcatcher, and least Bell's vireo. A focused survey for the arroyo toad was negative, as was a focused survey for San Diego fairy shrimp within vernal pools on the FRS II site.

Short-term impacts to the Quino checkerspot butterfly, coastal California gnatcatcher, and least Bell's vireo, including construction noise and loss of habitat, would be significant. Impacts to sensitive wildlife species are discussed below.

Potential short-term impacts to nesting birds covered by the Migratory Bird Treaty Act would be avoided with implementation of the Standard Conditions for Biological Resources presented in Section 2.6, Project Design Features.

Quino Checkerspot Butterfly. An individual Quino checkerspot butterfly was observed within the Water Authority's right-of-way, approximately 150 feet north of the proposed South Portal and staging area, within the anticipated impact area for Vent #4. Direct impacts to areas supporting dot-seed plantain or other larval host plants could occur during construction of the proposed project. In order to avoid impacts to this species, areas supporting dot-seed plantain located in the vicinity of the project area would be fenced to prevent access. In addition, protocol surveys would be conducted within a 330-foot radius of the butterfly observation site prior to project construction. Potential impacts to the Quino checkerspot butterfly from construction activities would be significant (**Impact BR 9**).

Coastal California Gnatcatcher. Two male and one female coastal California gnatcatchers were observed in the vicinity of the project, south of the San Diego River and outside of the project footprint. Based on the 2005 survey, direct impacts to the gnatcatchers would be avoided. The absence of gnatcatchers north of the San Diego River is believed to be the result of the 2003 Cedar Fire as surveys for the gnatcatcher conducted in the early 1990s identified five gnatcatcher territories along the Water Authority's ROW north of the San Diego River (Mooney & Associates 1993). Project biologists anticipate that gnatcatchers will eventually return to this portion of MTRP as the habitat recovers from the effects of the Cedar Fire. While there would

be no direct impacts to the gnatcatcher under present conditions, potential impacts could occur if gnatcatcher habitat reestablishes within the study area prior to or during project construction. If gnatcatchers are observed within the project impact area (within 500 feet of active construction areas) during pre-construction surveys, impacts to the gnatcatcher would be significant (**Impact BR 10**).

Least Bell's Vireo. Three pairs and two single male least Bell's vireos were detected in the vicinity of the project area. The majority of the territory of one pair of vireos occurs within the project footprint. Direct impacts to this species from loss of habitat and indirect impacts due to construction noise within the San Diego River riparian corridor during the breeding season (March 15-September 15) would be significant (**Impact BR 11**).

Would the proposed project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS?

As discussed above, the loss of Diegan coastal sage scrub, coastal sage-chaparral scrub, valley needlegrass grassland, vernal pool habitat, southern willow scrub, southern cottonwood-willow forest, mule-fat scrub, and open water/waters of the U.S. would be significant.

Impacts to Diegan coastal sage scrub and coastal sage-chaparral scrub habitats occurring inside the Water Authority's ROW would be significant. Temporary impacts to these habitats would be mitigated by on-site revegetation; permanent impacts would be mitigated at an offsite mitigation bank. Total acreages of upland habitats occurring inside and outside of the ROW are summarized in Table 3.8-3.

Would the proposed project have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The proposed project would result in impacts to the San Diego River associated with the stabilized river crossing (Table 3.8-4). Impacts to other waters of the U.S. within small ephemeral drainages within canyon bottoms along the Water Authority's ROW would be avoided. The Corps considers any impact to wetlands or waters of the U.S. to be substantial. Therefore, the permanent impacts to open water/waters of the U.S. would be significant. Impacts to vernal pools are no longer regulated by the Corps as vernal pools are considered to be isolated waters and the courts have ruled that Section 404 of the Clean Water Act no longer applies. Impacts to vernal pools are regulated exclusively by the RWQCB and are considered to be significant.

Table 3.8-4
Impacts to Jurisdictional Habitats

Habitat Type	Jurisdiction Permanent/Temporary (Acres) Corps	CDFG	City of San Diego
San Diego mesa claypan vernal pools	--/--	0.05/-- (regulated by RWQCB)	--/--
Southern willow scrub	0.002/0.011	0.002/0.011	0.002/0.011
Southern cottonwood-willow forest	0.005/0.09	0.005/0.09	0.005/0.09
Mule-fat scrub	--	0/0.02	0/0.02
Waters of the U.S./Open water	0.018/--	0.018/--	0.018/--
Total	**0.025/0.101**	**0.030/0.121**	**0.025/0.121**

Would the proposed project 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?

In the project area, the San Diego River and potentially Shepherd's Canyon currently serve as wildlife corridors. With the exception of the stabilized river crossing of the San Diego River, the project impacts would occur in upland areas, outside of these potential wildlife corridors. The stabilized crossing of the San Diego River is a minor project feature that would be constructed during daylight hours over a period of approximately two months. The permanent impacts to the river crossing would replace existing sand and cobbles with concrete. Several trees would need to be trimmed or removed to allow for construction. Consequently, the proposed project would not substantially affect use of the San Diego River as a wildlife corridor. Therefore, this impact would be less than significant.

Nesting migratory bird species were observed on site. As noted in Table 3.8-1, these avian species are protected by the Migratory Bird Treaty Act. Direct impacts to nesting avian species during the breeding season would be avoided with implementation of the Standard Conditions for Biological Resources presented in Section 2.6, Project Design Features. Therefore, there would be no impact.

Would the proposed project conflict with local policies protecting biological resources, such as tree preservation policies or ordinances?

There are no policies and ordinances, other than those discussed elsewhere in this section such as the MTRP Master Plan and the City's MSCP, adopted for the purpose of protecting biological resources that would apply to the proposed project. Therefore, there would be no impact.

Would the proposed project conflict with the provision of an adopted HCP, NCCP, or other approved local, regional, or State HCP?

The City of San Diego's MSCP states that utility lines and roads and limited water facilities and other essential public facilities are conditionally compatible with the biological objectives of the MSCP and, thus, are allowed within the City's MHPA. The conditions for compatibility, outlined in the MSCP's planning policies and design guidelines, call for minimizing environmental impacts and avoiding disturbance of the habitat of MSCP covered species, and wetlands. The MHPA includes chaparral and non-native grassland among these habitats. Where avoidance is infeasible, mitigation is required.

The proposed project would not be consistent with portions of the City of San Diego's MSCP. Much of the proposed project's impacts to the habitats of MSCP covered species would be avoided or mitigated. Nearly all permanent project features would be belowground and the Water Authority would revegetate all temporary impact areas. However, permanent impacts to 0.23 acre of chaparral, and 0.1 acre of non-native grassland would not be mitigated, because the Water Authority does not consider these habitats sensitive.

This comparatively minor impact will not substantially affect the City's ability to implement the MSCP. Therefore, impacts to the City of San Diego's MSCP would be less than significant. See Section 3.1, Land Use, for further discussion of this issue.

3.8.4 Mitigation Measures

To mitigate significant impacts to biological resources, the Water Authority shall implement the following mitigation measures. Tables 3.8-5 through 3.8-8, found at the end of this section, summarize the mitigation acreage requirements for impacts to sensitive habitats, including impacts to upland habitats inside the Water Authority's right-of-way, impacts to upland habitats outside the Water Authority's ROW, total impacts to upland habitats, and impacts to jurisdictional habitats.

BR 1-1
BR 2-1
BR 3-1 Temporary impacts to Diegan coastal sage scrub, coastal sage scrub-chaparral scrub, and valley needlegrass shall be mitigated through revegetation with a coastal sage scrub seed mix that includes valley needlegrass seed. Permanent impacts to Diegan coastal sage scrub, coastal sage scrub-chaparral scrub, and valley needlegrass shall be mitigated offsite using mitigation credits from the Water Authority's Crestridge Habitat Management Area.

BR 4-1 Permanent impacts to San Diego claypan vernal pool habitat shall be mitigated at a 2:1 ratio by the creation of replacement vernal pool habitat. The Water Authority shall request enrollment under the RWQCB *General Waste Discharge Requirements (WDR) for Dredged of Fill Discharges to Waters Deemed by the U.S. ACOE to be Outside of Federal Jurisdiction* (Order No. 2004-0004-DWQ).

The site selected for the creation of claypan vernal pool habitat shall have the appropriate topography and soil type for vernal pool creation and shall ideally be disturbed. The vernal pool creation effort shall not have an adverse effect on existing

vernal pools. The created vernal pools shall be protected through the use of fencing, education, signage and enforcement to keep park visitors away from the pools.

Two sites that are potentially suitable for vernal pool mitigation have been identified within MTRP. The final vernal pool creation program shall be prepared to the mutual satisfaction of the Water Authority, MTRP staff, and the RWQCB.

BR 5-1 Mitigation for temporary and permanent impacts southern willow scrub at the stabilized crossing of the San Diego River shall be mitigated through the revegetation of disturbed areas adjacent to the San Diego River with southern willow scrub species.

BR 6-1 Mitigation for temporary and permanent impacts to southern cottonwood-willow riparian forest shall be mitigated through the planting of southern cottonwood-willow riparian forest container stock within disturbed areas adjacent to the San Diego River.

BR 7-1 Mitigation for temporary impacts to mule-fat scrub shall be mitigated through the planting of mule fat scrub within disturbed areas adjacent to the San Diego River.

BR 8-1 Mitigation for permanent impacts to waters of the U.S. shall be mitigated through the creation of wetlands along the San Diego River in MTRP and the restoration/ enhancement of an adjacent area.

BR 9-1 A qualified biologist shall conduct a pre-construction survey for the Quino checkerspot butterfly during the flight season prior to the commencement of project construction. Should Quino checkerspot butterflies be present, the Water Authority shall provide mitigation in the form of habitat preservation, enhancement, or creation to the mutual satisfaction of the USFWS and the Water Authority.

BR 10-1 All on-site grading and construction activities adjacent to Diegan coastal sage scrub shall occur outside the gnatcatcher breeding season (March 1 through August 15). It is possible that construction activities could overlap the gnatcatcher breeding season and, therefore, indirect impacts to gnatcatchers could occur. If grading or construction is planned to commence during the breeding season, a pre-construction survey shall be conducted to determine the presence or absence of gnatcatchers within areas affected by noise. If no nesting birds occur within this area, development would be allowed to proceed. However, if nesting birds are observed within this area, development shall be postponed until all nesting activity has ceased or until after August 15. Work that has commenced prior to the breeding season shall be allowed to continue without interruption. Traffic shall continue to traverse occupied habitat enroute to construction sites in unoccupied areas.

BR 11-1 Indirect impacts to least Bell's vireos resulting from loss of habitat at the proposed stabilized San Diego River crossing shall be mitigated by the planting of southern willow scrub (Mitigation Measure **BR 5-1**).

BR 11-2 If feasible, indirect impacts to least Bell's vireos resulting from construction noise at the San Diego River shall be mitigated by prohibiting construction of the San Diego River stabilized crossing during the breeding season (March 15- September 15). If not feasible, the Water Authority shall consult with the USFWS and implement any required mitigation measures.

Table 3.8-5
Mitigation Requirements for Upland Impacts Inside of the ROW* (acres)

Habitat Type	Impact			Mitigation Ratio	Mitigation Requirement
	Temporary	Permanent	Total		
Diegan coastal sage Scrub	1.58	0.02	1.60	1:1	1.60
Coastal sage-chaparral scrub	0.09	0.00	0.09	1:1	0.09
Valley needlegrass grassland	0.02	0.01	0.03	1:1	0.03
Total	1.69	0.03	1.72		1.72

* Ratio for permanent impacts is 1:1 since this habitat has already been mitigated offsite at 1:1 previously, resulting in a 2:1 overall ratio.

Table 3.8-6
Mitigation Requirements for Upland Impacts Outside of the ROW (acres)

Habitat Type	Impact			Mitigation Ratio	Mitigation Requirement
	Temporary	Permanent	Total		
Diegan coastal sage scrub	0.51*	 0.06	0.51 0.06	1:1 2:1	0.57 0.12
Costal sage-chaparral scrub	0.00	 0.02	0.00 0.02	1:1 2:1	0.00 0.04
Valley needlegrass grassland	0.00	 0.02	0.00 0.02	1:1 2:1	0.00 0.04
Total	0.51	0.10	0.61	N/A	0.77

* Includes 0.19 acre outside of MHPA

Table 3.8-7
Total Upland Habitat Mitigation Requirements (acres)

Habitat Type	Impacts Requiring Mitigation*	Mitigation Ratio	Mitigation Requirement	Total Mitigation Requirement
Diegan coastal sage scrub	2.11** 0.06	1:1 2:1	2.11 0.12	2.23
Coastal sage-chaparral scrub	0.09 0.02	1:1 2:1	0.11 0.04	0.15
Valley needlegrass grassland	0.03 0.02	1:1 2:1	0.03 0.04	0.07
Total	0.64	N/A	2.45	2.45

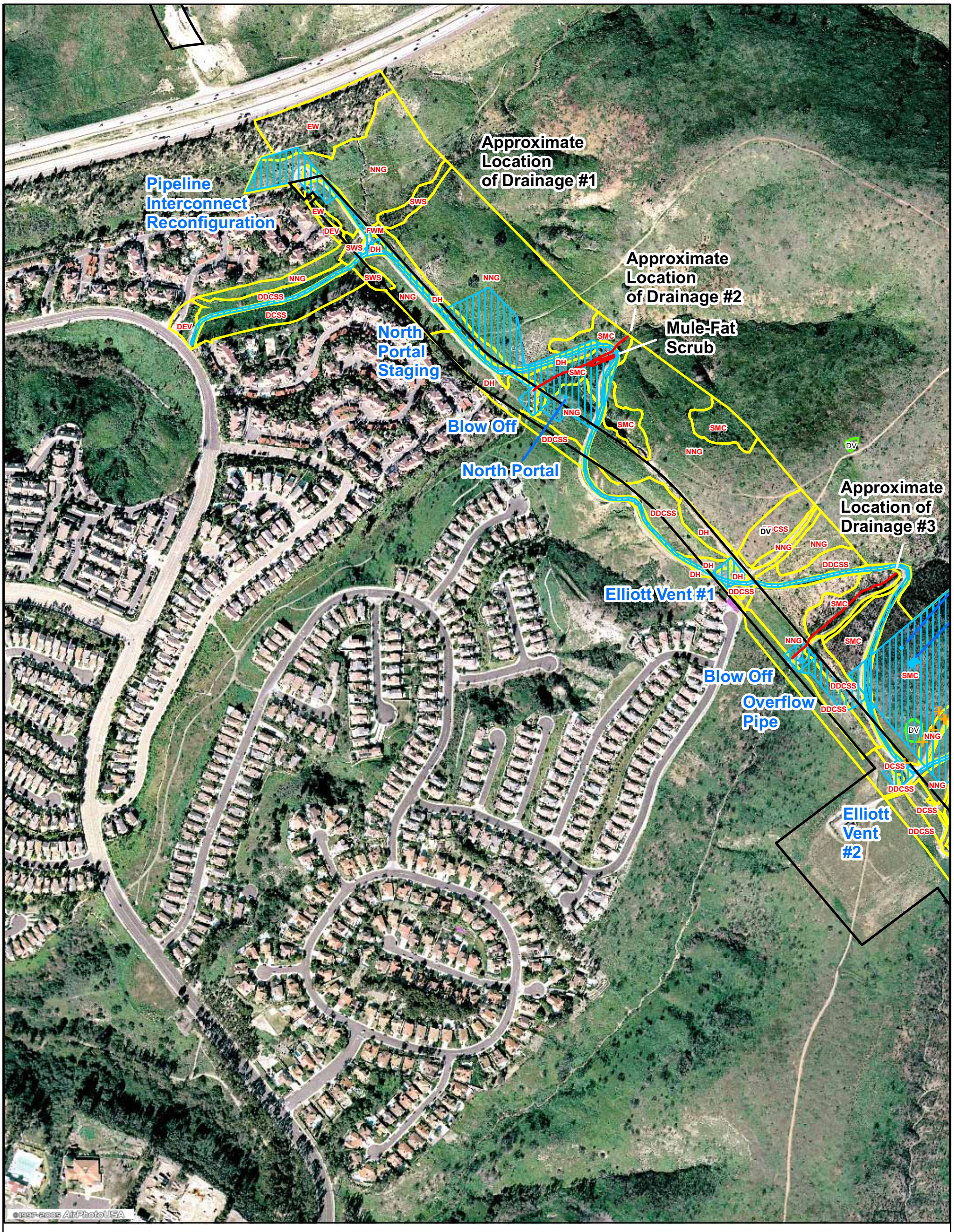
* Temporary impacts would be mitigated through on-site revegetation; permanent impacts would be mitigated through use of existing offsite mitigation credits.
** Includes 0.19 acres to Diegan coastal sage scrub outside of the MHPA

Table 3.8-8
Mitigation for Impacts to Jurisdictional Habitats

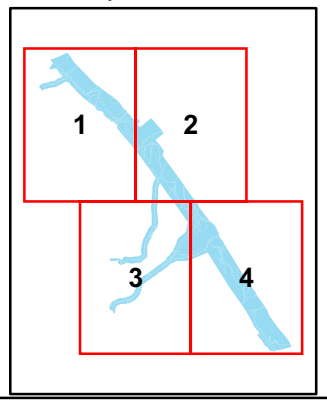
Habitat Type	Jurisdiction Permanent/Temporary (Acres)			Mitigation Ratio	Acreage
	Corps	CDFG	City of San Diego		
San Diego mesa claypan vernal pools	--/--	0.05/-- (regulated by RWQCB)	--/--	2:1/1:1	0.10/--
Southern willow scrub	0.002/0.011	0.002/0.011	0.002/0.011	2:1/1:1	0.004/0.011
Southern cottonwood-willow forest	0.005/0.09	0.005/0.09	0.005/0.09	2:1/1:1	0.10/0.09
Mule-fat scrub	--	--/0.02	--/0.02	2:1/1:1	--/0.02
Waters of the U.S./ Open water	0.018/--	0.018/--	0.018/--	2:1/1:1	0.036/--
Total	**0.025/0.101**	**0.030/0.121**	**0.025/0.121**	**2:1/1:1**	**0.24/0.121**

3.8.5 Residual Impacts after Mitigation

No residual impacts would remain after implementation of the proposed mitigation measures.



Map Sheet Index



Label	Species Name
QCB	Quino Checkerspot Butterfly
LVB	Least Bell's Vireo
CAGN	California Gnatcatcher
DV	Variegated Dudleya
DV-R	Variegated Dudleya-Reveg
AC	San Diego Thornmint

Legend

- Project Impact Area
- SDCWA Right-of-Way
- Vegetation Boundaries
- Sensitive Plant Polygons
- Jurisdictional Habitats
- Vernal Pool

Vernal pools represented as a cross for display purposes

Label	Vegetation Description
CLORF	Southern Coast Live Oak Riparian Forest
CS-CS	Coastal Sage - Chaparral Scrub
DCS-CS	Disturbed Coastal Sage - Chaparral Scrub
DCSS	Diegan Coastal Sage Scrub
DDCSS	Disturbed Diegan Coastal Sage Scrub
DEV	Developed
DF	Fascicled Tarweed (Deinandra fasciculata)
DH	Disturbed Habitat
DSMC	Disturbed Southern Mixed Chaparral
EW	Eucalyptus Woodland
FWM	Coastal and Valley Freshwater Marsh
GL	Valley Needle Grassland
MFS	Mule-fat Scrub
NNG	Non-native Grassland
SCWRF	Southern Cottonwood-Willow Riparian Forest
SMC	Southern Mixed Chaparral
SWS	Southern Willow Scrub

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
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Date: Mar 03, 2006

San Diego County Water Authority

Biological Resources Map #1

Figure 3.8-1

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Approximate Location of Drainage #3

Inlet Shaft Control Building

FRS II Site

Outlet Shaft/Staging Area

Approximate Location of Drainage #4

Elliott Vent #2

Blow Off

Mule-Fat Scrub/ Tamarisk

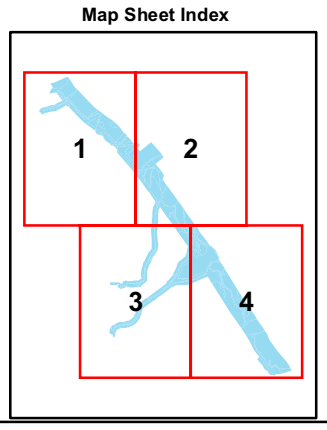
Elliott Vent #3

Approximate Location of Drainage #5

Blow Off

DV NNG DDCSS SMC DSMC DV-R DCSS CS-CS DEV DH MFS DCS-CS GL

Map Sheet Index



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DSMC	Disturbed Southern Mixed Chaparral
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SCWRF	Southern Cottonwood-Willow Riparian Forest
SMC	Southern Mixed Chaparral
SWS	Southern Willow Scrub

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

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San Diego County Water Authority

Biological Resources Map #2

Figure 3.8-2

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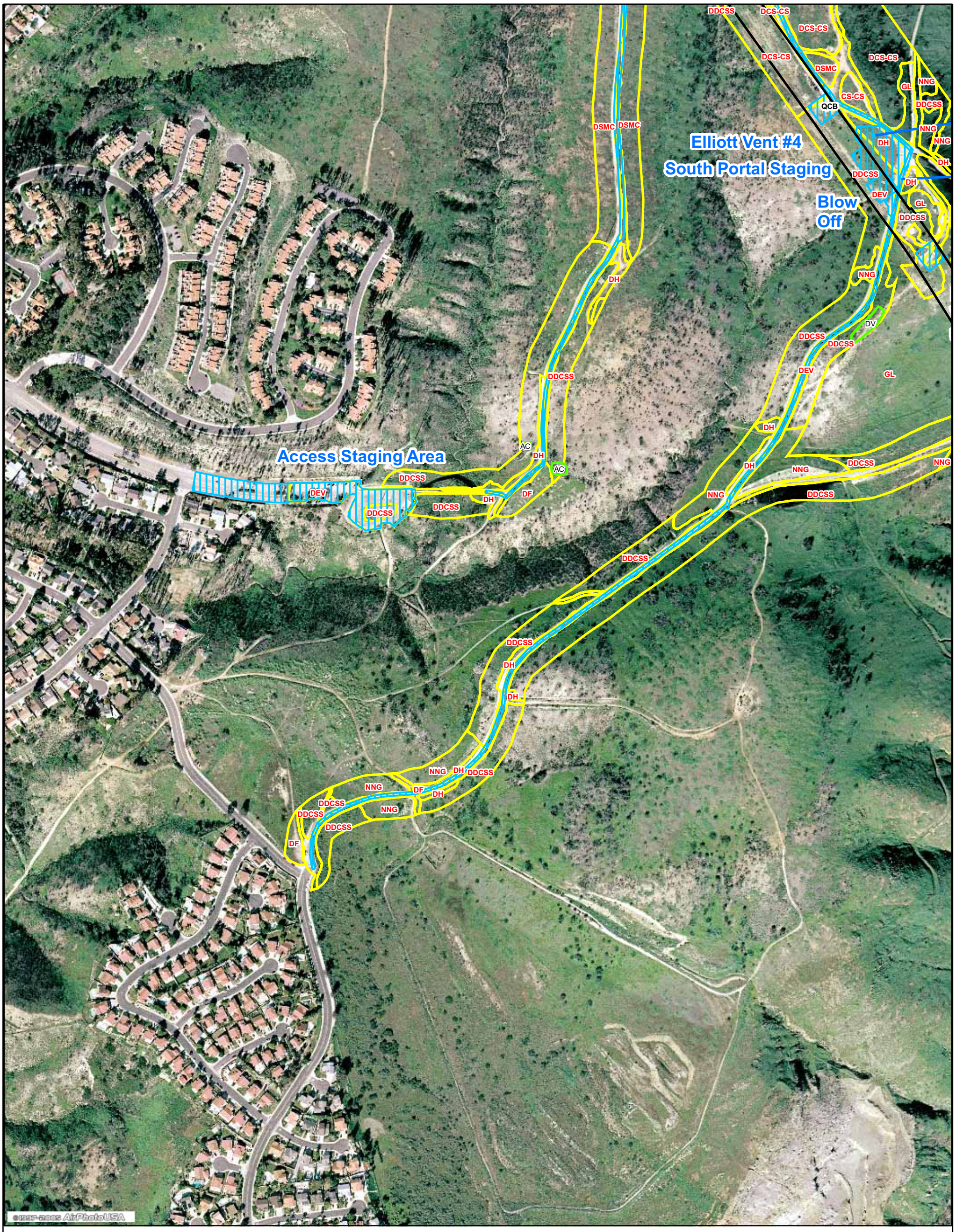
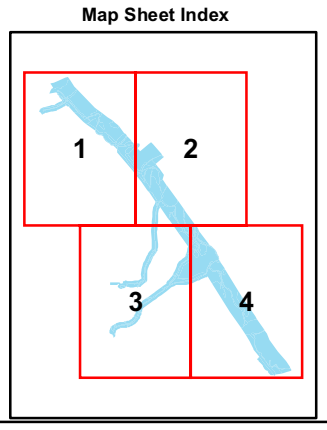


Map Sheet Index



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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

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Date: Mar 03, 2006

San Diego County Water Authority

Biological Resources Map #3

Figure 3.8-3

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South Portal

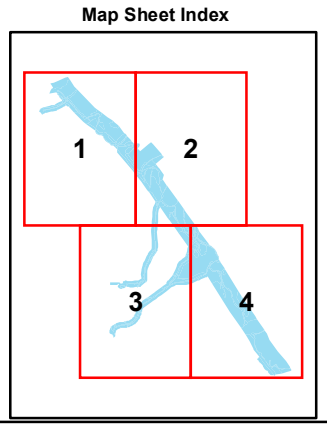
South Portal Staging

Elliott Vent #5

Stabilized Crossing

Access Staging Area

Map Sheet Index



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San Diego County Water Authority

Biological Resources Map #4

Figure 3.8-4

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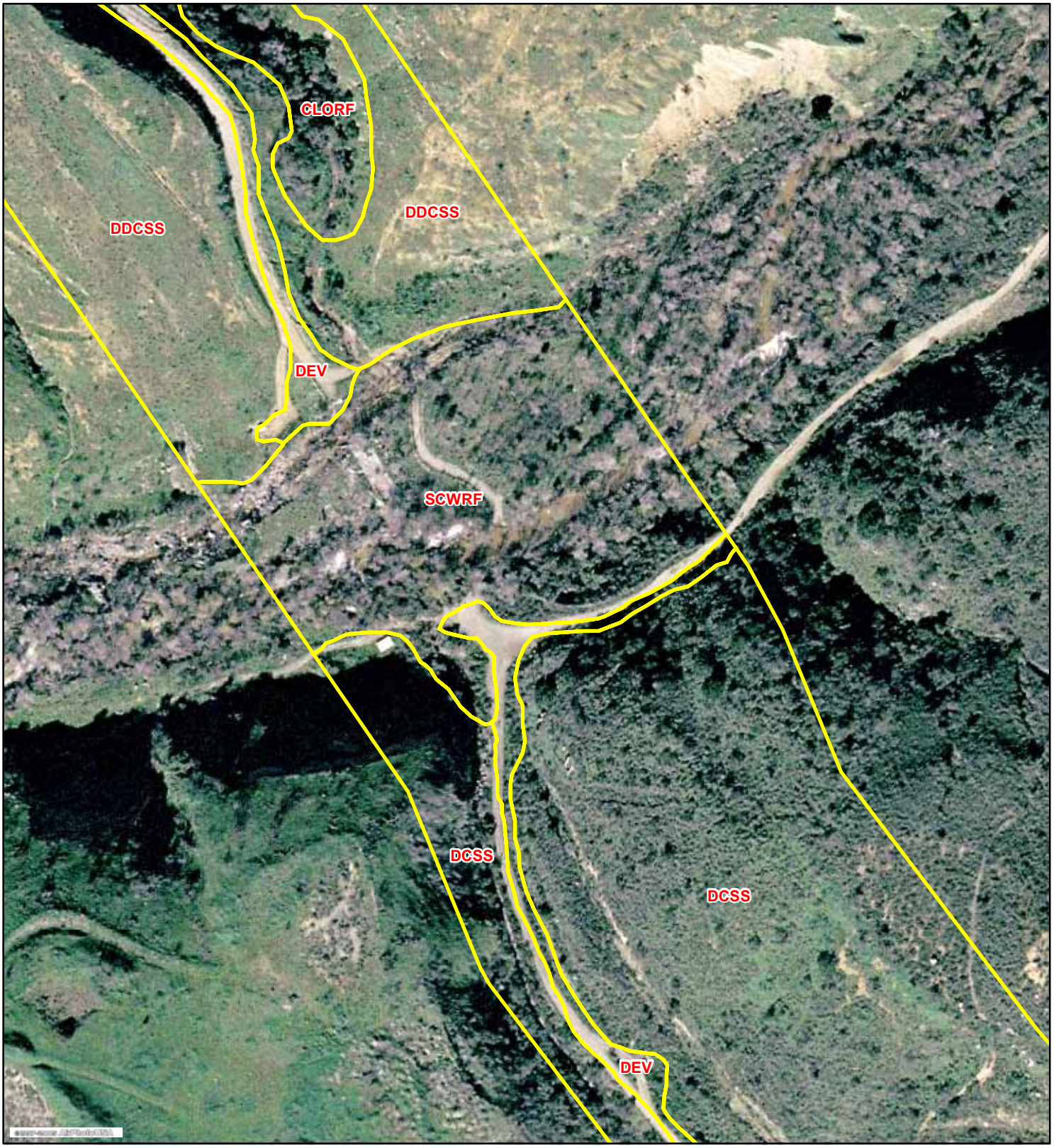

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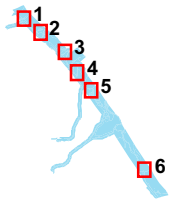

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

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San Diego County Water Authority

Aerial View of Proposed River Crossing

Figure 3.8-5

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3.9 CULTURAL RESOURCES

This section evaluates the potential impacts of the proposed project on cultural resources within the project area. This evaluation is based on a records search conducted at the South Coastal Information Center, an intensive pedestrian survey of the site, and a Native American contact program. The cultural resources survey report (Tierra Environmental Services 2006b) is included as Appendix F to this EIR.

3.9.1 Existing Conditions

Cultural History

The earliest documented prehistoric sites in southern California are identified as belonging to the Paleoindian period, which has locally been termed the San Dieguito complex/tradition. The Paleoindian period is thought to have occurred between 9,000 years ago, or earlier, and 8,000 years ago in this region. The San Dieguito complex is seen as a hunting economy generally focused on highly ranked resources such as large mammals, with limited use of seed grinding technology. Archaeological evidence associated with this period has been found around inland dry lakes, on old terrace deposits of the California desert, and also near the coast, where it was first documented at the Harris Site.

The Early Archaic period is differentiated from the earlier Paleoindian period by a shift to a more generalized economy and an increased focus on the use of grinding and seed processing technology. At sites dated between approximately 8,000 and 1,500 years before present, the increased use of groundstone artifacts and atlatl dart points, along with a mixed core-based tool assemblage, identify a range of adaptations to a more diversified set of plant and animal resources.

Around 2,000 years ago Yuman-speaking people from the eastern Colorado River region began migrating into southern California, representing what is called the Late Prehistoric Period in San Diego County, and recognized by smaller projectile points, the replacement of flexed inhumations with cremation, the introduction of ceramics, and an emphasis on inland plant food collection and processing, especially acorns (True 1966). Inland semi-sedentary villages were established along major watercourses, and montane areas were seasonally occupied to exploit acorns and pinon nuts, resulting in permanent milling features on bedrock outcrops. Mortars for acorn processing increased in frequency relative to seed grinding basins.

The project area is located within the ethnographic territory of the Kumeyaay who inhabited the southern region of San Diego County, western and central Imperial County, and northern Baja California (Almstedt 1982; Gifford 1931; Hedges 1975; Luomala 1976; Shipek 1982; Spier 1923) and are the direct descendants of the early Yuman hunter-gatherers. Acorns were the single most important food source used by the Kumeyaay. Their villages were usually located near water, which is necessary for leaching acorn meal. Seeds from grasses, manzanita, sage, sunflowers, lemonadeberry, chia and other plants were also used, along with various wild greens and fruits. Deer, small game, and birds were hunted, and fish and marine foods were eaten as well. Houses were covered with tule bundles that had excavated floors and central hearths.

Other structures included sweathouses, ceremonial enclosures, ramadas, and acorn granaries. Their traditional material culture included ceramic cooking and storage vessels, baskets, flaked lithic and ground stone tools, arrow shaft straighteners, and stone, bone, and shell ornaments.

Hunting implements included the bow and arrow, curved throwing sticks, nets, and snares. Shell and bone fishhooks, as well as nets, were used for fishing. Lithic materials including quartz and metavolcanics were commonly available throughout much of the Kumeyaay territory. Other lithic resources, such as obsidian, chert, chalcedony and steatite, occur in more localized areas and were acquired through direct procurement or exchange. Projectile points including the Cottonwood Series points and Desert Side-notched points were commonly produced.

Kumeyaay culture and society remained stable until the advent of missionization in 1769, which along with the introduction of European diseases, greatly reduced the native population of southern California. The Spanish Period (1769-1821) represents a period of Euroamerican exploration and settlement. Dual military and religious contingents established the San Diego Presidio and the San Diego Mission along the San Diego River. The cultural and institutional systems established by the Spanish continued beyond the year 1821, when California came under Mexican rule. During this time the Spanish missionaries forced local Native Americans to construct a dam and flume that would carry water from the San Diego River to the mission for irrigating crops. The dam and flume were constructed of native rock, cement, and tile. A portion of the flume still exists within the project area although it is in poor condition and little trace of cement or tile was found.

During the Mexican Period (1821-1848) the project area was part of a land grant deeded to Don Santiago Arguello in 1845 (Moyer 1969:109). Under Arguello's ownership, the project area was leased for a variety of agricultural pursuits and mining and was opened to settlement by Arguello's heirs in 1885. In 1917, the U.S. Government set up Camp Kearny in a large tract of land that includes the project area, and nearby Fortuna Mountain was used for artillery practice. The base was reactivated by the U.S. Marine Corps in 1934 as Camp Elliott, and from this period until 1960 the project area continued to be used for military training. In 1960, about one-third of the bases' holdings were deactivated by Department of the Navy and were transferred to the General Services Administration. Some portion of the property was then deeded to the City of San Diego, San Diego State University, and the San Diego Unified School District (Alter 2005). Mission Trails Regional Park was established in 1974.

Survey Results

The records search conducted at the South Coastal Information Center revealed that 16 studies have been conducted within a 1-mile radius of the project area and that portions of the project area have been previously investigated. In addition to previously completed surveys within the vicinity of the project area, the records search identified 36 cultural resources, including 34 prehistoric sites and 2 historic sites, within 1 mile of the project area, with 11 of the previously recorded sites within the project area. The previously identified cultural resources suggest a variety of site types are present in the area, ranging from prehistoric habitation sites to historic structures and other resources. These sites are dominated by lithic scatters and may include several Early Archaic sites.

No previously unrecorded sites were located during the intensive pedestrian survey of the project area. Of the 11 previously recorded sites located within the project area, 6 were relocated. The remaining 5 sites were either not relocated or have apparently been destroyed. A detailed discussion of all 11 archaeological sites is provided in Appendix F.

Historic research included an examination of a variety of resources including the National Register of Historic Places, the California Inventory of Historic Resources, and the California Historical Landmarks listing. In addition, the 1955 edition of the La Mesa 7.5-minute USGS Quadrangle was consulted. No historic structures were indicated on these sources and none were observed within the project area.

3.9.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to cultural resources are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant impact to cultural resources would occur if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 of the State CEQA Guidelines.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 of the State CEQA Guidelines.
- Disturb any human remains, including those interred outside of formal cemeteries.

3.9.3 Impact Analysis

Would the proposed project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

The only historical resource identified in the project area is the Mission Flume that once carried water from the Old Mission Dam through Mission Gorge to the San Diego Mission. The remains of the flume are listed on the National Register of Historic Places. Impacts to this historical resource would be completely avoided as the FRS II and pipeline tunnel would be located well north of the resource and the proposed stabilized crossing of the San Diego River would be located to the south. None of the project features would require work or equipment near the flume. No impacts to historical resources would occur.

Would the proposed project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Eleven cultural resources were originally recorded in the project survey area. Seven of these archaeological sites have previously been tested and are not considered significant because they do not meet the criteria for listing on the California Register. Impacts to these resources would be less than significant.

Four resources located within the project survey area, briefly described below, have not been evaluated for significance and must, therefore, be avoided or evaluated for significance.

CA-SDI-5518 was originally located in 1978 and described as a scatter of lithics with shell. The current survey identified one metavolcanic flake within the boundaries of the site. However, the ground surface was covered with non-native grasses and annuals making visibility somewhat limited.

CA-SDI-5656 is located at the base of a small knoll and was recorded in 1978 as a light concentration of an unknown number of flakes and shell covering approximately 40 meters by 50 meters. The current survey located five flakes widely dispersed over the area.

CA-SDI-5657 was originally recorded as a collection of six bedrock milling surfaces and a light scatter of flakes. The site is in good condition and appears to be relatively unchanged since it was originally recorded. Lithic materials include metavolcanic and quartzite flakes.

CA-SDI-12018 was recorded in 1990 as a lithic scatter of seven cores and one flake. During the current survey the area was covered by dense non-native vegetation making visibility poor. The site was not relocated.

Direct impacts to extant cultural resources within the project area could result from brushing and vegetation removal, grading, and other ground disturbing activities during construction. These impacts would be significant **(Impact CR 1)**.

No additional impacts to cultural resources are anticipated during operation of the project. However, construction of the proposed project components including the FRS II, portals, and tunnel, could uncover significant cultural resources that have not been previously documented. The impact of discovering unexpected cultural resources would be significant **(Impact CR 2)**.

Only Water Authority personnel and passive recreational users routinely access this portion of the park. The project would not increase the number of visitors or workers to this area on a long-term basis. Therefore, indirect impacts to cultural resources would be less than significant.

Would the proposed project disturb any human remains, including those interred outside of formal cemeteries?

No evidence of human remains has been discovered in the project area through a literature search and an intensive site survey. Based on the cultural resources discovered in the project area, human remains are not anticipated during excavation. This potential impact would be less than significant.

3.9.4 Mitigation Measures

To mitigate significant impacts to cultural resources during project construction, the Water Authority shall implement the following mitigation measures:

CR 1-1 Prior to construction, a qualified archaeologist shall flag the construction zone, including a 10-foot buffer zone, so that impacts occur entirely outside the boundaries of CA-SDI-5518, CA-SDI-5656, CA-SDI-5657, and CA-SDI-12018.

CR 2-1 In the event that unanticipated cultural resources are encountered during project construction, all earthmoving activity shall cease until the qualified archaeologist examines the findings, assesses their significance, and offers recommendations for procedures deemed appropriate to either further investigate or mitigate adverse impacts to those cultural resources that have been encountered (e.g., excavate the significant resource). These additional measures shall be implemented.

CR 2-2 If human bone or bones of unknown origin are found during project construction, all work shall stop in the vicinity of the find and the County Coroner and the Water Authority shall be contacted immediately. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission who shall notify the person it believes to be the most likely descendant. The most likely descendant shall work with the Water Authority to develop a program for reinternment of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the identified appropriate actions have been completed. Any collection of artifacts resulting from the surveys and monitoring, as well as the associated records, shall be curated at an appropriate institution in San Diego County that meets the standards of the State of California Guidelines for the Curation of Archaeological Collections.

3.9.5 Residual Impacts after Mitigation

No residual impacts would remain after implementation of the proposed mitigation measures.

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3.10 GEOLOGY AND SOILS

This section evaluates the potential impacts of the proposed project on geology, soils, and seismic hazards. This evaluation is based on the Preliminary Geotechnical Investigation Technical Memorandum No. 2 prepared for the pipeline tunnel by Ninyo & Moore (Jacobs Associates 2005) and the Geotechnical Investigation Technical Memorandum 02 prepared by GeoLogic Associates (HDR 2005). These reports are bound separately with the respective Preliminary Design Reports for the tunnel and FRS II, and are available for review at the Water Authority's offices.

3.10.1 Existing Conditions

Regional Geologic Setting

The project area can be described as topographically diverse consisting of a major river gorge, relatively flat mesa areas, several drainages, rounded hilltops, and steep slopes. The elevation of the project area ranges between 180 and 820 feet AMSL. The project area is in the western portion of the Peninsular Ranges and in the Coastal Plains geomorphic provinces of Southern California. The 30- to 100-mile-wide Peninsular Ranges geomorphic province extends from the Transverse Ranges and the Los Angeles Basin south to the tip of Baja California and is bounded on the east by the Colorado Desert and on the west by the Coastal Plains. Most of the Peninsular Ranges geomorphic province is characterized by northwest trending mountain ranges lying west of the San Andreas Fault. The Coastal Plains rise sharply to nearly level terraces or mesas, dissected terraces, and rolling hills with characteristic Mesozoic volcanic and Eocene sedimentary rocks.

The project area lies within a seismically active region subject to the effects of moderate to large earthquake events along major faults. The regional faults that may affect the project area include the Rose Canyon, Coronado Bank, La Nacion, Elsinore, San Jacinto, and San Andreas faults. The Elsinore, San Jacinto and San Andreas faults lie more than 30 miles inland from the project site. The Rose Canyon fault zone lies approximately 14 miles north of the project with faults both onshore and offshore. The Coronado Banks fault is located offshore approximately 15 miles to the west. The La Nacion fault zone lies approximately 5 miles northeast of the project area.

Site Geology

Geologic maps of the study area are presented in Figures 3.10-1 through 3.10-3. A generalized geologic profile along the project alignment is also shown in this figure. Details on the formations in the study area are presented below.

Artificial Fill is present on the site as backfill for Water Authority pipelines and the FRS I. Undocumented fill soils were generated during the grading of the on-site dirt roads. The fill soils were obtained from the on-site soils.

Alluvium is present as loose alluvial soils in the various ravines and canyons that cross the alignment. These materials have been transported by surface water and are derived from the on-site surface soils and underlying formations.

Topsoil and Colluvium are present as naturally occurring topsoil and colluvium over much of the undisturbed portions of the site. Topsoil occurs from the weathering and decomposition of the underlying formations. Colluvium is the accumulation of loose soils that were transported down-slope by gravity and water. Topsoil typically ranges in depths to about 3 feet. Colluvium is typically thicker, particularly at the base of hillsides.

Landslide Deposits (Qls) are present at the southerly end of the alignment. The landslide materials generally consist of highly disturbed blocks of sandstone and claystone derived from the Friars Formation and the Mission Valley Formation. The landslide deposits have been estimated to extend to a depth of approximately 50 to 55 feet in the vicinity of the existing Water Authority pipelines.

Pomerado Conglomerate (Tp) is present on the ridge tops along the tunnel alignment. The Eocene-age Pomerado Conglomerate in the project area consists of light brown to reddish brown, strongly cemented, silty sandstone and cobble to boulder conglomerate. Excavations by backhoe and borings may be very difficult.

Mission Valley Formation (Tmv) is present generally under the Pomerado Conglomerate along the tunnel alignment. The Eocene-age Mission Valley Formation consists predominantly of light gray weakly to moderately cemented silty fine-grained sandstone with interbeds of clayey siltstone and silty claystone. Some cobble beds and strongly cemented concretionary beds are also present. Layers of relatively weak, sheared, and remolded clay up to approximately 0.25 inch in thickness, may occur within this formation.

Stadium Conglomerate (Tst) is present to a limited extent. The Eocene-age Stadium Conglomerate typically underlies and mixes with the basal portion of the Mission Valley Formation. The Stadium Conglomerate in the site vicinity consists of yellowish tan to gray, medium brown to reddish brown, strongly cemented, cobble conglomerate with a matrix of silty fine to medium sand. It is thin and discontinuous at the project site.

Friars Formation (Tf) is present in the northern and southern ends of the tunnel alignment. At the project site the Eocene-age Friars Formation generally consists of reddish brown claystone and light gray to olive green clayey to silty sandstone. A landslide south of Elliott Vent #5 occurred in the Friars Formation.

Santiago Peak Volcanics (Jsp) is present at the northern end of the tunnel alignment. Metavolcanic rock of the Jurassic-age Santiago Peak Volcanics is expected to underlie the on-site formations at depth. The contact with the metavolcanics is expected to be highly variable. In the site vicinity the Santiago Peak Volcanics consist of dark gray, massive, hard, fine-grained metavolcanic rock. Upper portions of the unit can be deeply weathered to a light reddish brown to green, silty to clayey sand to silty clay.

FRS II. For the FRS II site, two exploratory borings and two seismic lines were performed in May 2005. The borings were drilled to a depth of 60 feet below the existing ground surface. Based on the boring data, the base of the proposed FRS II would be founded in Pomerado Conglomerate or interfingered with the Mission Valley Formation. These materials typically allow for stable excavation and fill slopes. Cobbles up to 10 inches or more are anticipated in these formations as well as zones of moderate to highly cemented materials. Localized heavy ripping, rock-breaking, jack hammering, and blasting may be necessary or chosen by the contractor for cost-effective excavation.

Tunnel Alignment. The geology study of the tunnel alignment was based on a review of published geologic maps and geotechnical reports. The surface of the study area is comprised of artificial fill, alluvium, topsoil and colluvium, and landslide deposits and underlain generally by Pomerado Conglomerate, Mission Valley Formation, Stadium Conglomerate, Friars Formation, and the Santiago Peak Volcanics. The sedimentary units are nearly horizontal or dip gently a few degrees to the west-southwest. Santiago Peak Volcanics are expected to be encountered in constructing the North Portal and the first 200 to 1,000 feet of the inlet tunnel excavation. Blasting is expected to be required at the North Portal for this reach. See Section 2.4.5 for a description of the blasting construction process. The South Portal is expected to be constructed in Mission Valley Formation.

Groundwater

The depth to the groundwater table is unknown but probably is at the elevation of the San Diego River in the site vicinity or about 180 feet AMSL. Groundwater was not encountered in the 60-foot-deep borings on the FRS II site. Since the deepest project features are above an elevation of 500 feet AMSL, the groundwater table is not expected to be encountered during project construction. However, groundwater seepage from perched water tables may occur along the tunnel alignment. The one exception is the proposed stabilized crossing of the San Diego River where surface water is present year-round.

Geologic Hazards

Faulting and Fault Rupture. As defined by the California Geological Survey, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). The state geologist has defined a potentially active fault as any fault considered to have been active during Quaternary time (last 1.6 million years). This definition is used in delineating Earthquake Fault Zones under the Alquist-Priolo Geologic Hazards Zones. The FRS II site is not included within any Earthquake Fault Zones as created by the Alquist Priolo Act. There are no known major or active faults on or in the immediate vicinity of the site. Two active regional fault zones in the San Diego area are the Rose Canyon Fault Zone and the Coronado Bank Fault Zone located approximately 8.3 and 21.4 miles from the site, respectively. A potentially active Quaternary fault (displacement within the last 1.6 million years) is mapped about 2 miles west of the project site. This fault is part of the northernmost extension of the La Nacion Fault Zone, which is estimated to have a maximum likely quake magnitude of 6.2 to 6.7 (Deméré 1997b).

The project site is located within Seismic Zone 4. The project site, as with all of southern California, is considered to lie within a seismically active region. The Rose Canyon Fault Zone is considered to have the most significant effect in the project area from a design standpoint. The peak horizontal ground acceleration from the design earthquake is predicted to be 0.20g (20 percent of the acceleration of gravity) at the FRS II site. Based on review of the historical earthquake records, the closest historic event occurred in 1803 approximately 3 miles from the FRS II site, and the ground acceleration resulting from that Magnitude 5.0 earthquake was 0.12g (12 percent of the acceleration of gravity). The design of the FRS II and other project components would adhere to the Uniform Building Code and seismic design parameters of the Structural Engineers Association of California.

Liquefaction. Liquefaction is a phenomenon in which soils lose strength when subjected to ground shaking during an earthquake. The soils at risk of liquefaction are typically uniform, granular, and saturated with groundwater. Any structures founded on or buried in such soils, including buildings, tanks, and pipelines, can experience very large total and/or differential settlements, causing major damage. In the project area, a near-surface groundwater table is lacking, the design site acceleration is relatively low, and the site soils are competent. Therefore, the potential for large-scale liquefaction effects and associated settlement of the proposed structures is considered to be very low.

Landslides. As noted above and shown on Figures 3.10-2, a landslide from the Friars Formation and the Mission Valley Formation is south of the project area, east of the Water Authority Second Aqueduct easement. The landslide deposits have been estimated to extend to a depth of approximately 50 to 55 feet in this area.

Soils

The soil types within the study area were identified based on the reports and maps in the Soil Survey for the San Diego Area (U.S. Soil Conservation Service 1973). The four basic soil types mapped along the tunnel alignment are as follows: Diablo-Olivenhain complex, Redding gravelly loam, Redding cobbly loam, and riverwash. All of these soils consist of cobbly or gravelly loam over gravelly or cobbly clay and sandy clay. The Diablo series consists of well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale. Olivenhain cobbly clay loam is low in fertility and is very slowly permeable in the subsoil. The Redding series consists of well-drained, undulating to steep gravelly loams that have a gravelly clay subsoil and hardpan. These soils formed in old mixed cobbly and gravelly alluvium. Cobblestones make up 20 to 30 percent of the surface layer and 25 to 35 percent of the subsoil.

Riverwash occurs in intermittent stream channels. The material is typically sandy, gravelly, or cobbly. It is excessively drained and rapidly permeable. Many areas are barren. Scattered sycamores and coast live oaks grow along the banks. This land type is of no value for farming or ranching and in many locations has been used as a source of sand and gravel. The following are the specific soil types found within the project area:

- Diablo-Olivenhain complex, 9 to 30 percent slopes (DoE)
- Redding gravelly loam 2 to 9 percent slopes (RdC)

- Redding cobbly loam 9 to 30 percent slopes (ReE)
- Redding cobbly loam, dissected, 15 to 50 percent slopes (RfF)
- Riverwash (Rm)

Table 3.10-1 summarizes the characteristics and occurrence of these soil types in the project area.

Table 3.10-1
Soil Characteristics and Location in Project Area

Soil Name (Symbol)	Percent Slope	Erosion Potential / Hydrologic Group	Shrink-Swell Behavior	Project Location
Diablo-Olivenhain complex (DoE)	9 to 30	Moderate erodibility Hydrologic Group D (high runoff potential)	High	North Portal, FRS II, South Portal, access trails
Redding gravelly loam (RdC)	2 to 9	Severe erodibility Hydrologic Group D (high runoff potential)	High	North Portal, FRS II, South Portal, access trails
Redding cobbly loam (ReE)	9 to 30	Severe erodibility Hydrologic Group D (high runoff potential)	High	FRS II, South Portal, access trails
Redding cobbly loam, dissected, (RfF)	15 to 50	Severe erodibility Hydrologic Group D (high runoff potential)	High	North Portal
Riverwash (RM)	---	Severe erodibility Hydrologic Group A (low runoff potential)	Low	River crossing

Source: U.S. Soil Conservation Service 1973

3.10.2 Thresholds of Significance

Thresholds used to evaluate potential geology and soils impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant geology and soils impacts would occur if the proposed project would:

- Expose people or structures to potential substantial adverse effects, including the risk of injury or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, such as Division of Mines and Geology Special Publication 42;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction;
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil.

- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

3.10.3 Impact Analysis

Would the proposed project expose people or structures to potential substantial adverse effects, including the risk of injury or death involving:

- *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, such as Division of Mines and Geology Special Publication 42?*
- *Strong seismic ground shaking?*
- *Seismic-related ground failure, including liquefaction?*
- *Landslides?*

While southern California is a seismically-active area, the proposed project would be located in an area where the risks of damage due to fault rupture, strong seismic ground shaking, liquefaction, and landslide are low. Since there are no known faults through the project site, the risk of damage to project components from fault rupture is low. The closest fault, which is part of the northernmost extension of the La Nacion Fault Zone, is estimated to have a maximum likely quake magnitude of 6.2 to 6.7 (Deméré 1997). This represents a low seismic hazard (0.2 to 0.3 g) over the next 50 years. Furthermore, the project structures would be designed to resist damage from ground-shaking induced by the design earthquake. Finally, the FRS II and pipeline tunnel would be unmanned. Therefore, the proposed project would not expose structures or people to potential substantial adverse seismic effects, including the risk of injury or death. This impact would not be significant.

Would the proposed project result in substantial soil erosion or the loss of topsoil?

The project would involve extensive grading, including widening of unpaved access trails within MTRP that are on soils with severe erodibility and high runoff potential. Therefore, the potential for substantial soil erosion or the loss of topsoil is high. However, substantial soil erosion or loss of topsoil would be avoided by implementation of the standard specifications and project features described in Section 2.6, including erosion control BMPs developed for the SWPPP. The impact of potential erosion and loss of topsoil would be less than significant.

Would the proposed project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Geotechnical surveys conducted for the FRS I project and the currently proposed project have determined that the Pomerado Conglomerate, which is the primary geologic unit in which the

FRS II would be constructed, is stable. According to the geologic technical reports prepared for the FRS II and the pipeline tunnel, the potential for landslides, surface rupture, and liquefaction is low. Therefore, impacts relating to unstable geologic units would be less than significant.

Would the proposed project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Expansive soils are clay- or adobe-based soils that absorb large quantities of water and, as a result, expand. This expansion can cause building slabs to crack and buckle. As noted above, the FRS II would be located within Pomerado Conglomerate, which is a light brown to reddish brown, strongly cemented, silty sandstone and cobble to boulder conglomerate. Pomerado Conglomerate is not considered to be an expansive soil. In addition, the FRS II site and the pipeline tunnel would be over excavated and backfilled with appropriate materials. There would be no impacts relating to expansive soils.

3.10.4 Mitigation Measures

Impacts to geology and soils would be less than significant. Therefore, no mitigation measures are required.

3.10.5 Residual Impacts after Mitigation

No residual impacts would occur.

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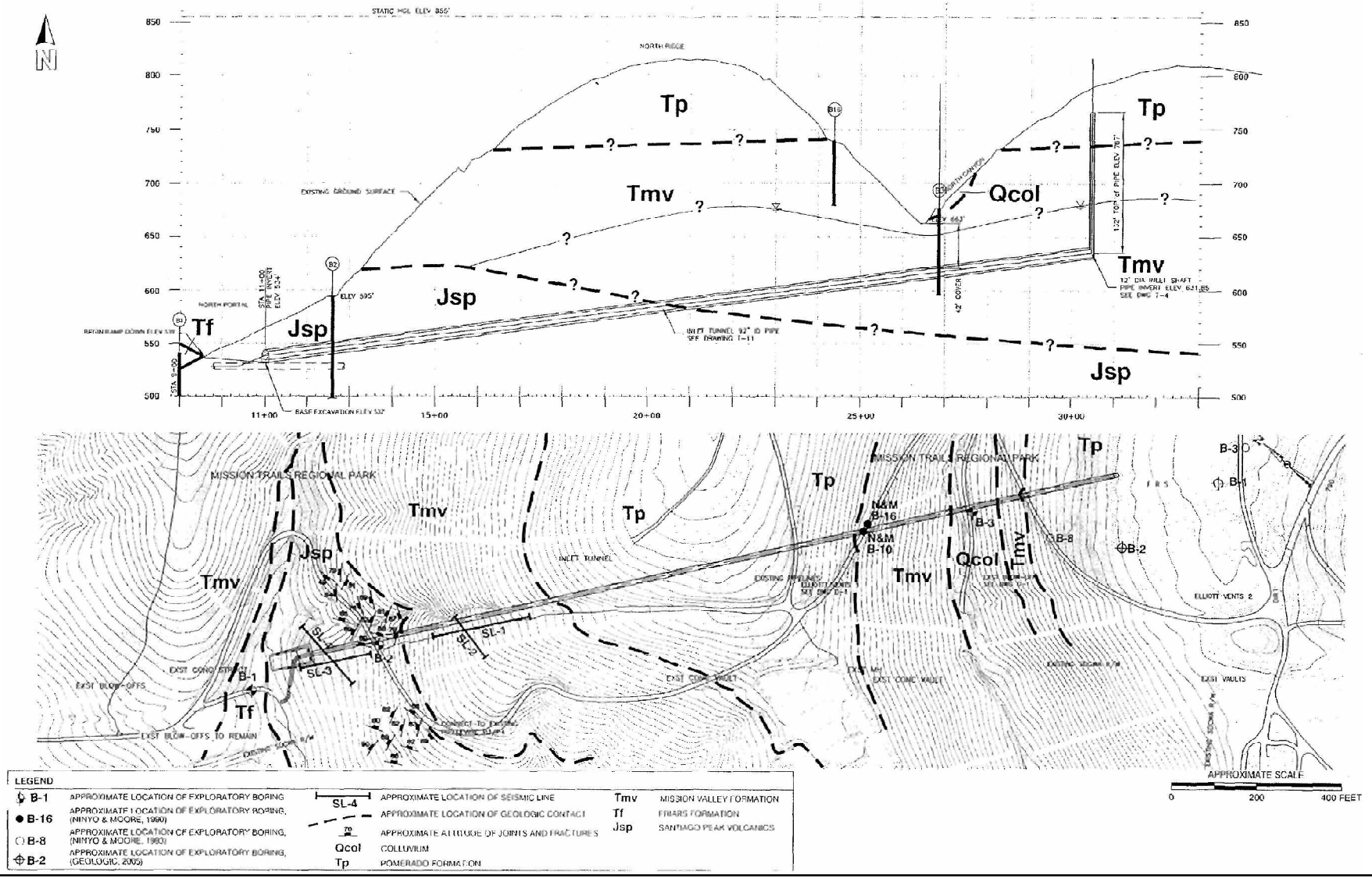

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Study Area Geology - Inlet Tunnel

Figure 3.10-1

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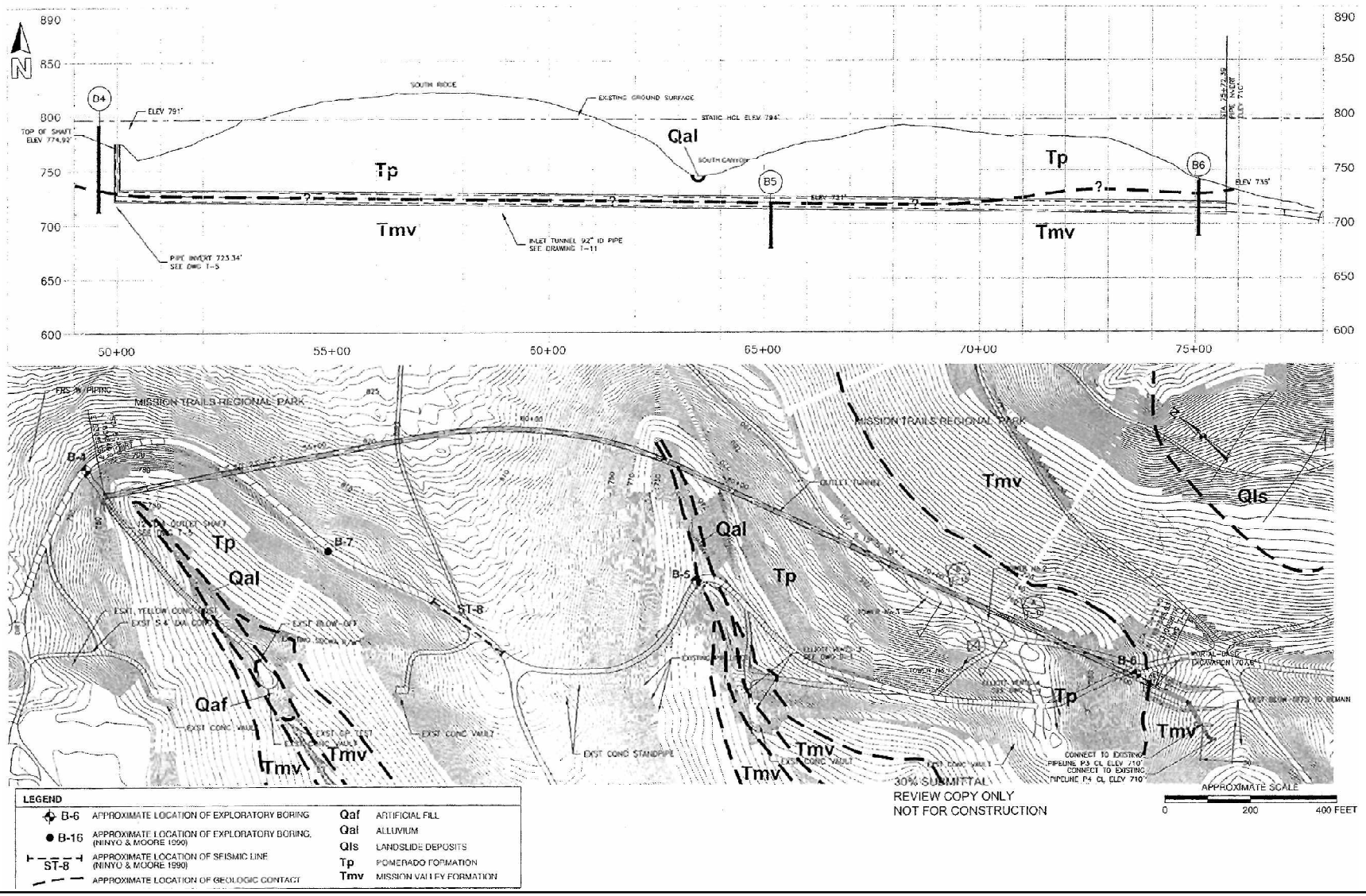

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Study Area Geology - Outlet Tunnel

Figure 3.10-2

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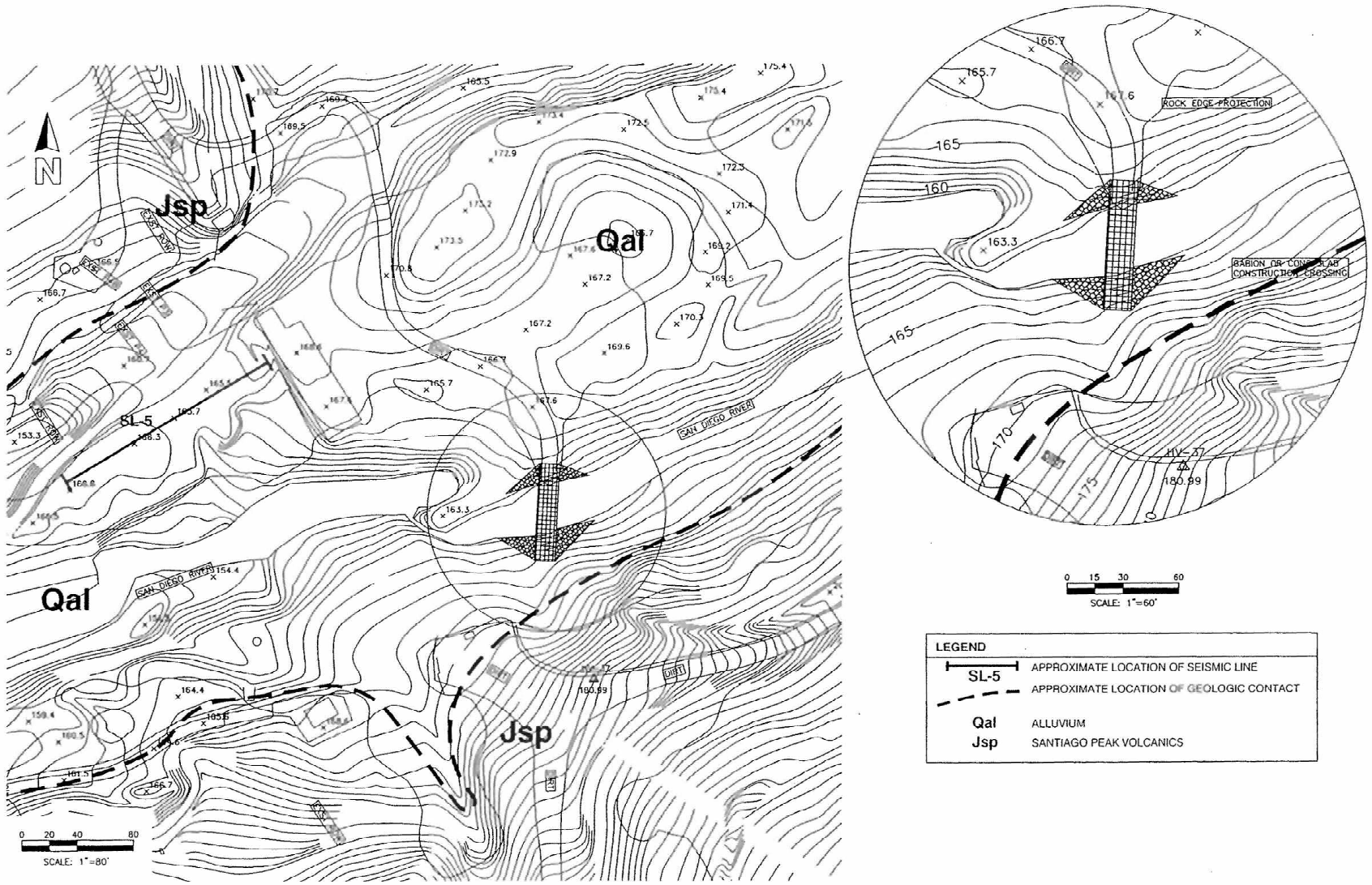

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Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Study Area Geology - Stabilized River Crossing

Figure 3.10-3

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3.11 PALEONTOLOGICAL RESOURCES

This section evaluates the potential impacts of the proposed project on paleontological resources. The evaluation is based on a review of geotechnical reports prepared for the proposed project and paleontological reports available at the San Diego Natural History Museum.

3.11.1 Existing Conditions

Paleontological resources (i.e., fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of humans. Fossil remains such as bone, teeth, shells, and wood are found in the geologic formations in which they were originally buried, typically within deep bedrock layers of sandstone, mudstone, and shale. Paleontological resources represent a limited, nonrenewable, and sensitive scientific and educational resource (Deméré and Walsh 1994). A direct relationship exists between a geologic formation and the fossils that occur within it. Knowing the geology of an area and the paleontological sensitivity of particular geologic formations makes it possible to predict where fossils will and will not occur. In general, formations that are sedimentary in origin have the potential to contain fossils, and formations that are igneous in origin do not (Deméré and Walsh 1994).

According to the Preliminary Geotechnical Investigation (Jacobs Associates 2005), as discussed in Section 3.10, the project area consists of surficial deposits of artificial fill, alluvium, topsoil and colluvium, and Quaternary-age landslide deposits. Rocks of the Pomerado Conglomerate, Mission Valley Formation, Stadium Conglomerate, Friars Formation, and Santiago Peak Volcanics underlie the project area. The Pomerado Conglomerate, Mission Valley Formation, Stadium Conglomerate, and Friars Formation consist of Eocene age (approximately 37 to 46 million years old) sedimentary rocks. Santiago Peak Volcanics are much older Jurassic-age (approximately 120 to 140 million years old) mildly metamorphosed volcanic, volcaniclastic, and sedimentary rocks (Kennedy and Peterson 1975). The geology analysis identifies the on-site Santiago Peak Volcanics as fine-grained metavolcanic rock (Section 3.10).

A paleontological records search was conducted at the San Diego Museum of Natural History to determine the sensitivity for fossil remains in the project area and whether any fossil localities have been recorded within a 1-mile radius of the project site. The museum has 25 recorded fossil localities within 1 mile of the project site with eight of these localities within the same formations found in the project area. One of these localities is within the terrestrial Pomerado Conglomerate and produced fossils of plants (e.g., flowering plants) and invertebrates (e.g., clams); one locality is within the marine Mission Valley Formation and produced fossils of marine vertebrates (e.g., sharks) and non-marine vertebrates (e.g., soft shelled turtles, fish, insectivores, primates, and rodents); and six localities are within the Friars Formation and produced fossils of terrestrial invertebrates (e.g., ostracods and snails) and vertebrates (e.g., crocodiles, lizards, marsupials, insectivores, bats, primates, rodents, oreodonts, and brontotheres).

Mission Valley Formation, Stadium Conglomerate, and Friars Formation are considered to have high sensitivity for fossil remains, Pomerado Conglomerate is considered to have moderate sensitivity, and the Santiago Peak Volcanics are considered to have low sensitivity for fossils

(Deméré and Walsh 1994). Alluvium and landslide materials have unknown sensitivity, but as these formations are sedimentary in origin, they are considered to have some potential to contain fossils.

3.11.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to paleontological resources are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant impact to paleontological resources would occur if the project would:

- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

3.11.3 Impact Analysis

Would the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The proposed project would require excavation to a depth of approximately 50 feet below existing ground level for the FRS II. This excavation, which could involve up to 105,000 cy, would occur mostly in Pomerado Conglomerate, with intrusions of Mission Valley Formation. Excavation for the 13-foot-diameter tunnel would be at shallow depths under canyons and as much as 225 feet below ground under the North Ridge in MTRP. This excavation, which could involve as much as 48,000 cy, would occur mostly in Mission Valley Formation, with the first 200 to 1,000 feet of tunneling at the northern end of the project occurring in Santiago Peak Volcanics. The shaft excavations would occur in Pomerado Conglomerate.

The proposed project would involve grading and excavation in formations considered to have moderate and high sensitivity for fossil remains. The project would also involve construction in close proximity to areas documented to contain fossil remains. Therefore, grading associated with the proposed project has the potential to result in impacts to paleontological resources. This impact would be significant **(Impact PR 1)**.

3.11.4 Mitigation Measures

To mitigate potentially significant impacts to paleontological resources, the Water Authority shall implement the following mitigation measures:

PR 1-1 The following measures shall be carried out by a qualified professional paleontologist:

- Existing bedrock outcrops and (possibly) excavation of test trenches shall be inspected for fossil remains.

- Surface collection of discovered fossil remains shall be conducted via simple excavation of exposed specimens and possibly plaster-jacketing of large and/or

fragile specimens or more elaborate quarry excavations of richly fossiliferous deposits.

- Stratigraphic and geologic data shall be recovered to provide context for recovered fossil remains. These data will typically include a description of lithologies of fossil-bearing strata, measurement and description of the overall stratigraphic section, and photographic documentation of the setting.

- Laboratory preparation of collected fossil remains shall be conducted for potentially significant or unique finds.

- Prepared significant or unique fossil remains shall be cataloged and identified.

- Cataloged fossil remains shall be transferred for storage to an accredited institution.

- A final report summarizing the findings from the laboratory and field, stratigraphic units inspected, types of fossils discovered, and the significance of the curated collection shall be prepared.

3.11.5 Residual Impacts after Mitigation

No residual impacts would remain after implementation of the proposed mitigation measures.

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3.12 PUBLIC SAFETY AND HAZARDOUS MATERIALS

This section evaluates the potential impacts of the proposed project on public safety and hazardous materials. The public safety concerns related to the project would include potential facility accidents or failures associated with hazardous materials, increased public exposure to unsafe conditions/activities including use of and exposure to hazardous materials, and the increased risk of wildland fire. This evaluation is based on the Geotechnical Investigation Technical Memorandum 02 prepared by GeoLogic Associates (HDR 2005).

3.12.1 Existing Conditions

Hazardous Materials

San Diego County encompasses agricultural, commercial, and industrial development, as well as numerous military installations. The construction and operation of such development and the infrastructure to support it involves potential risk from historical and current use of hazardous materials, including fuel, pesticides, fertilizers, solvents, and other chemicals. For military installations where training exercises have taken place, unexploded artillery and other military debris, referred to as unexploded ordnance, may remain on and/or buried underneath the ground surface.

Facility Construction and Operation. During construction, diesel-fueled equipment would have to be maintained and fueled on site. Potentially hazardous materials associated with project construction include oil, fuel, and explosives for blasting. No chemicals would be stored at the FRS II facility. Since the water would be untreated, chlorine or ammonia would not be needed at the facility.

Unexploded Ordnance. The risk of unexploded ordnance exists at MTRP, as the park was once a part of former Camp Elliott. The Mission Trails Formerly Used Defense Site (FUDS) is roughly defined as the area north of the San Diego River, east of Tierrasanta, and south of Highway 52. The camp was used for artillery, anti-aircraft, and machine gun firing practice for more than 40 years. Munitions and ordnance remained on the property after the camp was closed in 1961. Since that time, over 5,000 ordnance items and nearly 25 tons of ordnance debris have been removed from Tierrasanta and MTRP. Surface and subsurface ordnance removal was conducted in the vicinity of the site during 1992-1995. During 2000-2003, the Corps concluded that the ordnance and explosives (OE) clearance completed in 1995 was still protective of public safety. A limited magnetometer survey to locate near-surface metallic objects performed in the geotechnical study work areas prior to subsurface investigation did not identify any metallic objects.

Wildfires

In October 2003, San Diego County experienced the worst firestorms in county history, which were second statewide only to the Oakland Hills Fire of 1991 in terms of damage. The hot, dry Santa Ana winds drove three major fire fronts: Cedar, Paradise, and Otay. The Cedar Fire, which swept across MTRP, burned more than 273,000 acres countywide, and nearly 30,000

acres in the City of San Diego (City of San Diego 2004). A large portion of the vegetation in MTRP burned in the 2003 Cedar Fire, and the areas of grasses, chaparral, coastal sage scrub, and woodland vegetation are recovering. Thousands of structures were destroyed by the fire, including several Tierrasanta homes near the park that are being rebuilt or are currently under construction. Damage to Water Authority facilities within MTRP was limited to irrigation systems and combustible materials used for erosion control such as silt curtains and straw waddles. Based on a range of San Diego City Fire Department classifications for the Tierrasanta community, the fire hazard classification would be high (City of San Diego 2003).

3.12.2 Thresholds of Significance

Thresholds used to evaluate potential public safety and hazardous materials impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G. A significant public safety and hazardous materials impacts would occur if the proposed project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

3.12.3 Impact Analysis

Would the proposed project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Transportation, use, or disposal of hazardous materials during construction, operation, and maintenance of the proposed facilities would pose potential health and safety hazards to construction and maintenance workers, nearby residents, park users, and the environment. These impacts would be associated with the potential for spills on the construction site or along access roads, and improper disposal of hazardous materials. However, the Water Authority's *General Conditions and Standard Specifications* (Water Authority 2005) cover construction procedures for this kind of large infrastructure project. Safety measures that are part of the *General*

Conditions and Standard Specifications and measures that would be incorporated into the project plans and specifications are described in Section 2.6. These and other measures that would be incorporated into the plans and specifications for the project would reduce the risk of upsets during construction, including accidental explosions or releases of hazardous substances. Therefore, the impacts from typical hazardous materials and conditions during project construction would be less than significant.

Would the proposed project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The proposed project is intended for the transport, storage, and regulation of flow of raw water. No chemicals would be used or stored at the FRS II site. Therefore, the impacts from hazardous materials used in project operation would be less than significant.

Would the proposed project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No schools are located or planned within one-quarter mile of the FRS II. The SDUSD owns the 12.78-acre property where the FRS II would be constructed, as well as a parcel at the intersection of Calle de Vida and Colina Dorada. Both parcels are managed by the City of San Diego Park and Recreation Department as part of MTRP. The School District does not have development plans for either parcel and it is anticipated that the School District would sell the parcel at the proposed FRS II site to the Water Authority prior to project construction. Therefore, there would not be an impact to existing or proposed schools.

Would the proposed project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?

A site-specific hazardous materials survey has not been conducted for the FRS II site or the tunnel portal and shaft locations. MTRP was once part of Camp Elliott, a military training area, and has been identified as potentially having unexploded ordnance from the historic military use. Therefore, the impact of potential exposure of construction and maintenance workers to hazardous materials in the soil and/or unexploded ordnance would be significant **(Impact PS 1)**.

Would the proposed project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. An emergency-only access gate and road from Seda Drive would allow for emergency crews to bypass construction equipment and haul trucks within MTRP to reach the FRS II site. The proposed stabilized crossing of the San Diego River would improve emergency response capabilities from Mission Gorge Road to areas north of the San Diego River. The ability to evacuate the Tierrasanta community, which would most likely be the result of a wildland fire, would not be compromised

by the proposed project. An evacuation plan would be required for the construction site. Therefore, this impact would be less than significant.

Would the proposed expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Activities associated with the construction, operation, and maintenance of the proposed project could increase the potential for accidental wildfires. Workers smoking cigarettes, sparks from equipment, welding, or other activities could increase the potential for fire ignition in MTRP during project construction. The western boundary of the project area encompasses dense residential development bordered by undeveloped ridges and valleys of the park. This area suffered the loss of several structures during the Cedar Fire in 2003. The potential for people or structures to be exposed to risk of loss, injury, or death involving wildland fires due to project construction would be significant **(Impact PS 2)**.

The risk of wildland fires from project operation would be negligible. The aboveground structures associated with the Water Authority's facilities within MTRP are made of concrete and steel and all vegetation is cleared within 6 feet of the structures or the fence line, whichever is farther. Future wildland fires within MTRP would not be likely to damage the proposed facilities. Long-term impacts would be less than significant.

3.12.4 Mitigation Measures

To mitigate the significant impacts of potential soil contamination and unexploded ordnance to construction workers, the Water Authority shall implement the following mitigation measures:

PS 1-1 Before completion of final design plans and specifications, all proposed project construction areas shall be investigated to determine if there is a record of hazardous materials contamination (Phase I Environmental Site Assessment). If so, the Water Authority shall characterize the site(s) according to the nature and extent of soil contamination, and determine the need for further investigation and/or remediation of the soils conditions on the contaminated site.

PS 1-2 If warranted, a Phase II investigation shall be conducted. The Phase II investigation shall, at a minimum, involve soil sampling. Should further investigation reveal high levels of hazardous materials in the site soils, mitigate health and safety risks according to County Department of Environmental Health and RWQCB regulations. This will include site-specific health and safety plans prepared prior to construction.

PS 1-3 Prior to the start of construction, a qualified contractor shall survey all project construction sites, including access roads in MTRP, for the presence of unexploded ordnance. The survey shall include identification of potential unexploded ordnance locations and a determination of the presence or absence of unexploded ordnance in the area. Once the survey is completed, a qualified contractor shall arrange for the removal of any unexploded ordnance found. In addition, the unexploded ordnance

contractor shall provide training, as needed, to construction contractors related to the identification of unexploded ordnance.

To mitigate the potential wildland fire risk during construction, the Water Authority shall implement the following mitigation measures:

PS 2-1 Prior to approval of final design plans and specifications, a Fire Prevention Program shall be developed in consultation with the Fire Marshal for each component of the proposed project. The program shall address fire prevention for the construction period and for long-term maintenance activities.

PS 2-2 Prior to completion of construction, an Emergency Response Plan (ERP) shall be developed by the Water Authority (facility operator) in coordination with the County Office of Emergency Services, the County Environmental Health Department, and the appropriate Fire Protection District.

3.12.5 Residual Impacts after Mitigation

No residual impacts would remain after implementation of the proposed mitigation measures.

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3.13 UTILITIES AND PUBLIC SERVICES

This section evaluates the potential impacts of the proposed project on public utilities (power, telephone, water, and sewerage) and public services (police, fire, emergency response, and schools). This evaluation is based on available engineering information from the design engineers, including the Site Development Requirements and Constraints Technical Memorandum 03 (HDR 2005), and utility providers.

3.13.1 Existing Conditions

Public Utilities

The following utilities are located within the project area:

- SDG&E overhead power lines.
- Electrical and telecommunication lines associated with the Second Aqueduct and FRS I.
- Pipelines in the Water Authority's Second Aqueduct easement.
- City of San Diego storm drain under the access road at the North Portal.
- City of San Diego Mission Gorge Trunk Sewer.

Electrical and Communication. SDG&E easements cross the Water Authority's Second Aqueduct easement and parallel access roads in MTRP that would be utilized during construction. Within the SDG&E easements are 230 kilovolt (kV), 138 kV and 69 kV transmission lines. The larger lines are mounted on lattice steel towers. Smaller lines are mounted on wooden poles.

Electric and communication utilities are available in the residential area immediately west of MTRP, along Corte Playa Catalina. SBC/Pac Bell provides telephone service to the existing FRS I facility. The existing FRS I is currently served by SDG&E through a two-phase, 240-volt, 100-amp service. It is anticipated that a similar service would be sufficient for the proposed FRS II facility. Both utilities have confirmed that there is sufficient capacity in their system to serve the proposed FRS II site.

Water Supply Pipelines. The largest utilities in the project area are the Water Authority pipelines in the Second Aqueduct easement. Pipeline 3 is a 69-inch-diameter, pre-cast concrete cylinder pipe. Pipeline 4 is a 72-inch-diameter, pre-stressed concrete cylinder pipe. These two pipelines carry untreated water. Pipeline 4BII is a 96-inch-diameter, welded steel pipeline that carries treated water. Pipelines 3, 4, and 4BII must continue to convey untreated and treated water to member agencies during the construction of the proposed project. These pipelines would be abandoned in place following the completion of the pipeline tunnel and FRS II.

Storm Drainage. A storm drain, consisting of a culvert under the access road at the North Portal, is located approximately 200 feet south of the start of the tunnel. There has been extensive erosion at this point. All other drainage in the project construction area exists as open channels or canyons.

City of San Diego Mission Gorge Trunk Sewer. The City's Mission Gorge Trunk Sewer crosses the San Diego River west of the proposed stabilized river crossing. The sewer is encased in concrete and exposed at the river crossing, possibly having been undermined during the high flows of last winter's above-normal rainy season.

Public Services

Police. Police protection is provided by the City of San Diego Police Department. MTRP is included in the Eastern Division, which has its headquarters at 9225 Aero Drive. The closest police station is the Navajo Storefront, located at 7381 Jackson Drive.

Fire Protection/ Emergency Response. Fire protection is provided by the City of San Diego Fire Department, now known as the San Diego Fire-Rescue Department. The closest fire station is Station 39 located at 4949 La Cuenta Drive off of Tierrasanta Boulevard in Tierrasanta, a distance of approximately 1.5 miles to the project area. This department also oversees the City's medical emergency operations, provides the primary emergency medical response with paramedic/firefighters on all of the City's 44 fire engines, staffs ambulances, and oversees medical dispatch communications (9-1-1 Dispatchers). A call for emergency medical services (EMS) would first be answered by the closest fire station.

Schools. No schools are within the construction zone, and the project would not affect school capacity.

The parcel proposed for the FRS II encompasses 12.78 acres of vacant property currently owned by the San Diego Unified School District. This property would be purchased by the Water Authority for the project and would no longer be available for school district use. Vacant property at the corner of Calle de Vida and Colina Dorado Drive that may be used temporarily for construction access is also owned by the school district and would not be available for district use during the 2 years of project construction.

3.13.2 Thresholds of Significance

Thresholds used to evaluate potential impacts to public services and utilities are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; and the thresholds established for the Water Authority's Program Environmental Impact Report for the Regional Water Facilities Master Plan. A significant impact to public services would occur if the proposed project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services, such as: fire protection, police protection, schools, parks, and other public facilities.
- Exceed wastewater treatment requirements of applicable Regional Water Quality Control Board.

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the need for new or expanded water supplies or entitlements.
- Generate solid waste that would significantly impact the permitted capacity of the landfill served by the project.
- Not comply with federal, state, and local statutes and regulations related to solid waste.
- Interrupt or disrupt utility services as a result of physical displacement and subsequent relocation of public utility infrastructure.
- Result in the need for additional capacity of utility infrastructure or additional services that could not be supplied by existing utility service providers.

3.13.3 Impact Analysis

Would the proposed project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services such as fire protection, police protection, schools, parks, and other public facilities?

Construction Impacts

Measures to reduce the risk of wildland fires due to project construction are discussed in Section 3.12 (Public Safety and Hazardous Materials). These measures would reduce the risk of fire to below a level of significance. The project would not increase the need for fire protection services during construction. Impacts on fire protection services would be less than significant.

Short-term security would be required for the construction site. This security would be provided by full-time security guards employed by the contractors during project construction to protect the construction site from unauthorized entry and the materials and equipment from theft and vandalism. Also, project staging areas would be fenced. Although the project would bring more people and heavy equipment into MTRP to accomplish the project construction, the increased activity would not substantially increase the need for police services such that capacity or response times in the surrounding community would be reduced. Impacts on police protection would be less than significant.

The construction zones for the project are well within the park. Construction would not interfere with school activities. There would not be impacts to schools.

Although certain MTRP trails would be closed to public use during construction times (see Section 3.6 Recreation), emergency access routes would be maintained to all project components during construction. No public roads outside of MTRP would be closed or restricted due to project construction. The project construction would not substantially reduce emergency medical response. Therefore, impacts on emergency medical response would be less than significant.

In summary, construction of the project would not interrupt service, create the need for additional capacity, or decrease the level of service of public services in the project area. Therefore, construction impacts on public services would be less than significant.

Operational Impacts

The project would not result in the need for new or physically altered governmental facilities, including police and fire stations. The stabilized crossing at the San Diego River would enhance access to the southern part of MTRP for security and emergency medical response, resulting in a project benefit to these public services.

The project would not generate students or result in the need for new or physically altered schools. The school district has indicated they are willing to sell the FRS II parcel to the Water Authority, as its location within MTRP precludes district use and development. The school district has not proposed any near-term plans to develop the property at Calle de Vida and Colina Dorada Drive, and the project would not interfere with any long range plans for school district use.

In summary, long-term operation of the project would not interrupt service, create the need for additional capacity, or substantially decrease the level of service of public services in the project area. Operational impacts on public services would be less than significant.

Would the proposed project exceed wastewater treatment requirements of applicable Regional Water Quality Control Board?

The proposed project would not involve generation or treatment of wastewater. Therefore, there would not be an impact involving the treatment of wastewater.

Would the proposed project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed project would involve the construction of new water facilities for transmission and storage, but would not involve water treatment. The proposed project would not involve the construction of new wastewater treatment facilities. Therefore, there would not be an impact involving a wastewater treatment facility.

Would the proposed project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

A storm drain consisting of a culvert under the access road at the North Portal is located approximately 200 feet south of the start of the inlet tunnel. There has been extensive erosion at this point. As part of the project, this storm drain would be repaired and the eroded area would be stabilized to protect the Water Authority easement from further erosion at this location. This would be a benefit to the utility, and would not involve expansion of the existing facility. Impacts of the construction have been included in the analysis of impacts of the overall project. This impact would be less than significant.

Would the proposed project require or result in the need for new or expanded water supplies or entitlements?

The proposed project would involve construction of new water facilities for transmission and storage of existing water supplies to improve operational efficiency and reliability. The project would not result in the need for new or expanded water supplies or entitlements. There would not be an impact to water supplies or entitlements.

Would the proposed project generate solid waste that would significantly impact the permitted capacity of the landfill served by the project?

The proposed project would involve limited generation of solid waste from the removal of the existing vent structures and blow offs, and overall construction activities. However, the amount of waste material generated would be negligible. This impact would be less than significant.

Would the proposed project not comply with federal, state, and local statutes and regulations related to solid waste?

The project plans and specifications would require the construction contractor to comply with all applicable federal, state, and local statutes and regulations, including those for appropriate disposal of solid waste. Operation of the FRS II by the Water Authority would likewise comply with all applicable statutes and regulations. This impact would be less than significant.

Would the proposed project interrupt or disrupt utility services as a result of physical displacement and subsequent relocation of public utility infrastructure?

Construction Impacts

Aboveground electrical and communication lines are highly visible and would be mapped on project construction plans and described in construction specifications. The contractor would be responsible for avoiding inadvertent damage to these lines during construction. In the unlikely case such damage occurred, the interruption in service would be short-term while the line would be repaired and reconnected.

Pipelines 3, 4, and 4BII must be protected from damage due to construction loads of equipment and vehicles passing over the Second Aqueduct easement. Using the existing access road from Clairemont Mesa Boulevard, the Second Aqueduct would be crossed at approximately Station 4178+57 for Pipeline 3 and 4, and at Station 50+74 for Pipeline 4BII. The following actions would be incorporated into the project to limit the risk of damage to the existing pipelines (HDR 2005):

- Record drawings will be reviewed at the 30 percent design level to determine the maximum allowable live loads during construction.
- Ground elevations will be surveyed over the pipes at the crossing locations to confirm the amount of cover.
- Equipment will not be permitted to operate over the pipelines unless a temporary bridge is constructed so that the load will not transfer to the existing pipelines.
- Stockpiling of excavated material will not be allowed over the existing pipelines or between the pipelines.

The existing Water Authority pipelines in the project area would be protected from the weight of construction equipment by a concrete slab that would distribute the weight over the pipelines, and by protocols defined in the plans and specifications for construction activities near the pipelines.

Near the end of project construction, the new pipeline must be connected to the existing pipelines. A pipeline outage of 10 calendar days is planned. The tie-ins would be scheduled by the Water Authority during the winter time, between November 1 and March 31 to take advantage of reduced water demand (Jacobs Associates 2005).

The outage necessary to allow connection of the new pipeline to the existing Pipeline 3 and Pipeline 4 at the north and south ends of the project would be short-term, and would be scheduled by the Water Authority during the winter when water demands are low.

As part of the project, the storm drain under the access road at the North Portal would be repaired and the eroded area would be stabilized to protect the Water Authority easement from further erosion at this location. This would be a benefit to this utility.

The Mission Gorge Trunk Sewer would not be affected by proposed construction of the stabilized river crossing, as the construction activity would occur east of the sewer line.

In summary, construction of the project would not interrupt service, create the need for additional capacity, or decrease the level of service of public utilities in the project area. Therefore, construction impacts on public utilities would be less than significant.

Operational Impacts

Both SBC/Pac Bell and SDG&E have confirmed that there is sufficient capacity in their system to serve the proposed FRS II site. Therefore, there is no need for additional capacity of

communications or electrical lines, and overall level of service would not decrease due to the project.

The project is proposed by the Water Authority to relieve a hydraulic bottleneck in existing water supply operations, and to provide a stronger pipeline segment where surges and higher pressures could put the existing pipelines at risk. Therefore, the project would have operational benefits to the capacity and reliability of the water delivery system. The project would not result in the need for additional capacity, and overall level of service in water supply facilities would not decrease due to the project.

The proposed river crossing would not affect river hydraulics, so the Mission Gorge Trunk Sewer would not be affected by the permanent presence of the stabilized at-grade crossing to the east. The project would not generate wastewater and would therefore not increase flows to existing wastewater treatment facilities or require the construction of new wastewater treatment facilities.

In summary, operation of the project would not cause interruptions or disruption of public utilities. Therefore, operational impacts on public utilities would be less than significant.

Would the proposed project result in the need for additional capacity of utility infrastructure or additional services that could not be supplied by existing utility service providers?

Short-term construction and long-term operation of the project would not interrupt service, create the need for additional capacity, or decrease the level of service of public utilities in the project area. Therefore, operational impacts on public utilities would be less than significant.

3.13.4 Mitigation Measures

Impacts on public utilities and services would be less than significant. Therefore, no mitigation measures would be required.

3.13.5 Residual Impacts after Mitigation

No residual impacts would occur.

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SECTION 4.0
CUMULATIVE IMPACTS

4.1 INTRODUCTION

Cumulative impacts refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts are physical changes in the environment that result from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355). If a project's incremental effect is not cumulatively considerable it need not be considered significant and should not be discussed in detail in the EIR. A project's contribution is not considered cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact (CEQA Section 15130). The Final PEIR for the Regional Water Facilities Master Plan concluded that the cumulative impacts of the projects recommended in the Master Plan are expected to be reduced to a less than significant level through incorporation of standard mitigation measures and additional site-specific measures that would be identified during subsequent site-specific CEQA review.

4.2 CUMULATIVE PROJECTS

A list of past, present, and probable future projects producing related or cumulative impacts when considered together with the proposed project was solicited from the City of San Diego at the time the Notice of Preparation was distributed for review. Other capital improvement projects being undertaken throughout San Diego County and the Military Housing project on MCAS Miramar were also evaluated. These projects are described below and summarized in Table 4-1.

City of San Diego Projects

The City of San Diego is the lead agency for the following ongoing or planned development projects within the project vicinity.

Chinese Community Church. The Chinese Community Church project was under construction in 2005, with site grading taking place in August and September. The Chinese Community Church project consists of a two-story, 6,958-square-foot sanctuary; a two-story, 17,346-square-foot fellowship building; and a 102-space parking lot on the west side of Via Valarta in Tierrasanta. Environmental issues that required mitigation were biological resources, human health/public safety/hazardous materials (unexploded ordnance), hydrology/water quality (BMPs/erosion control), and paleontological resources. The project has resulted in impacts to 0.38 acre of Diegan coastal sage scrub, including 0.23 acre within a MHPA. All project impacts were found to be mitigable to below a level of significance.

Table 4-1
Cumulative Projects Considered

Project Name	Location	Description
Chinese Community Church	West side of Via Valarta	Church
Sycamore Canyon Landfill Master Plan	Mast Boulevard	Landfill Expansion and Management
Castlerock	North side of Mast Boulevard, Santee	119 multi-family residential units, recreational amenities, a pedestrian trail, internal public streets and natural open space.
Tierrasanta Townhomes	Tierrasanta Boulevard	Up to 60 townhomes.
Pipeline Relining	County-wide	30-year pipeline relining program that focuses on one community per year, with a priority on those areas where deterioration is most severe.
Pressure Control and Hydroelectric Facility	Mira Mesa, I-15/Mercy Road	Partially buried concrete and masonry structure to regulate pressure in the Second San Diego Aqueduct and generate electricity.
Twin Oaks Valley Water Treatment Plant	Twin Oaks Valley, north of Escondido	100-million-gallon-per-day (mgd) water treatment plant.
Emergency and Carryover Storage Projects	San Vicente Reservoir	Raising of San Vicente Dam to increase storage capacity.
Emergency Storage Project/San Vicente Pipeline	San Vicente Reservoir to I-15/Mercy Road	Construction of tunnel pipeline to connect to Second San Diego Aqueduct at I-15/Mercy Road.
Moreno-Lakeside Pipeline	Lakeside	A 4.7-mile pipeline that will connect an existing pipeline to the Helix Water District's R.M. Levy Water Treatment Plant. The project also includes a flow control facility.
Lake Hodges Projects	Lake Hodges and Olivenhain Reservoir	A 1.25-mile pipeline connecting Lake Hodges with the Olivenhain Reservoir, and a pump station on Lake Hodges to move water between the two water storage facilities.
Encina Desalination Facility	Carlsbad	Construction of a 50-mgd desalination facility on the grounds of the Encina Power Plant.
Military Housing	North side of SR-52, northeast of Santo Road	1,600 multi-family residential units, two elementary schools and a community center or park within the development area. Access from Santo Road.
SR-52 Managed Lanes Project	I-805 to SR-125	Construction of managed lanes in median of SR-52 from I-805 to SR-125. Project would include replacement of Santo Road Overpass.

Sycamore Canyon Landfill Master Plan. The Sycamore Canyon Landfill Master Plan is designed to extend the life of this centrally located solid waste disposal site within the City of San Diego. A 1st Screencheck Draft EIR has been prepared for the project (BRG 2004). The project site was formerly owned by the County of San Diego and has been operated as a landfill since 1963. The County operated the landfill until 1982 when a private contractor was hired to operate the facility. The County sold the landfill property and operation to Allied Waste Industries in 1997. The landfill is now operated by Sycamore Landfill, Inc., which is a subsidiary of Allied Waste Industries.

Discretionary actions required from the City of San Diego include a community plan amendment, vacation of several street and utility easements, a Planned Development Permit and Site Development Permit, and MHPA boundary adjustments. Other project approvals required include a Waste Discharge Permit and Section 401 Certification by the Regional Water Quality Control Board, a Solid Waste Facility Permit from the City of San Diego Local Enforcement Agency, with concurrence by the California Integrated Waste Management Board, Authority to Construct/Permit to Operate from the San Diego County Air Pollution Control District, a 1602 Streambed Alteration Agreement from the CDFG, and a Section 404 Permit from the Corps.

The proposed project would expand the property designated in the East Elliott Community Plan from 493 acres to 607 acres and would increase the permitted daily tonnage from 3,300 tons per day to 6,800 in 2010, increasing gradually until it reaches 13,000 tons per day in 2025. The total area of disturbance would increase from 332.5 acres to 380 acres, an increase of 14.3 percent. Truck trips would increase from 1,540 in 2003 to 6,680 in 2025. All significant traffic impacts were found to be mitigable to below a level of significance.

Landform alteration/visual quality impacts within Sycamore Canyon are significant and not mitigable due to the high visibility of the site and the extent of terrain modification.

Impacts to biological resources were found to be mitigable to below a level of significance. Sensitive species that would be impacted include Nuttall's scrub oak, variegated dudleya, Cooper's hawk, coastal California gnatcatcher, 29.38 acres of gnatcatcher habitat, 10.8 acres of chamise chaparral, 20.9 acres of Diegan coastal sage scrub, 1.8 acres of Diegan coastal sage scrub/native grassland mix, 0.8 acre of native grassland, 0.9 acre of southern mixed chaparral, and 0.1 acre of mule fat scrub. The project would also impact 0.37 acre of Corps non-wetland jurisdictional waters of the U.S., 0.03 acre of Corps wetlands (mule fat scrub), 0.13 acre of CDFG riparian habitat (mule fat scrub), 0.39 acre of CDFG jurisdictional streambed, and 0.13 acre of lands classified as City of San Diego wetlands.

Noise impacts were found to be significant because night operations would exceed the City of San Diego Noise Ordinance thresholds. Operational noises may also exceed 60 dB(A) within gnatcatcher habitat along the landfill access road. These noise impacts were found to be mitigable to below of level of significance.

Air quality impacts were found to be significant and not mitigable for PM_{10}, air toxics and odors.

Castlerock. The Castlerock project is a proposed residential development on the north side of Mast Boulevard between Medina Drive and West Hills Parkway. The project would include 379 single-family and 119 multi-family residential units, recreational amenities, a pedestrian trail, internal public streets and natural open space on a 191.8-acre site within the East Elliott Community Plan area. The discretionary actions by the City of San Diego required for implementing the Castlerock project include a Planned Residential Development Permit; a Site Development Permit; a Vesting Tentative Map; a Rezone, an amendment to the East Elliott Community Plan and City of San Diego Progress Guide and General Plan, and a Development Agreement. Other project approvals required include a CDFG 1602 permit, a Corps 404 permit, and a RWQCB 401 water quality certification. A stated project goal and objective is to develop the project site in an environmentally sensitive manner by preserving open space, consistent with the adopted MSCP/MHPA and the Mission Trails Design Guidelines. The project would preserve 82.2 acres in natural open space (MHPA) and would provide trail connections from MTRP to Gooden Ranch. A Draft EIR (EIR No. 10046) has been prepared for this project (RECON 2005).

Tierrasanta Townhomes. Intracorp has been exploring the idea of developing a church site at the end of Tierrasanta Boulevard owned by Tierrasanta Christian Church with up to 60 townhomes. The development plans require a rezone from the planned church use to high-density residential.

San Diego County Water Authority Projects

The Water Authority is currently undertaking or is planning several other projects recommended in the Regional Water Facilities Master Plan and as part of the Emergency Storage Project (ESP). These projects are described below. None of the projects are located close to MTRP and none would have a cumulative impact to MTRP or the Tierrasanta community. The cumulative impacts would be on a regional basis. These projects are presented to describe the other major capital improvement projects that the Water Authority is undertaking within San Diego County and to evaluate the potential for regional environmental effects.

Pipeline Relining. The Water Authority's Pipeline Relining program is a 30-year program that focuses on one community per year, with a priority on those areas where deterioration is most severe. This program ensures the reliability of water supply to the region. Relining is necessary because the pipelines showed signs of deterioration and joint damage during internal pipeline inspections. Relining the existing pipelines with steel is a quicker, more cost-effective alternative to removing and replacing the pipelines. Just as important, relining significantly reduces the impact of construction on nearby residents. The new steel liners serve as new pipelines, and are expected to last approximately 50 to 75 years. Most relining work is done inside the pipe. Relining work does not interrupt the delivery of water to nearby homes or businesses.

All relining activities, including excavation, temporary lay-down of lining materials and vehicle parking, take place on the Water Authority's existing easement. The Water Authority works hard to minimize the impacts of relining activities to nearby residents, including noise, dust and traffic. When relining is complete, the Water Authority's easement is restored to its original condition.

The first two pipeline relining projects have been completed. The Pipeline 3 and 4 Relining project was within the Rancho Penasquitos and Mira Mesa communities while the Pomerado Pipeline 4 Relining Project was within the Scripps Ranch community and across MCAS Miramar.

Pressure Control and Hydroelectric Facility. The Pressure Control and Hydroelectric Facility, located in the Mira Mesa area, will serve an important function in improving aqueduct operations and enhancing the flexibility of the Water Authority's extensive water delivery system. Several large diameter valves within the facility will control water pressure and the amount of water delivered to surface water storage reservoirs and water filtration plants located in eastern and southern regions of the county. A hydroelectric turbine will generate supplemental electricity.

Located in the Mira Mesa area west of I-15, the partially buried concrete and masonry structure will be 40 feet wide and 105 feet long and will stand approximately 18 feet above ground. The facility will connect to existing pipelines with 3,000-feet of 96- and 108-inch-diameter pipe. Construction on the facility began in August 2004.

Twin Oaks Valley Water Treatment Plant. The Water Authority is currently constructing a 100-mgd water treatment plant in Twin Oaks Valley, north of San Marcos. The new water treatment plant, which is the first to be constructed by the Water Authority, will help alleviate the growing need for additional treated water capacity that has strained the Water Authority's ability to meet demands over the last three summers. The water treatment plant is part of the Water Authority's $3.2 billion Capital Improvement Program (CIP) to reduce over reliance on a single supplier and improve water reliability by diversifying the region's water supply portfolio. Construction of the treatment plant will begin in early 2006 with completion scheduled for spring 2008.

Emergency and Carryover Storage Projects. The San Vicente Dam raise is part of the Emergency Storage Project, a system of reservoirs, interconnected pipelines and pumping stations designed to make water available to the San Diego region in the event of an interruption in imported water deliveries.

The San Vicente Dam raise would increase the reservoir's water storage for San Diego County. As originally planned for the Emergency Storage Project, the dam would be raised 54 feet to increase water capacity by 52,000 acre-feet over the present capacity of 90,000 acre-feet.

A recent study launched by the Water Authority as part of its Regional Water Facilities Master Plan showed a need of an additional 100,000 acre-feet of storage capacity to help meet the region's water needs through 2030. The plan identified San Vicente Dam as a possible location for this additional water storage. Therefore, the dam may be raised further to 123 feet, or about 69 feet beyond what was planned for the Emergency Storage Project. Other sites have been identified in previous studies, and further engineering and environmental studies are needed before a site selection for the additional water storage can be made. Both studies are currently under way and are expected to be completed in 2007. Construction is anticipated to commence in 2008.

Emergency Storage Project/San Vicente Pipeline. The San Vicente Pipeline and the Emergency Storage Project are part of the Water Authority's CIP to enhance and increase the operational flexibility of its water delivery system. The San Vicente Pipeline, which is currently under construction, will be a large-diameter pipeline connecting the San Vicente Reservoir in Lakeside to the Water Authority's Second Aqueduct west of Interstate 15. This 11-mile-long pipeline is a key component of the Water Authority's Emergency Storage Project and an important investment in the future reliability of San Diego County's water supply. The pipeline will provide access to water set aside in the reservoir for emergencies, such as a drought or major earthquake, that could cut off the county's supply of imported water. Imported water meets up to 90 percent of San Diego County's water needs.

The pipeline will be built in a tunnel rather than a trench. Tunneling will significantly reduce construction impacts to the environment and surrounding communities. The pipeline and tunnel are currently under construction and are expected to be completed in late 2008.

Moreno-Lakeside Pipeline. The Moreno-Lakeside Pipeline (MLP) Project is an important part of the San Diego County Water Authority's Capital Improvement Program to enhance the flexibility, reliability and capacity of its water delivery system. The Water Authority is installing a 4.7-mile pipeline that will connect an existing pipeline to the Helix Water District's R.M. Levy Water Treatment Plant. The project also includes a flow control facility.

The Moreno-Lakeside Pipeline Project will ensure the Water Authority can supply up to 80 mgd of untreated water to the R.M. Levy Water Treatment Plant that is owned and operated by the Helix Water District. Out of the 80 mgd, 40 mgd will be used for the Helix Water District, 8 mgd by Otay Water District, 18 mgd by Padre Dam Municipal Water District and 14 mgd reserved for future use.

A 46- by 50-foot flow control facility will be located on a 0.5-acre site along El Monte Road, east of the Lake Jennings Park Road intersection. The facility will measure the flow of water to the Helix, Otay and Padre Dam Municipal Water Districts.

Lake Hodges Projects. The Lake Hodges Pipeline and Pump Station are an important part of the Water Authority's Emergency Storage Project and the overall CIP. The 1.25 miles of belowground pipeline will connect Lake Hodges with the Olivenhain Reservoir. The Lake Hodges Pump Station will be built to move the water to and from the lake. Pump turbines will provide the additional benefit of capturing energy created when water flows from the Olivenhain Reservoir into Lake Hodges. This very important project will increase the amount of water available within the county for use during emergencies.

Encina Desalination Facility. The Water Authority has proposed the construction of a 50-mgd seawater desalination plant along with pipelines, pumps, and other appurtenant and ancillary water facilities to produce and distribute potable water through the Water Authority's aqueduct system. The project is a Water Authority regional water supply project that may become a significant water supply source. The desalination plant portion of the Project would be constructed on property currently owned by Cabrillo Power I LLC (Cabrillo), co-located on site at the existing Encina Power Station, immediately south of the Aqua Hedionda Lagoon.

MCAS Miramar Projects

Military Housing Project. The federal government (Department of Defense) has approved the construction of up to 1,600 multi-family residential units on 264 acres located in the southeastern portion of MCAS Miramar north of SR-52 and the community of Tierrasanta. The project will also provide land for two elementary schools and a community center or park within the development area. Access to the site will require an approximately 2.5-mile extension of Santo Road, involving approximately 34 acres. Existing internal roads to eastern MCAS Miramar, also known as East Miramar, will provide secondary emergency access. The extension of Santo Road will provide direct access to SR-52 approximately 1 mile east of I-15.

The Final Environmental Impact Statement (EIS) was prepared in June 2004 and a Record of Decision was published in the Federal Register on August 20, 2004. As discussed in the EIS, the project would result in potentially significant impacts for the following environmental topics: utilities (sewer), public services (police and schools), visual resources, cultural resources, biological resources, traffic/circulation, and public safety. Mitigation measures were proposed that were found to reduce all project impacts to below a level of significance. Potentially significant cumulative impacts were found for public services (police and schools), visual resources, traffic/circulation, air quality, and noise. These potential cumulative impacts were also found to be mitigable to below a level of significance.

Caltrans Projects

SR-52 Managed Lanes Project. Caltrans has proposed the construction of managed lanes between I-805 in Kearney Mesa and SR-125 in Santee. The project would likely require the replacement of the Santo Road Overpass, along with other interchange projects. Preliminary project design calls for a reversible lane that would conflict with the existing bridge abutments. The project is in the early development phase at Caltrans. Construction of the Managed Lanes project is contingent on the availability of funding. SANDAG has identified this project as a TransNet Early Action project, but has not yet identified the funding mechanism. The earliest construction could start would be 2010, although a number of smaller freeway operational improvements would start earlier. All improvements would occur within Caltrans right-of-way.

It is possible that Caltrans would proceed with improvements to the Santo Road Overpass/Interchange as a separate project. In that case, construction at the interchange could start as early as 2008. Caltrans anticipates minor periods of lane closure during construction for lane shifts, but expects traffic flow to be maintained during construction with minimal disruption.

4.3 CUMULATIVE IMPACT ANALYSIS

4.3.1 Land Use

The PEIR for the Regional Water Facilities Master Plan concluded that cumulatively significant impacts could result from the Master Plan projects and other development and utility and infrastructure projects throughout the region if these projects are not in conformance with the adopted land use plans, zoning requirements, HCPs/MSCPs, and environmentally sensitive land regulations. It also concluded that, in most cases, the projects would be compatible with local plans, and designed and sited to minimize these conflicts and/or inconsistencies, and that implementation of mitigation measures identified for specific project actions on a case-by-case basis could reduce potentially significant cumulative impacts to below a level of significance.

None of the cumulative projects identified would have an adverse impact on land use within MTRP. The Castlerock project would provide a connection between MTRP and Gooden Ranch to the north, which is considered to be a positive impact. Each project within the City of San Diego that proposes a change in the applicable community plan requires individual review and approval. The federal government has land use authority on MCAS Miramar and the Water Authority has jurisdiction over its own facilities, which are typically already designated in local land use plans for utility use. Cumulative land use impacts would not be significant.

4.3.2 Aesthetics/Visual Quality

The PEIR for the Regional Water Facilities Master Plan concluded that development of the recommended water delivery, storage, and treatment facilities would result in cumulative adverse impacts on aesthetic resources in the region. Adverse aesthetic impacts would result from the construction of visible aboveground and partially buried facilities such as pump stations, treatment plants, FRSs, and various vents, valve enclosures, and other ancillary facilities. It was also concluded that, in general, the facilities would occur in heavily modified urban and industrial settings or adjacent to existing facilities. The cumulative aesthetic/visual quality impacts of projects located in rural or open space areas were concluded to be of the greatest concern as they have the potential to create substantial visual contrasts with their settings. Implementation of program-level mitigation measures was anticipated to reduce cumulative aesthetic/visual impacts to below a level of significance. Those program-level mitigation measures, such as placing facilities belowground; using architectural designs, textures, and colors that complement the surrounding natural areas; and planting landscaping, are applied to all Water Authority projects located within visually sensitive areas.

None of the cumulative projects identified would contribute to aesthetic/visual quality impacts within MTRP. The aesthetic/visual quality impacts of the proposed project within MTRP during construction are identified as adverse but not significant because the impacts would be short term. Long-term visual/aesthetic impacts in MTRP would not be significant because planned revegetation with native seed mix would restore the natural landscape, and the FRS II control building would be constructed with an architectural design and building materials that would complement the surrounding parkland. In addition, the removal or replacement of many of the

existing Elliott Vents with smaller structures would be a visual benefit. Cumulative aesthetics/visual quality impacts would not be significant.

4.3.3 Traffic/Circulation

The PEIR for the Regional Water Facilities Master Plan concluded that construction activities associated with the proposed water infrastructure facilities would contribute to an overall increase in traffic volumes on the existing and planned roadway network on a localized and temporary basis only as most Water Authority facilities are unmanned and operated from a central office in Escondido. Following construction, the projects would not contribute to cumulative regional traffic and transportation impacts associated with other projects in the region.

The proposed project would not result in significant short-term traffic impacts within the Tierrasanta community. Construction traffic would last up to 2 years, but the peak level of construction traffic would last approximately 6 months during the initial excavation of the FRS II and construction of the North and South Portals for the tunnel. Peak traffic from project construction would not significantly degrade existing levels of service for roadways in the project area. The cumulative projects considered all have short-term traffic impacts associated with construction and long-term traffic impacts associated with operation.

The Chinese Community Church will most likely be completed prior to the commencement of the construction of the proposed project. Church traffic is likely to be concentrated in the evenings and on weekends, which would avoid the peak hours of project construction traffic on Via Valarta. Traffic from the Sycamore Landfill and Castlerock projects is not anticipated on project routes within Tierrasanta. This traffic would be concentrated on SR-52. The majority of the traffic generated by the Tierrasanta Townhomes project would use Tierrasanta Boulevard for access into and out of the Tierrasanta community. The project with the greatest potential to result in a cumulative traffic impact would by the military housing project north of SR-52 on MCAS Miramar. While much of this traffic would head east or west on SR-52, traffic would also head south on Santo Road. Brushing and grading for this project may commence as early as fall 2005. However, most of the construction of the military housing project is expected to be implemented in five phases beginning December 2007, by which time most of the proposed FRS II project construction would be completed. Therefore, cumulative project traffic from the Military Housing project was not considered in the cumulative project traffic analysis.

The Caltrans SR-52 Managed Lanes project would commence in 2010 at the earliest, which is after the anticipated completion of the proposed project. The Santo Road Interchange project, if constructed separately from the SR-52 Managed Lanes project, could start as early as 2008. This construction schedule could coincide with the construction of the proposed project, which could result in traffic generated by the proposed project driving through the Caltrans construction zone and adding to the Caltrans construction trips. Caltrans would prepare and implement a traffic control plan for the Santo Road Interchange improvements, which would maintain the flow of traffic through the construction site. Caltrans construction traffic would be anticipated to use SR-52, not Santo Road, to access the interchange project site.

The cumulative nature of traffic impacts has been taken into consideration in the evaluation of the traffic impacts associated with the proposed project. No additional traffic impacts have been identified. Furthermore, all traffic impacts associated with the proposed project would not be significant. Cumulative traffic impacts would not be significant.

4.3.4 Air Quality

The PEIR for the Regional Water Facilities Master Plan concluded that construction of the proposed facilities could result in temporary significant construction-period emissions of criteria air contaminants. Potential long-term air quality impacts were identified for the operation of the facilities in the form of objectionable odors, emissions from occasional use of emergency back-up generators, and fugitive dust from infrequent vehicle traffic on dirt roads. SDAPCD approved mitigation measures were identified in the PEIR to reduce these long-term impacts to below a level of significance for all emissions.

In analyzing cumulative impacts from a proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is listed as "non-attainment" for the CAAQS or NAAQS. A project that has a significant impact on air quality with regard to emissions of PM_{10}, NO_x and/or ROC/ROG/VOCs, as determined by the screening criteria outlined in the Air Quality Technical Report (Appendix C), would also have a significant cumulative effect on air quality. In the event direct impacts from a project are not significant, a project may still have a cumulatively considerable impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects are in excess of screening levels identified above, and the project's contribution accounts for a significant proportion of the cumulative total emissions.

All construction and operation activities within the region are required to comply with Federal and State air quality policies. SDAPCD has permit authority over stationary sources, acts as the primary reviewing agency for environmental documents addressing potential air quality impacts, and develops regulations that must be consistent with, or more stringent than, Federal and State air quality policies.

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the SDAPCD, measures the concentrations of pollutants from existing sources. Past and present project impacts are, therefore, included in the background ambient air quality data.

Construction of the proposed project could take place at the same time as other construction projects in the vicinity; however, construction impacts are short-term and tend to be localized. Because emissions of NOx and PM_{10} would be above the significance thresholds during construction, project construction could have a cumulatively significant, if temporary, impact on the ambient air quality. This significant cumulative impact would not be mitigable to below a level of significance during project construction. A Statement of Overriding Considerations would be necessary for project approval. However, the proposed project's contribution to cumulative air quality impacts would cease upon completion of construction.

4.3.5 Noise and Vibration

The PEIR for the Regional Water Facilities Master Plan concluded that noise impacts associated with the proposed water infrastructure projects would occur primarily during construction and would be short-term in nature. From a long-term operational standpoint, noise from equipment or machinery operation at Water Authority facilities is mitigated to achieve the necessary noise limits established in the local regulations for noise sensitive locations. Therefore, long-term cumulative noise impacts associated with Water Authority facilities would be mitigated to below a level of significance.

Noise impacts are cumulative if the sources of noise being considered are audible to a sensitive receptor at the same time and combine to exceed the City of San Diego's Noise Ordinance or otherwise cause a substantial increase in the ambient noise level for a sensitive receptor.

None of the cumulative projects considered would result in noise impacts within or adjacent to the project area, thus avoiding the potential for a sensitive receptor to be exposed to noise from two construction sites at once. The Tierrasanta Townhomes project at the end of Tierrasanta Boulevard would be adjacent to MTRP, but would be approximately 1 mile southwest of the proposed stabilized river crossing through Mission Gorge. Traffic generated by the cumulative projects would combine on area roadways and would therefore contribute to increased noise levels; however, this increase would not be expected to be perceptible due to the small percentage increase in regional traffic volumes. The noise impacts associated with the proposed project would be limited to the 2-year construction period. Cumulative noise impacts would not be significant.

4.3.6 Recreation

The PEIR for the Regional Water Facilities Master Plan concluded that the Water Authority's projects and other reasonably foreseeable projects could have cumulative significant adverse impacts on recreational resources in the region. With the implementation of appropriate mitigation measures, however, cumulative impacts to recreational resources would not be significant. Program-level mitigation measures included the relocation of displaced recreational facilities or restoration of disturbed recreational facilities.

None of the cumulative projects considered would have an adverse impact on recreation within MTRP. The residential development projects would result in an increased demand for parkland, primarily in the form of playgrounds and sports parks. These impacts are evaluated and mitigated by the appropriate reviewing agency. The Tierrasanta Townhomes, Military Housing, and Castlerock projects would result in increased use of MTRP. The Castlerock project would provide open space and a trails connection between MTRP and Gooden Ranch. The proposed project would result in adverse but not significant short-term impacts to recreation by temporarily reducing access to the western side of the park and closing certain trails. The other projects would either not impact recreation or would cause a long-term increased demand for recreational opportunities. Although the proposed project would make part of MTRP unavailable during the 2 years of construction, the proposed project includes the restoration of all temporary impacts within MTRP. In addition, MTRP is a very large open space park with

multiple access points and trails, most of which would be available to users, including new users generated by new development. Cumulative impacts to recreation would not be significant.

4.3.7 Water Resources

The PEIR for the Regional Water Facilities Master Plan concluded that the Water Authority's water infrastructure projects would result in significant cumulative impacts to water quality from increased runoff when combined with the effects of other development projects within the same watershed. All construction projects can cause increased erosion from exposed soil areas that may contribute to sediment-laden runoff into local drainage courses. Erosion can be destructive to the immediate area and sedimentation can clog waterways and downstream wetland and lagoon areas. It is assumed that new construction associated with other projects in the watershed would meet Federal, State, and local permit requirements in a similar manner as required for the Water Authority's projects. These requirements include mitigation measures similar to those identified in Section 3.7 (Water Resources). As such, the significant cumulative impacts would be mitigable to below a level of significance.

Surface water from the project site flows into the San Diego River, either directly or thorough tributaries within MTRP such as Shepherd Canyon. The Sycamore Canyon Landfill, Castlerock, Tierrasanta Townhomes, Chinese Community Church, and the Military Housing projects are all located within the watershed of the San Diego River. Therefore, the cumulative runoff from these projects could have an adverse impact on water quality within the river. As noted above, it is assumed that new construction associated with these projects would meet Federal, State, and local permit requirements for construction and operation. Cumulative water resources impacts would not be significant.

4.3.8 Biological Resources

The PEIR for the Regional Water Facilities Master Plan concluded that construction of the proposed water infrastructure projects could result in cumulative impacts to biological resources. Potential impacts included loss of wildlife and plant habitat, disturbance to special status species, and impacts to waters of the U.S. (including wetlands). Because impacts to sensitive biological resources are regulated by the USFWS, CDFG, Corps, and other agencies, potential impacts resulting from project development require consultation with responsible agencies and implementation of mitigation measures. The evaluation of project impacts takes into account the cumulative nature of impacts to biological resources through loss of habitat, severance of wildlife corridors, and disturbance by human activities. Implementation of mitigation measures for impacts to biological resources is required for each project as a condition of approval. Therefore, significant cumulative impacts to biological resources would be mitigated to below a level of significance.

It is noted that the preservation of the region's biological resources is being addressed through the implementation of regional habitat plans such as the City of San Diego's MSCP. These plans focus efforts on the region's predominant habitats (Diegan coastal sage scrub, riparian woodland, southern mixed chaparral, non-native grassland, and southern oak woodland), providing for preservation in large, contiguous areas of habitat in perpetuity. Sensitive resource areas are

managed, restored, and/or revegetated for long-term persistence through implementation of the MSCP. While the Water Authority is preparing its own HCP and is not a participant in the City of San Diego's MSCP, impacts to biological resources and mitigation measures for those impacts have been drafted in conformance with the MSCP Guidelines. All City of San Diego projects must be in conformance with the MSCP. The military housing project on MCAS Miramar must conform to the Integrated Natural Resources Management Plan. The conformance of the cumulative projects considered to the applicable HCPs will assure the conservation of open space and restoration or enhancement of disturbed habitat. Cumulative biological impacts would not be significant.

4.3.9 Cultural Resources

The PEIR for the Regional Water Facilities Master Plan concluded that any loss of cultural resources associated with the Water Authority's water infrastructure projects and other reasonably foreseeable future projects would contribute to cumulatively significant impacts to cultural resources. It also concluded that these cumulatively significant impacts could be reduced to below a level of significance or avoided by implementing program-level mitigation measures identified in the PEIR along with mitigation measures outlined during project-specific analysis.

The proposed project would avoid or otherwise mitigate impacts to any significant cultural resources. Therefore, there would be no contribution to cumulatively significant regional impacts to cultural resources. Cumulative cultural resources impacts would not be significant.

4.3.10 Geology and Soils

The entire San Diego region is susceptible to impacts from seismic activity. Although seismic activity can cause damage to substandard construction, new project designs can significantly reduce potential damage. Earthquake-resistant designs employed on new structures minimize the impact to public safety from seismic events to a less than significant level. The proposed project and the cumulative projects may be constructed through geologic formations susceptible to slope failure and soil compaction as well as on sites with potential shrink and swell soils, or that feature soils with high erosion potential. Project-specific geotechnical investigations have been prepared for the proposed project and will be required of the other projects as part of the design process to address these geologic issues and impacts. All projects are required to utilize standard engineering practices and meet design standards for the geologic setting in which they are located. This level of project review and adherence to engineering and design standards would reduce the potential for cumulative geological impacts. Cumulative geology/soils impacts would not be significant.

4.3.11 Paleontological Resources

The proposed project and the cumulative projects considered could result in disturbance of geologic formations with moderate to high paleontological resource potential. Paleontological surveys are required to determine the resource value for impacted areas if the underlying formations are known to contain paleontological resources. Monitoring by a qualified paleontologist is a site-specific requirement for all Water Authority and City of San Diego

projects in areas where any grading would occur in formations of moderate to high resource potential. This requirement would reduce the potential for cumulative paleontological impacts. Cumulative paleontological resources impacts would not be significant.

4.3.12 Public Safety and Hazardous Materials

The PEIR for the Regional Water Facilities Master Plan concluded that construction, operation, and maintenance of Water Authority water infrastructure projects and other reasonably foreseeable projects in the region could increase the potential for wildfires. It was also concluded that this potential for project-related fire hazards would be mitigable to below a level of significance through adoption of appropriate mitigation measures (e.g., development and implementation of Fire Prevention Programs or Emergency Response Plans (ERPs) for each project, as necessary, in consultation with local fire protection services). The contractor for the proposed project would prepare an ERP for the proposed project, and fire safety practices would be required at the project site. Cumulative projects such as the Military Housing project, Sycamore Landfill, and Castlerock would expand development within areas surrounded by or adjacent to large areas of natural vegetation, thus increasing the potential cumulative wildfire hazard. However, each project would be required to prepare an ERP. This action would prevent cumulative contributions to public safety impacts. Cumulative public safety impacts would not be significant.

Construction and operation of the Water Authority's projects and the other cumulative projects could result in the exposure of workers or the public to hazardous materials due to disturbance of contaminated sites, or the unintentional release or spill of hazardous materials. These cumulative impacts would be mitigable to below a level of significance through the implementation of mitigation measures including the thorough investigation of potential project sites prior to construction; clean up of known contaminated sites; use of proper personal protective equipment if contamination were encountered; proper use, handling, and storage of hazardous materials to prevent spills; and adequate ERPs that would be implemented in the event of a release or spill.

MTRP is known to contain unexploded ordnance, although the Corps has conducted sweeps and has removed many items. While the potential for discovery of unexploded ordnance has been reduced, it has not been eliminated. No other hazardous materials are known in the project area.

Each project would conform with local, state, and federal requirements for brush management, fire setbacks, emergency access, hazardous materials handling and storage, and other regulations designed to protect public health and safety. Cumulative public safety and hazardous materials impacts would not be significant.

4.3.13 Utilities and Public Services

The proposed project is a water utility infrastructure project that would require little in the way of other utilities or public services. Electricity and communications lines would be needed at the control building for the FRS II to run lights, valves, security systems, and other equipment. Other anticipated cumulative projects would be required to provide for adequate utility service before their approval, and it is not expected that these projects would require more utility service

than could be provided through usual procedures. In addition, utility providers would plan ahead and forecast future utility demands in the region as a whole and expand their capacity to meet future needs and provide adequate levels of service. Cumulative impacts to utilities and public services would not be significant.

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SECTION 5.0
GROWTH INDUCING EFFECTS

State CEQA Guidelines Section 15126.2(d) requires discussion of the potential growth-inducing effects of a project in an EIR. Based on the State CEQA Guidelines, growth is not assumed to be positive or detrimental; adverse impacts are assessed if the growth inducement associated with the proposed project would result in significant adverse environmental impacts.

The proposed project is one of a series of projects recommended by the Water Authority's Regional Water Facilities Master Plan for construction over a 27-year period. The Water Authority must respond to the needs of its member agencies. Therefore, the Regional Water Facilities Master Plan is an inherently flexible plan.

The Water Authority has historically relied on the regional population projections of other governmental agencies to help it determine regional water supply requirements. Because the Water Authority does not have any land use approval authority, it can neither directly cause nor prevent growth. How and where development occurs in the Water Authority's service area is dictated by the local land use agencies through their approval authority.

The PEIR for the Regional Water Facilities Master Plan concluded that the construction of projects recommended by the Regional Water Facilities Master Plan will not result in direct growth inducing effects but could help remove an obstacle to future growth through the provision of additional water supplies. It also noted that, because the Water Authority delivers water on a regional basis in response to the demands of Member Agencies, it would be speculative to try to determine if and where future growth will occur. Therefore, it is concluded that approval of the proposed project will not result in future growth.

The Water Authority responds to the water demands of its Member Agencies. While lack of water is one of a number of potential barriers to the growth of an area, it is not a substantial barrier to growth within the Water Authority's service area because Member Agencies have always met the needs of the customers in their service areas and have always expected the Water Authority, a the regions water wholesaler, to meet their own needs. Member Agencies have submitted their anticipated future anticipated water demands to the Water Authority and the Water Authority has responded through the construction of capital improvement projects that will increase water delivery capacity. The proposed project will not extend water service to any new areas and will not remove an existing barrier to growth in any area of the County. Any future development projects within the service area would be subject to review and approval by various jurisdictions with land use authority. Therefore, no direct relationship between the proposed project and future growth within the service area has been established. The proposed project would not result in growth inducing impacts.

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SECTION 6.0
OTHER MANDATORY CONSIDERATIONS

6.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines Section 15128 states that an EIR "shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR."

Effects related to agriculture resources, mineral resources, and population and housing were not analyzed in detail in this EIR as it was obvious during the initial environmental review process that impacts to these resource areas as a result of the proposed project would be less than significant. A discussion of these issues and the rationale for this determination is presented in Section 6.1.1.

Other issues were determined to be potentially significant at the initial environmental review process, but through subsequent analysis were determined to be less than significant through project design. Land use, aesthetics/visual quality, traffic/circulation, recreation, water resources, geology/soils, and utilities and public services, which are discussed in detail in Section 3.0 of this EIR, were found not to be significant for the reasons discussed in Section 6.1.2.

6.1.1 Environmental Effects Eliminated from Further Review

Agricultural Resources

Would the proposed project:

- *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*
- *Conflict with existing zoning for agricultural use, or a Williamson Act contact?*
- *Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?*

According to the San Diego County Important Farmland Map, much of MTRP, and all of the proposed project area, is designated as Grazing Land. There are no agricultural soils or agricultural operations within the project vicinity. Grazing Land is not considered to be a significant agricultural resource by the California Department of Conservation or the Water Authority. Furthermore, the subject land is within MTRP, which precludes grazing or the possibility of any other type of farming. The proposed project would not conflict with existing zoning for agricultural use and would not interfere with farming of adjacent parcels. MTRP is surrounded by urban development and Marine Corps Air Station Miramar. The Water Authority has determined that impacts to agricultural resources would not be significant, and that no further study of this issue is warranted.

Mineral Resources

Would the proposed project:

- *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
- *Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?*

The State Mining and Geology Board has defined the following Mineral Resource Zones (MRZ):

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that there is little likelihood for their presence.
- MRZ-2: Areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence.
- MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4: Areas where available information is inadequate for assignment to any other MRZ zone.

Western San Diego County was classified by Mineral Resource Zones by the California Division of Mines and Geology in 1982. Plate 21 of the report entitled *Mineral Land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region* (CDMG 1982) indicates that the portion of MTRP studied in this EIR has been classified as MRZ-2 and 3. The San Diego River east of Mission Dam, and west of the Second Aqueduct is in MRZ-2 zone, indicating the presence or high likelihood of significant mineral deposits. The area around Fortuna Mountain, which is located between the Mission Dam and the Second Aqueduct, is classified as MRZ-3. Although these deposits may contain significant mineral resources, the proposed project would not preclude access since they are located within a utility easement and an open space preserve/regional park setting and mining would not be compatible with dedicated parkland. Further, the crushed rock, sand, and mud deposits that are excavated during project construction would be offered to local mining operators and may be put into the local development economy. For these reasons, the Water Authority has determined that impacts to mineral resources would not be significant, and that no further study of this issue is warranted.

Population and Housing

Would the proposed project:

- *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*
- *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

- *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

The proposed project would provide for increased flow regulatory capabilities within the Water Authority's Second San Diego Aqueduct, which would prevent future spills through existing vent structures in MTRP, and would allow for increased hydraulic service and increased capacity to the Alvarado, Perdue, and Otay Water Treatment Plants and to Lake Murray, Sweetwater Reservoir, and Lower Otay Lake. The proposed project would be constructed entirely within MTRP and no houses or persons would be displaced. For these reasons, the Water Authority has determined that impacts to population and housing would not be significant, and that no further study of this issue is warranted.

6.1.2 Effects Found Not to Be Significant During Environmental Analysis

Land Use

Potential impacts to land use are evaluated in Section 3.1. The proposed project would not conflict with any applicable land use plans, policies or regulations. The proposed project would conform to the guidelines of the MSCP, so also would not conflict with the applicable habitat conservation plan for the project area. Land use impacts would not be significant.

Aesthetics/Visual Quality

Potential impacts to aesthetics/visual quality are evaluated in Section 3.2. No significant visual impacts were identified for any of the 16 key observation points of the project. The aesthetic/visual quality impacts of the proposed project within MTRP during construction are identified as adverse but not significant because the impacts would be short term. Long-term visual/aesthetic impacts in MTRP would not be significant because planned revegetation with native seed mix would restore the natural landscape, and the FRS II control building would be constructed with an architectural design and building materials that would complement the surrounding parkland. In addition, the removal or replacement of many of the existing Elliott Vents with smaller structures would be a visual benefit. The proposed project would not introduce a new source of substantial light that would affect nighttime views in the area or glare that would affect daytime views in the project area. Aesthetics/visual quality impacts would not be significant.

Traffic/Circulation

Potential impacts to traffic/circulation are evaluated in Section 3.3. For the peak time of construction traffic, estimated to occur during the first 6 months of the project construction period, all road segments and intersections in the study area are calculated to operate at acceptable levels with the addition of construction traffic. Long-term traffic generation from project operation would be minimal. Traffic impacts would not be significant.

Recreation

Potential impacts to recreation are evaluated in Section 3.6. The project would reduce the use of the extreme western side of MTRP during construction where certain access points and trails would be closed to protect public safety. However, because this large regional park offers multiple access points and trails, the recreation impacts from temporary closure of the access points and trails on the extreme western side of MTRP are identified as adverse but not significant.

Water Resources

Potential impacts to water resources are evaluated in Section 3.7. Compliance with the General Construction Stormwater Permit and provisions of the SWPPP would assure the project would not result in significant downstream surface water or groundwater quality impacts. Adherence to the Waste Discharge Permit would assure the project would not result in significant waste discharge impacts due to possible dewatering activities.

The temporary disruption of natural drainage patterns in the construction areas would not be long-term and would be limited; therefore, this impact would not be significant. The only project component anticipated to interrupt flowing water is the stabilized crossing of the San Diego River, which would be constructed prior to the higher winter flows and would take no more than 2 months to complete. After FRS II and pipeline tunnel construction is completed, the impermeable surface expression of the constructed facilities would be limited to the access/control building and small concrete pads covering valve vaults. These small areas would not generate additional runoff at levels that would affect the capacity of downstream drainages, or increase downstream flooding. Therefore, long-term alteration of drainage patterns within MTRP would not be significant.

The overflow pipeline from the FRS II is not considered to be a significant impact due to the remote chance that large quantities of water would be discharged and the lack of development, including roads or trails that could be affected downstream. Compliance with provisions of the SWPPP and the General Construction Stormwater Permit would assure that potential construction impacts to aquatic biological resources would not be significant. The stabilized river crossing would be constructed at grade and would be engineered to withstand the flows and velocities anticipated during a 100-year flood. Therefore, potential impacts from placing this structure within the 100-year floodplain would not be significant.

Water resources impacts would not be significant.

Geology/Soils

While southern California is a seismically-active area, the proposed project would be located in an area where the risks of damage due to fault rupture, strong seismic ground shaking, liquefaction, and landslide are low. The project structures would be designed to resist damage from ground-shaking induced by the design earthquake. Also, the FRS II and pipeline tunnel would be unmanned.

Although the project would involve extensive grading of soils with severe erodibility and high runoff potential, substantial soil erosion or loss of topsoil would be avoided by implementation of the standard specifications and project features described in Section 2.6, including erosion control BMPs developed for the SWPPP. The Pomerado Conglomerate, which is the primary geologic unit in which the FRS II would be constructed, is stable. Pomerado Conglomerate also is not considered to be an expansive soil. In addition, the FRS II site and the pipeline tunnel would be over excavated and backfilled with appropriate materials.

Geology/soils impacts would not be significant.

Utilities and Public Services

Potential impacts to utilities and public services are evaluated in Section 3.13. Public utilities, including aboveground electrical and communication lines, Water Authority pipelines, the storm drain under the access road at the North Portal, and the Mission Gorge Trunk Sewer would not be adversely affected by project construction due to design features and utility protection measures that would be incorporated into the project plans and specifications. Also, the outage necessary to allow connection of the new pipeline to the existing Pipeline 3 and Pipeline 4 at the north and south ends of the project would be short-term, and would be scheduled by the Water Authority during the winter when water demands are low. Construction impacts on utilities would not be significant.

In regards to long-term operation, both SBC/Pac Bell and SDG&E have confirmed that there is sufficient capacity in their system to serve the proposed FRS II site. Therefore, there is no need for additional capacity of communications or electrical lines, and overall level of service would not decrease due to the project. The project would have operational benefits to the capacity and reliability of the water delivery system. The proposed river crossing would not affect river hydraulics, so the Mission Gorge Trunk Sewer would not be affected by the permanent presence of the stabilized at-grade crossing to the east. Operational impacts on utilities would not be significant.

In regards to construction impacts on public services, although the project would bring more people and heavy equipment into the park to accomplish the project construction, the increased activity is not anticipated to substantially increase the need for police services such that capacity or response times in the surrounding community would be reduced. Measures to reduce the risk of fire due to project construction are discussed in Section 3.12 (Public Safety and Hazardous Materials). These measures are anticipated to reduce the risk of fire to below a level of significance. Therefore, the project is not expected to increase the need for fire protection services during construction. Emergency access routes would be maintained to all project components during construction, and no public roads would be closed due to project construction; therefore, project construction would not reduce emergency medical response. The construction zones for the project are well within the park. Construction would not interfere with school activities. Construction impacts on public services, including police, fire, emergency response, and schools would not be significant.

In regards to long-term operation, the project would not interrupt service, create the need for additional capacity, or decrease the level of service of public services in the project area, including fire stations, police services, or schools. Operational impacts on public services would not be significant.

6.1.3 Non-applicable Significance Thresholds

Several thresholds from CEQA Guidelines Appendix G were found to not be applicable to the proposed project. As a matter of clarification, these thresholds are addressed briefly below.

Land Use

Would the proposed project physically divide an established community?

The proposed project is linear in nature, with construction activity proposed within or adjacent to approximately 2 miles of the Water Authority's right-of-way through MTRP. Nearly all of the project components would be placed belowground. The roads and trails leading to and within the right-of-way would be temporarily closed during construction, but would remain part of the recreational trails network following construction. Tierrasanta is the closest established community to the proposed project site. No physical impacts would occur within the Tierrasanta community. Therefore, the proposed project does not have the potential to physically divide an established community.

Traffic/Circulation

Would the proposed project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The project would not involve or affect airport facilities.

Would the proposed project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The proposed project impact area is confined to the MTRP, a recreational area not connected to alternative transportation routes. Project related construction traffic would not require traffic control on public streets that would interfere with bus, bicycle, or other alternative transportation modes.

Noise

For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels?

For a project within the vicinity of a private airstrip, would the proposed project expose people residing or working in the project area to excessive noise levels?

The proposed project area is not within an airport land use plan, within 2 miles of a public airport, or in the vicinity of a private airstrip.

Recreation

Would the proposed project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

The proposed project would involve construction of infrastructure within a regional recreational area, but would not involve construction of recreational facilities.

Water Resources

Would the proposed project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level, which would not support existing land uses or planned uses for which permits have been granted).

The proposed project would not involve the use of groundwater. Limited dewatering may be required during excavation of the FRS II and during tunneling, but the duration of groundwater pumping would be short-term, and no groundwater supply wells are in the vicinity of the proposed project.

Would the proposed project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project would not involve construction of housing.

Geology and Soils

Would the proposed project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The proposed project would not involve or impact septic tanks or alternative wastewater disposal systems.

Public Safety and Hazardous Materials

Would the proposed project result in a safety hazard for people residing or working within an area covered by an airport land use plan or within two miles of a public airport or public use airport?

MCAS Miramar is located north of SR-52, within 2 miles of the project site, although the runways are over 2 miles to the northwest. Montgomery Field is located approximately 3 miles to the west of the project site. The proposed project is outside the Accident Potential Zones (APZ) adopted by MCAS Miramar. The FRS II and pipeline tunnel would be unmanned facilities requiring only periodic inspection and maintenance. The project would not introduce persons into an area to work or reside where there would be a significant potential hazard from aircraft.

Would the proposed project result in a safety hazard for people residing or working within an area within the vicinity of a private airstrip?

The proposed project area is not in the vicinity of a private airstrip.

6.2 UNAVOIDABLE SIGNIFICANT EFFECTS

CEQA Guidelines Section 15126.2(b) requires an EIR to describe "any significant impacts, including those which can be mitigated but not reduced to a level of insignificance." In Section 3, the proposed project was analyzed to determine if it would cause significant impacts in each technical issue. Significant impacts were identified by measuring the project's performance against specific significance thresholds. If significant impacts were identified, mitigation measures were developed. In most cases, these measures would reduce significant impacts to below a level of significance with no residual impacts. However, for certain issues discussed below, significant and unmitigable impacts would still occur. In all cases, these unmitigable impacts would occur during the construction period, and would cease to occur when construction is completed. Issues that would have a residual impact after mitigation are air quality and recreation.

6.2.1 Air Quality

Potential project impacts to air quality are evaluated in Section 3.4 and cumulative impacts to air quality are evaluated in Section 4.3.4. Potential worst-case maximum daily emissions associated with the construction phase of the project would be above the significance criteria for NOx and PM_{10}. Based on the project's anticipated exceedence of air quality standards and a cumulative net increase in criteria pollutants for which the San Diego Air Basin is designated non-attainment, construction emissions would be significant for NO_x and PM_{10}. Emissions would be less than significant for CO, ROC/ROG, and SOx. Although the severity of impacts to air quality from the maximum daily NOx and PM_{10} emissions for construction of the proposed project would be reduced by implementation of the required mitigation measures, the impact of peak emissions would remain significant during the 2-year construction period and a Statement of Overriding Considerations would be required. The cumulative impact to air quality is also

significant and would require a Statement of Overriding Considerations. The project-level and cumulative impact to air quality would cease upon the completion of construction.

6.2.2 Noise

Potential noise impacts are evaluated in Section 3.5. Construction may generate substantial short-term increases in noise levels above ambient that may exceed 75 dBA. Also, significant noise impacts would be generated by night construction at the North Portal and Pipeline Interconnect Reconfiguration. Residual impacts would remain significant after implementation of the proposed mitigation measures. A Statement of Overriding Considerations would be necessary for project approval. The significant impacts to noise would cease upon the completion of construction.

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SECTION 7.0
ALTERNATIVES

7.1 INTRODUCTION

CEQA requires that EIRs contain an analysis of alternatives to the proposed project that would reduce or eliminate environmental impacts. Section 15126.6(a) of the CEQA Guidelines states that an EIR should describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. The selection of alternatives is governed by a "rule of reason" that requires an EIR to evaluate only those alternatives necessary to permit a reasoned choice (Section 15126.6(f)). The EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons for that determination (Section 15126.6(c)). Additionally, CEQA requires discussion of the No Project Alternative to give decision-makers the ability to compare impacts of approving the proposed project with those of not approving the proposed project (Section 15126.6(e)).

The proposed project is a component of the Regional Water Facilities Master Plan. Program-level alternatives to capital improvement projects that were selected by the Water Authority to meet projected future water demands by member agencies through 2030 are addressed in the Master Plan PEIR, which is incorporated by reference into this EIR. Only alternatives to the project-specific components of the proposed project are discussed in this project-level EIR. A wide range of potential project alternatives were evaluated in terms of ability to meet project objectives, ability to reduce identified significant environmental impacts associated with the proposed project, engineering feasibility, and cost of implementation. Because a primary project objective is to eliminate the existing hydraulic bottleneck in MTRP caused by the series of high ridgelines, evaluation of alternative sites for the project was not considered feasible. The primary environmental impacts associated with the proposed project are the visual impacts of the FRS II control building for park users and residential neighbors, construction traffic impacts of trucks hauling excavated soil and rock and importing concrete and other materials into MTRP through the Tierrasanta community, construction impacts of dust and NOx emissions on air quality, recreation impacts associated with road and trail closures during construction, and direct and indirect impacts to biological resources during construction. Therefore, the selection of alternatives for this project-specific EIR focused on ways to avoid or reduce these impacts.

7.2 ALTERNATIVES CONSIDERED BUT REJECTED

Based on conceptual engineering development of major project components and initial environmental evaluation, some alternatives or alternative components were dismissed as either not meeting the project objectives or as being infeasible due to engineering or economic limitations. Three alternative components that were considered but rejected are discussed below.

7.2.1 Alternative Location for FRS II

A location for the up to 18-mg flow regulatory structure was considered approximately 1,800 feet south of the proposed project site, in the canyon between Elliott Vent #3 and Elliott Vent #4. Selection of this alternative FRS II location would reduce potential visual impacts of the control building from viewpoints west of MTRP in Tierrasanta, particularly from homes along the north end of Corte Playa Catalina. Construction activity would be concentrated at a greater distance from the residential area, and topographical barriers would reduce potential noise and visual impacts. This site is owned by the City of San Diego and managed by the San Diego Department of Park and Recreation as part of MTRP. Similar impacts to biological resources, generally coastal sage scrub and chaparral would occur at this alternative location.

Elevations at the alternative location range from approximately 720 to 760 feet AMSL. The elevation of the FRS II must be set so that the range of operating water levels (hydraulic grade line) would be between 768 and 792 feet AMSL, with a normal operating hydraulic grade line of 780 feet AMSL. At this alternative location, achieving the necessary operating water elevations would require an aboveground structure approximately 296 feet by 392 feet, and about 30 feet high. Development of an aboveground structure would substantially reduce the amount of excavation, and therefore the number of truck trips entering and leaving MTRP at Clairemont Mesa Boulevard during the projected 4-month construction phase. However, the tunnel portion of the project would remain unchanged, so projected truck trips for construction of the tunnel portals and export of tunnel "muck" would still occur from the South Portal and North Portal for the approximately 2-year project construction duration.

In spite of the fact that this alternative would reduce some short-term traffic impacts, it was rejected because it would generate significant long-term visual impacts within MTRP from the 30-foot-high, aboveground storage tank. A structure of this size would be highly visible and impossible to effectively screen from viewers in the park and in the surrounding residential areas.

7.2.2 Alternative Ingress/Egress Points and Truck Routes During Project Construction

Three points of ingress/egress were determined to be feasible for construction of the proposed project: Portobelo Drive, Clairemont Mesa Boulevard, and Calle de Vida. Various routes to and from these ingress/egress points were evaluated, including one-way and loop scenarios. The alternative routes that were considered but rejected are described below.

Construction access to the FRS II and tunnel portal sites from Mission Gorge Road at Jackson Drive was eliminated from consideration because the grades are too steep for large construction vehicles to safely negotiate the existing dirt utility road that runs from the river north to the top of the ridge at Elliott Vents #5 and the proposed South Portal area. Grades north of the river are 14 to 15 percent (Jacobs Associates 2005).

Construction access for the similar FRS I project in 1994 was obtained from the Caltrans easement for SR-52, prior to its completion. This alternative avoids the use of residential streets. This access point is no longer available, however, due to topographical differences between the

completed SR-52 and the project area and safety issues associated with trucks entering and leaving SR-52 without the benefit of an improved highway interchange.

Access from Seda Drive provides the shortest and most direct route to the proposed FRS II site. Use of this route would avoid the closure of many roads and trails that would occur as part of the proposed project, including the access points at Clairemont Mesa Boulevard and Calle de Vida. However, use of Seda Drive for construction vehicles was eliminated from consideration due to the narrow private streets and steep grades within a condominium development and the associated concerns regarding noise, vibrations, and traffic safety. In response to the FRS I project, the Water Authority has agreed to only use the Seda Drive access point for emergency vehicles.

Access to the northern end of the project from the condominiums north of Portobelo Drive, along a City of San Diego utility easement between the condominiums and SR-52, was rejected due to the amount of grading required to access the slope bank (approximately 15 feet high) within the condominium complex, and the need for a temporary construction easement.

Access to MTRP at the north end of Corte Playa Catalina was rejected because private improvements would have to be removed and grading would have to be conducted to allow equipment to pass. In addition, this potential access point does not provide easy access to the FRS II site or either tunnel portal, and would require the negotiation of steep and winding residential streets by large trucks.

7.2.3 Spoil Disposal in MTRP at the BMX Site

Opportunities for using excavated material within the park, both to provide a benefit to the park and to reduce truck traffic through the Tierrasanta community during construction, have been explored with the MTRP Senior Park Ranger. A need for clean fill within the park has been identified and suitable quality material may be useful at several locations damaged by erosion, including the river berm near the KFMB radio towers and Cowles Mountain trails. These areas would be pursued in coordination with the park rangers.

Use of the abandoned quarry that is currently a BMX recreational site was also considered for spoil disposal. As noted above, disposal of spoil within the park would reduce truck trips in the surrounding community. However, using the BMX location for spoil disposal was rejected because it is a desirable location for BMX activities in MTRP, and considerable local and volunteer efforts were invested in creating this recreational facility. In addition, transporting spoil from the construction sites to the old quarry location would have resulted in additional impacts to biological resources and trails within MTRP. Finally, due to the steep grades between Elliott Vents #5 and the San Diego River, truck trips would have to be routed through Tierrasanta to I-15 and from I-15 up Friars Road and Mission Gorge Road to Jackson Drive, where a U-turn would be required. Thus, the advantage of an in-park disposal site at this location would be lost.

7.3 NO PROJECT ALTERNATIVE

For a development project on identifiable property, the No Project Alternative is defined by CEQA as "the circumstance under which the project does not proceed." Selection of the No Project Alternative would prevent the construction of the FRS II and tunnel pipeline project in MTRP, as proposed, the vent structures and blow-offs proposed for removal would remain in place, and the stabilized river crossing would not be constructed. Because no construction would occur under the No Project Alternative, none of the impacts examined in this EIR would occur. For example, the No Project Alternative would avoid impacts from truck traffic within the surrounding community, temporary interference with recreational activities in affected areas of the park, visual impacts of the access control building, and impacts to biological resources within MTRP, and potentially significant impacts to cultural resources. However, not constructing the FRS II storage facility and stronger pipeline would significantly hinder the Water Authority's ability to reliably meet projected water demands to the south, particularly when other facilities are installed that would subject the pipelines in MTRP to increased pressure and surges. The No Project Alternative would not meet the goals and objectives of the project and is therefore not a viable alternative.

7.4 ALTERNATIVE TO THE FRS II CONTROL BUILDING

The FRS II control building would be the primary aboveground feature of the proposed project. The primary objective is to have the control building blend with the landscape to the greatest extent possible through the use of native materials and colors for all exterior features. The access/control building would house the inlet valves, the control room, and provide entry into the water storage basins. Valves would be accessed by crane through metal hatches in the roof. The outlet valves would be located in a buried vault on the west side of the storage basins. Security fencing 8 feet high would be installed around the exposed face of the building. Another 8-foot high security fence would be installed on top of the building, which would be accessible from the reshaped contours of the new hillside.

An alternative to the access/control building has been proposed. Under this alternative, the access/control building would be replaced by two vent structures (Figure 7-1). The instrumentation and controls for the valve vaults and water storage basins would be housed inside the existing FRS I access building. The vents would allow air to exhaust or enter each water storage basin as the water levels in the basin fluctuate. Each vent structure would include four panels of louvers, and would be approximately 7 feet by 7 feet square and approximately 8 feet high. The vent structure alternative would include hatches into the water storage basins for maintenance personnel to inspect the interior of each basin. A stairway would lead from each hatch into the basin. Entry through the hatch would require "permit-required" confined space entry procedures. Security fencing 8 feet high would be installed around the access hatches and vent structures.

The smaller structures would be less visible to MTRP users and surrounding residents. However, because the design would not include creation of a berm, there would be more export of excavated material offsite compared to the proposed access/control building design. Therefore, truck traffic would be greater. More open trenching would be required for

connections of communication equipment to the FRS I access/control building; therefore, air quality impacts would be slightly greater than for the proposed project. Noise from the vent louvers would be slightly greater than from the enclosed building. Impacts to land use, recreation, water resources, biological resources, and cultural resources would be essentially the same, as the footprint of the two-vent structures would be slightly smaller and the footprint for communication connections would be slightly greater.

7.5 ALTERNATIVE TUNNEL ALIGNMENTS

7.5.1 Combined Inlet and Outlet Tunnel from One Heading Alternative

The Combined Inlet and Outlet Tunnel From One Heading Alternative is the longest of the tunnel alignment alternatives (approximately 5,200 feet). The alignment would be generally the same as the proposed project, except the tunnel would continue under the FRS II structure and be a continuous tunnel from the South Portal to the North Portal (Figure 7-2). The major difference between this alternative and the proposed project is that it would be mined mostly from the South Portal, located between Elliott Vents #4 and #5. Therefore, traffic and other construction impacts at the North Portal would be reduced by this alternative as compared to the proposed project, which includes construction at both portals. Under this alternative, pipe installation and final grouting would only occur from the South Portal. Blasting for construction of the northernmost 200 to 1,000 feet of the inlet tunnel and construction activity for connecting the inlet tunnel to the existing pipelines would still occur from the North Portal.

Compared to the proposed project and the other tunnel alignment alternatives, the Combined Inlet and Outlet Tunnel from One Heading Alternative would generate the greatest volume of materials for export, estimated to be about 65,700 cy compared to 48,060 cy for the proposed project. Total truck traffic for hauling would therefore be greater than for the proposed project. Fugitive dust emissions associated with truck travel on unpaved roads would be somewhat higher than the proposed project, because trucks associated with the excavation of the tunnel would be required to travel 2 miles round trip on unpaved surfaces to and from the South Portal site rather than 1 mile round trip to access the North Portal site. For certain portions of the construction, therefore, emissions would remain above the significance thresholds for NOx and PM_{10}. Impacts of noise during construction would be lower than with the proposed project, because there would be less construction activity at the North Portal. However, as noted above, blasting would still be needed at the North Portal, and the 10 days of continuous construction for the pipeline connection would also occur for this alternative. Impacts to recreation would be slightly less for this alternative because activity at the North Portal would be decreased and therefore the access and trails at this location would not have to be closed as long. Impacts to water resources would be slightly less for this alternative because of the decreased construction activity at the North Portal. Impacts to biological resources would be the same as for the proposed project because the project footprint would be the same. However, potential impacts to cultural resources would be less than for the proposed project because there would be less activity at the North Portal.

7.5.2 Inlet Tunnel and Trenched Outlet Pipeline

The Inlet Tunnel and Trenched Outlet Pipeline Alternative involves the construction of an inlet tunnel from the North Portal to the FRS II and a trenched pipeline from the FRS II south to Elliott Vent #5 (Figure 7-3). The Inlet Tunnel would be approximately 1,900 feet long. The trenched Outlet Pipeline would extend for approximately 2,700 feet from the FRS II to the existing Water Authority easement and would then follow the easement, replacing Pipeline 3 with a 96-inch diameter pipe. Existing flow in Pipeline 3 would have to be diverted into Pipeline 4, which would temporarily be kept in service during construction.

For the trenched outlet pipeline portion of this alternative, new air release/air vacuum valve structures would be needed at the localized high points, near the locations of Elliott Vents #3 and #4, which would be removed by the proposed project. Also, three low points would be created by the installation of the 96-inch trenched outlet pipeline at locations near the low points on the existing Pipeline 3 and Pipeline 4. New blowoff structures would be needed at these locations.

The trenched pipeline alternative would result in the least quantity of spoils needing disposal, an estimated 33,000 cy. For this alternative, the estimated number of peak construction vehicle trips through the community would be reduced compared to the proposed project because there would be less export.

Emissions associated with this alternative would be unaffected at the North Portal as the North Portal construction scenario would be similar to the North Portal construction scenario for the proposed project. However, trenching in the southern part of the pipeline alignment would require a different mix of heavy construction equipment than tunneling would require, and emissions of criteria pollutants from heavy equipment would be lower than for the tunneling option. Because of the additional 18 acres of disturbance, emissions of fugitive dust associated with construction of this alternative would be higher by an estimated additional 90 lbs/day than the proposed project. Emissions would remain above the significance thresholds during construction of this alternative for NOx and PM_{10}.

Because the trenched portion would increase ground surface impacts in MTRP by approximately 18 acres over the proposed project, impacts to land use, recreation, water resources, and biological resources would be greater than for the proposed project. Impacts to visual resources would be greater because of the surface disturbance of the trench, which would need to be revegetated. Impacts from construction noise would be greater in MTRP because there would be surface trenching along the alignment of the outlet pipeline instead of belowground tunneling. Impacts to cultural resources would be the greater than for the proposed project because there would be more near-surface disturbance in the trenched portion, with a greater potential to encounter previously undiscovered buried resources than with deep tunneling.

7.6 COMPARISON OF PROJECT ALTERNATIVES

The feasible alternatives discussed in Section 7.4 are compared to the proposed project in Table 7-1. The environmental issues presented in the table are only those where the performance of the alternatives and the proposed project would differ. For the FRS II control building design, the

impacts of the two-vent structure alternative would be similar to the proposed project. However, they would be greater to traffic and air quality due to greater excavation and export, and reduced visual impacts due to the smaller structure.

For the tunnel alternatives, the Combined Inlet And Outlet Tunnel From One Heading Alternative has lesser impacts compared to the proposed project in five issues: land use, noise, recreation, water resources, and cultural resources, mainly due to less construction activity at the North Portal. Traffic and air quality impacts would be comparable to the proposed project, although the number of truck trips each day would be reduced as they would be spread over a longer period of time. The other tunnel alternative would have lesser impacts in terms of traffic, but greater impacts compared to the proposed project for the other issues.

Table 7-1
Comparison of Alternatives to Proposed Project

Issue	Two-Vent Structure Alternative to FRS II Access/Control Building	Combined Inlet and Outlet Tunnel from One Heading	Inlet Tunnel and Trenched Outlet Pipeline
Land Use	=	<	>
Visual	<	=	>
Traffic	>	>	<
Air Quality	>	>	>
Noise	>	<	>
Recreation	=	<	>
Water Resources	=	<	>
Biological Resources	=	=	>
Cultural Resources	=	<	>

< Alternative has lesser impacts than the proposed project
> Alternative has greater impacts than the proposed project
= Alternative has the same level of impacts as the proposed project

7.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project Alternative would be the environmentally superior alternative to the proposed project because it would not directly result in any significant environmental impacts. CEQA Section 15126.6(e)(2) states: "If the Environmentally Superior Alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." The alternatives considered feasible are two variations in the pipeline alignment and construction method (tunnel versus trenching), and an alternative to the FRS II access/control building.

Comparing the proposed access/control building and the two-vent structure, the proposed access/control building has been determined to be environmentally superior. This is because there would be increased export of excavated material offsite with the two-vent structure alternative since a berm would not be created onsite.

Among the pipeline alignment options, the Combined Inlet and Outlet Tunnel from One Heading Alternative has been determined to be environmentally superior. This is because construction activities at the North Portal would be reduced, which would result in fewer impacts compared to the proposed project in the following issues: land use, noise, recreation, water resources, and cultural resources.

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes

San Diego County Water Authority

Two-vent Structure Alternative to Access/Control Building

Figure 7-1

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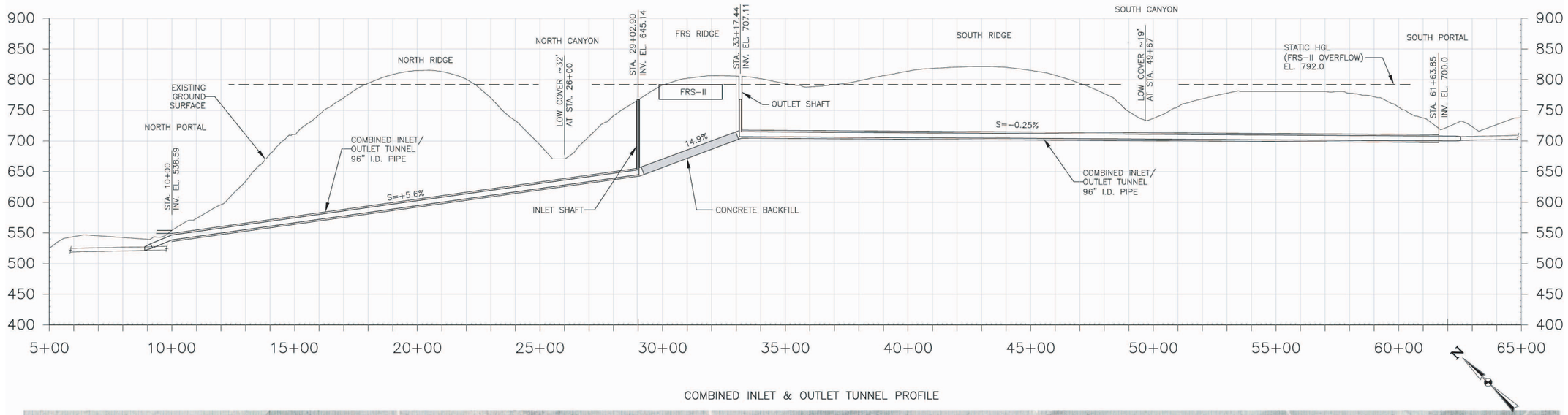
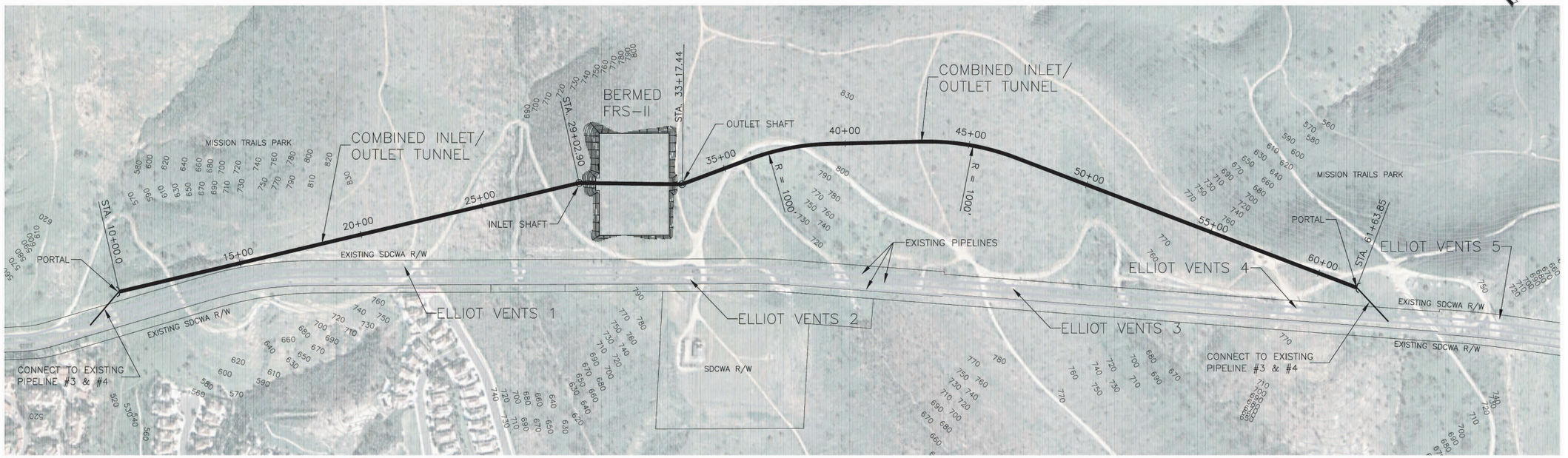


COMBINED INLET & OUTLET TUNNEL PROFILE



COMBINED INLET & OUTLET TUNNEL PLAN

0 40 80 160
VERT SCALE: 1"= 80'

0 100 200 400
HORIZ SCALE: 1"= 200'

N W E S

0 500
Feet

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
Date Created: August 15, 2005
File Ref:

San Diego County Water Authority

Tunnel Plan and Profile for Proposed Project

Figure 2-7

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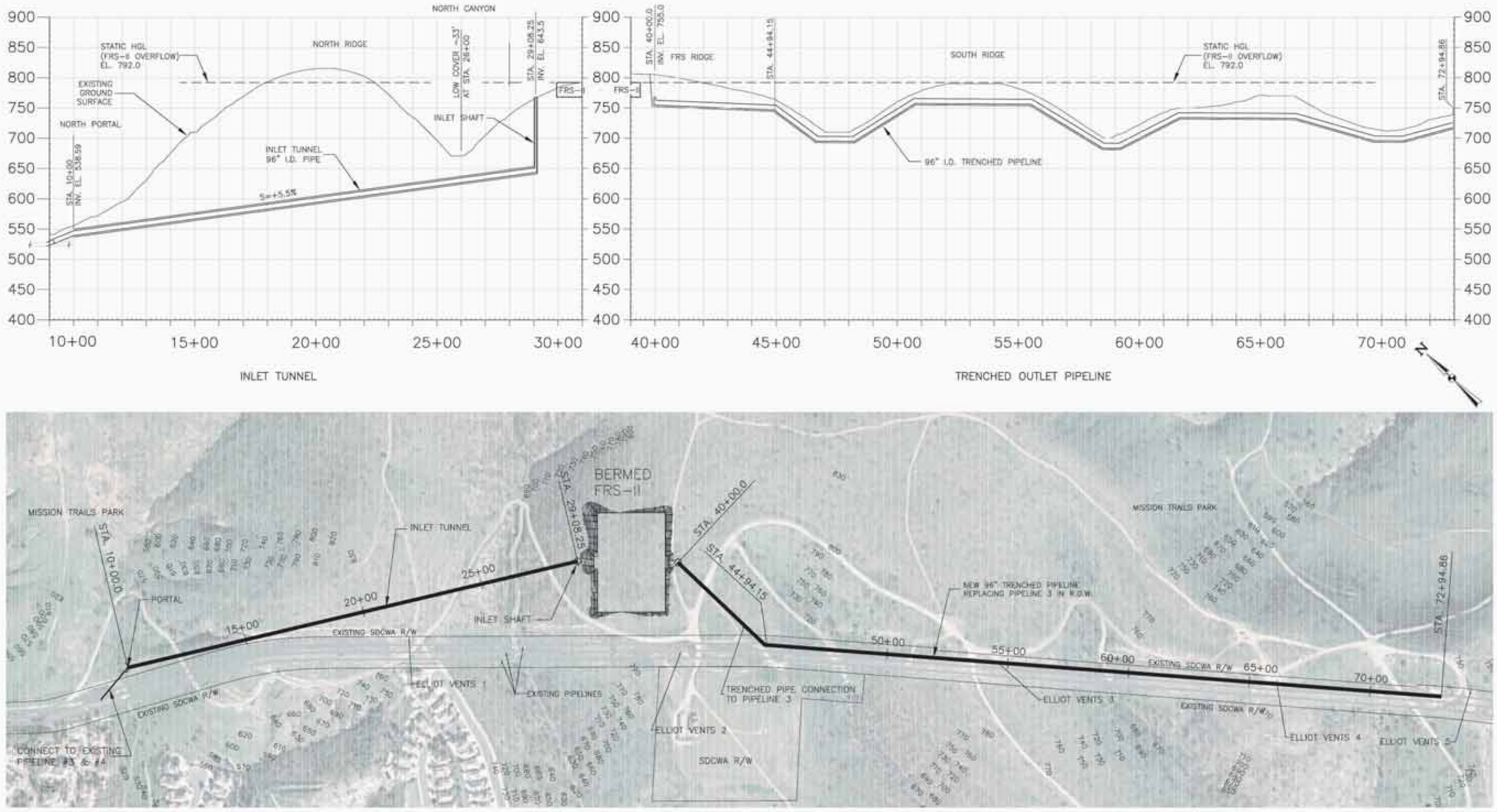

N

0 500

Feet

Mission Trails Flow Regulatory Structure II, Pipeline Tunnel, and Vent Demolition Project

Map Notes
Date Created: August 15, 2005
File Ref:

San Diego County Water Authority

Inlet Tunnel and Trenched Outlet Pipeline Alternative

Figure 7-3

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The following individuals and groups were consulted during the preparation of this EIR.

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