VALLECITOS WATER DISTRICT

2018 WATER, WASTEWATER, AND RECYCLED WATER MASTER PLAN

Draft Program Environmental Impact Report

October 2018

RECON

Vallecitos Water District
2018 Water, Wastewater, and Recycled Water Master Plan
Draft Program Environmental Impact Report

Prepared for
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TABLE OF CONTENTS

List of Abbreviated Terms ..... **iv**

Executive Summary **S-1**

1.0 Introduction **1-1**

1.1 Master Plan Background 1-1
1.2 Environmental Review Process 1-2
1.3 PEIR Supplement Scope, Content, and Organization 1-7
1.4 Other Related Environmental Documents 1-9

2.0 Environmental Setting **2-1**

2.1 Regional Context 2-1
2.2 Local Setting 2-2
2.3 Existing Facilities Setting 2-5
2.4 Existing Physical Characteristics 2-6

3.0 Project Description **3-1**

3.1 Goals and Objectives 3-1
3.2 Background 3-2
3.3 Master Plan 3-2

4.0 Environmental Effects Analysis **4-1**

4.1 Air Quality 4.1-1
4.2 Biological Resources 4.2-1
4.3 Cultural Resources 4.3-1
4.4 Energy 4.4-1
4.5 Geology, Soils, and Paleontology 4.5-1
4.6 Greenhouse Gas Emissions 4.6-1
4.7 Hydrology and Water Quality 4.7-1
4.8 Landform Alteration and Aesthetics 4.8-1
4.9 Land Use and Planning 4.9-1
4.10 Noise 4.10-1
4.11 Public Safety 4.11-1

5.0 Other CEQA Considerations **5-1**

6.0 Project Alternatives **6-1**

6.1 Master Plan Objectives 6-2
6.2 Alternatives Analyzed 6-2

7.0 List of Preparers **7-1**

FIGURES

2-1: Regional Location....2-3
2-2: VWD Service Area....2-4
3-1: CIP Project Locations....3-12
3-2: Proposed Land Outfall Improvements....3-18
3-3: Diamond Siphon Replacement Project Option 1....3-20
3-4: Diamond Siphon Replacement Project Option 2....3-21
4.2-1: Potential Sensitive Natural Communities within the Parallel Land Outfall....4.2-14
4.2-2: USFWS Critical Habitat....4.2-33
4.2-3: Coastal Zone....4.2-34
4.2-4: MHCP and MSCP Conservation Areas....4.2-36
4.2-5: USFWS National Wetland Inventory....4.2-40
4.3-1: Archaeological Resource Sensitivity....4.3-5
4.5-1: Active Faults....4.5-3
4.5-2: Geohazards....4.5-15
4.5-3: Geologic Formations....4.5-17
4.7-1: Hydrologic Units within VWD Service Area....4.7-2
4.7-2: FEMA Floodplains/Floodways....4.7-11
4.8-1: Representative Views of VWD Reservoirs....4.8-9
4.8-2: Representative Views of VWD Lift and Pump Station....4.8-10
4.8-3: Resource Conservation Areas....4.8-16

TABLES

S-1: Master Plan Environmental Impacts and Mitigation Measures....S-7
S-2: Cumulative Impacts and Mitigation Measures....S-35
3-1: 2008 Master Plan Versus 2018 Master Plan Comparison....3-4
3-2: 2018 Master Plan Phases....3-9
3-3: 2018 Master Plan Potable Water Storage Projects....3-11
3-4: 2018 Master Plan Pump Station Projects....3-13
3-5: 2018 Master Plan Potable Water Pipeline Projects....3-14
3-6: 2018 Master Plan Wastewater Pipeline Projects....3-16
3-7: 2018 Master Plan Wastewater Land Outfall Projects....3-17
3-8: Additional Regulatory Requirements Since 2011....3-24
4.1-1: Air Quality Monitoring Data....4.1-5
4.1-2: State and National Ambient Air Quality Standards....4.1-6
4.1-3: San Diego Air Pollution Control District Pollutant Thresholds....4.1-11
4.1-4: Summary of Maximum Daily Emissions for the Diamond Siphon Project....4.1-14
4.2-1: Sensitive Natural Communities Reported or Potentially Occurring within the VWD Service Area....4.2-12
4.2-2: Sensitive Plant Species Reported or Potentially Occurring within the VWD Service Area....4.2-15
4.2-3: Sensitive Wildlife Species Reported or Potentially Occurring within the VWD Service Area....4.2-25
4.2-4: U.S. Fish and Wildlife Service Critical Habitat within the Vallecitos Water District Service Area....4.2-32
4.2-5: Major Wetland Resources within the Service Area....4.2-39

TABLES (cont.)

4.3-1: Cultural Resources that May be Affected by CIP Project Construction.....4.3-14
4.4-1: Average Monthly Electricity Consumption of Existing VWD Pump and Lift Stations 4.4-2
4.4-2: Estimated Average Monthly Electricity Consumption for CIP Pump and Lift Stations 4.4-7
4.5-1: Active Faults within 60 Miles of the VWD Service Area 4.5-4
4.6-1: Estimated Annual Net Increase in VWD GHG Emissions for Proposed CIP Pump and Lift Stations.....4.6-12
4.6-2: GHG Emission Reductions Estimates for Master Plan CIP Project-Incorporated Measures 4.6-14
4.6-3: Estimated GHG Emission Reductions with Project Features 4.6-14
4.7-1: Water Bodies Identified as Impaired under the Clean Water Act 4.7-7
4.7-2: Tsunami Heights in San Diego.....4.7-9
4.9-1: Summary of Community Policy Consistency and Land Use Compatibility 4.9-15
4.10-1: County of San Diego Noise Ordinance Exterior Noise Standards.....4.10-6
4.10-2: City of San Marcos Exterior Noise Standards by Zone.....4.10-7
4.10-3: City of Escondido Exterior Noise Standards.....4.10-8
4.10-4: City of Vista Exterior Property Line Noise Limits 4.10-9
4.11-1: Schools Located within One-Mile of a 2018 Master Plan CIP Project.....4.11-13
6-1: Summary of Analysis for Alternatives to the 2018 Master Plan.....6-3
6-2: Ability of Alternatives to Meet Proposed Master Plan Objectives 6-5

APPENDICES (bound under separate cover)

A: Notice of Preparation and Comments
B: RCEM Output
C: Biological Resources Report
D: Cultural Resources Survey Report
E: Greenhouse Gas Evaluation

List of Abbreviated Terms

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
2008 Master Plan	2008 Water, Wastewater, and Recycled Water Master Plan
2018 Master Plan	2018 Water, Wastewater, and Recycled Water Master Plan
AB	Assembly Bill
AFY	acre-feet per year
AMSL	above mean sea level
AQIA	Air Quality Impact Analysis
B.P.	Before Present
BAAQMD	Bay Area Air Quality Management District
Basin Plan	Basin Water Quality Control Plan
BAU	business as usual
BCLA	Biological Core and Linkage Area
BMP	best management practice
CAAQS	California Ambient Air Quality Standards
CAFÉ	Corporate Average Fuel Economy
Cal-ARP	California Accidental Release Prevention Program
Cal-EPA	California Environmental Protection Agency
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCA	California Coastal Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CDMG	California Department of Conservation, Division of Mines and Geology
CDP	Coastal Development Permit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	Methane
CHP	California Highway Patrol
CIP	Capital Improvement Program
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNLM	Center for Natural Lands Management
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon dioxide

CPA	community planning area
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPOZ	Coastal Resource Protection Overlay Zone
CWA	Clean Water Act
CWC	California Water Code
CZMA	Coastal Zone Management Act
dB	decibel
dB(A)	A-weighted decibels
DEH	Department of Environmental Health (County of San Diego)
DHS	Department of Health Services (California)
District	Vallecitos Water District
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EO	Executive Order
EPCRA	Emergency Planning Community Right-to-Know Act
ESA	Environmental Site Assessment
ESHA	Environmentally Sensitive Habitat Area
Fed-OSHA	Occupational Safety and Health Administration (federal)
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zones
FIRM	Federal Insurance Rate Map
FPA	Focused Planning Area
GHG	greenhouse gas
gpm	gallons per minute
GWP	global warming potential
H&SC	Health and Safety Code
HCFCs	hydrochlorofluorocarbons
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HLP	Habitat Loss Permit
HMBP	Hazardous Materials Business Plan
HMP	Habitat Management Plan
HPMR	Habitat Preservation and Management Requirements
HRA	health risk assessment
Hz	Hertz
I-5, I-15	Interstate 5, Interstate 15
IFC	International Fire Code
in/sec	inch per second
ITS	Intelligent Transportation Systems
kWh	Kilowatt hour
LAFCO	Local Agency Formation Commission
LCFS	Low Carbon Fuel Standard
LCP	Local Coastal Plan
L_{dn}	day-night average level
L_{eq}	average sound level
LHP	Landslide Hazards Program

MBTA	Migratory Bird Treaty Act
Mg	milligrams
MGD	million gallons per day
MHCP	Multiple Habitat Conservation Program
MLD	Most Likely Descendent
MMAX	maximum magnitude
MMRP	Mitigation Monitoring and Reporting Program
MPO	Metropolitan Planning Organization
MRZ	Mineral resource zone
MS4	municipal separate storm sewer systems
MSCP	Multiple Species Conservation Program
MT CO_2e	metric tons of CO_2 equivalent
MTBE	Methyl tertiary butyl ether
MUP	Major Use Permit
Mw	moment magnitude
MWD	Metropolitan Water District of Southern California
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Planning
NEMA	National Electric Manufacturers Associations
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NOP	Notice of Preparation
North County Plan	Draft County of San Diego MSCP North County Subarea Plan
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
NSLU	Noise-sensitive land uses
O_3	ozone
OAEP	Operational Area Emergency Plan
OES	Office of Emergency Services
OMWD	Olivenhain Municipal Water District
OPLMA-PRP	Omnibus Public Land Management Act – Paleontological Resources Preservation
PEIR	Program Environmental Impact Report
PFCs	perfluorocarbons
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources
PRC	Public Resources Code
RAQS	Regional Air Quality Strategy

RCEM	Road Construction Emissions Model
RCRA	Resource Conservation and Recovery Act
Rincon MWD	Rincon del Diablo Municipal Water District
RMS	root mean square
RPO	Resource Protection Ordinance
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SB	Senate Bill
SB7	Senate Bill X_{7-7}
SCAQMD	South Coast Air Quality Management District
SCIC	South Coastal Information Center
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas & Electric
SDSU	San Diego State University
SDWD	San Dieguito Water District
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SR-78	State Route 78
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminant
TCP	Traditional Cultural Properties
TCR	Tribal cultural resources
TDS	Total dissolved solids
TM	tentative map
TPM	tentative parcel map
U.S. DOT	United States Department of Transportation
U.S. EPA	U.S. Environmental Protection Agency
U.S.C.	United States Code
UDC	Unified Disaster Council
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VMT	Vehicle miles traveled
VWD	Vallecitos Water District
WMA	watershed management area

Executive Summary

This chapter is an executive summary of the Program Environmental Impact Report (PEIR) for the implementation of the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan), prepared in compliance with the California Environmental Quality Act (CEQA). This chapter highlights the major areas of importance in the environmental analysis for the 2018 Master Plan, as required by CEQA Guidelines Section 15123. It provides a brief description of the 2018 Master Plan, project objectives, and alternatives to the 2018 Master Plan. In addition, this chapter provides tables summarizing: (1) the direct and cumulative impacts that would occur from implementation of the 2018 Master Plan; (2) the level of impact significance before mitigation; (3) the recommended mitigation measures that would avoid or reduce significant environmental impacts to a less than significant level; and (4) the level of impact significance after mitigation measures are implemented.

Overview

As required by CEQA, this PEIR: (1) assesses the potentially significant direct, indirect, and cumulative environmental effects of the 2018 Master Plan; (2) identifies potential feasible means of avoiding or substantially lessening significant adverse impacts to a less than significant level; and (3) evaluates a range of reasonable alternatives to the 2018 Master Plan, including the required No Project Alternative. The VWD is the Lead Agency for the 2018 Master Plan evaluated in this PEIR, and has the principal responsibility for certifying the PEIR and approving the 2018 Master Plan.

Pursuant to CEQA Guidelines, this PEIR is a programmatic evaluation of the potential effects on the environment of the entire 2018 Master Plan. This PEIR will be used by the VWD to evaluate the potential environmental effects of the overall 2018 Master Plan. Once certified, this PEIR would also be used to tier subsequent environmental analyses for future VWD development projects.

One capital improvement program (CIP) project, the Diamond Siphon Replacement Project (CIP SP-10), is proposed for immediate approval. CIP SP-10 has been evaluated at a project level within this PEIR to enable it to be constructed upon approval of the certification of this PEIR and approval of the 2018 Master Plan, without subsequent environmental analyses.

2018 Master Plan Description

The purpose of the 2018 Master Plan is to provide a reasonable program to install the necessary water, wastewater, and/or recycled water infrastructure to meet the service demands of planned development, if and when it occurs, within the VWD service territory. The 2018 Master Plan will serve as a tool to plan for growth, evaluate the existing and future needs for water, wastewater and recycled water services, and develop a facilities plan and CIP to accommodate these needs as they arise. The Master Plan addresses many local and regional issues, including service area growth, water conservation, local water supply development, and wastewater disposal capacity. The 2018 Master Plan includes prospective CIPs that would ensure adequate water and wastewater system capacity to meet potential future customers' service needs based on planned growth in the service territory through 2035 and through ultimate build-out. CIP projects identified in the 2018 Master Plan include a combination of water and wastewater storage reservoirs, pump/lift stations, and pipelines. The following is an overview of definitions, issues, and construction information associated with each of these types of facilities.

Ten potable water storage projects are identified in the 2018 VWD Master Plan. Storage projects generally involve the construction and/or alteration of potable water-holding reservoirs. Typical reservoir sites consist of a storage tank (reservoir) constructed on a level, graded pad; underground water supply and delivery pipelines; fencing for security purposes; and an access road for maintenance purposes. Placement of storage projects is essential, because optimizing the elevation at which a storage project is located can greatly increase efficiency by reducing the amount of pumping (energy) needed to move water to and from a reservoir through the use of gravity flow. In general, reservoir capacity is reported in units of millions of gallons (MG).

Seven potable water pump station projects and one wastewater lift station project are identified in the 2018 Master Plan. Pump and lift station projects involve the movement of water or wastewater uphill, or to higher pressure zones, and pressure reducing valves are used when water is moving to lower pressure zones (downhill). Pump and lift stations typically consist of buildings containing pumps, electric power-line connections, pipeline connections, fencing, and access roads for maintenance purposes. Pressure-reducing valves are installed along pipelines and usually within underground access vaults. In general, pump capacity is reported in units of gallons per minute (gpm) or millions of gallons per day (MGD).

Twelve potable water pipeline projects, twenty-five wastewater pipelines and one wastewater outfall project, with five segments, are identified in the 2018 VWD Master Plan. Pipeline projects (including the land outfall) involve trench excavation, preparing the bed for pipe placement, laying the pipe in the trench, filling the trench, and restoring the disturbed surface area. VWD intends to align all pipelines within existing and planned roadways to the extent that this is feasible. Where it is not feasible to install a pipeline within a street right-of-way, VWD would use the shortest possible route between connection points to minimize ground-level impacts. In this practice, the VWD would consider factors such as engineering principles and site-specific constraints. Transmission lines generally

transport large quantities of water or wastewater to or from one area to another. Pipeline size is generally reported in inches, which refers to the pipe's diameter.

Master Plan Goals and Objectives

VWD's mission is to provide planned, effective, equitable and fiscally sound water and sewer service to its residential, commercial, industrial, and institutional customers. The primary objectives for the 2018 VWD Master Plan include the following:

- Update water demands and wastewater flows based on current land uses, approved land uses, and projected growth-based land uses.

- Assign potential CIP projects to phasing periods corresponding with the phases used in relevant growth projection data through 2035.

- Ensure that proposed CIP facilities are designed and sized to serve the projected "build-out" of VWD's service area through either upgrades of existing facilities or expansion of the existing system, and to construct lineal CIP projects within existing rights of way, to the extent feasible, to avoid and minimize environmental impacts.

- Update VWD's wastewater treatment capacity needs at both the Encina Water Pollution Control Facility and the Meadowlark Water Reclamation Facility, and review and update potential wastewater land outfall capacity needs based on the new wastewater flow forecast.

Impact Summary

This PEIR examines the potential environmental effects from implementation of the 2018 Master Plan, including information related to existing environmental site conditions, analyses of the types and magnitude of potential individual and cumulative environmental impacts, and feasible mitigation measures that could reduce or avoid environmental impacts to a level less than significant. In accordance with Appendix G of the CEQA Guidelines, the potential environmental effects of the 2018 Master Plan are analyzed for the following areas:

- Air Quality
- Biological Resources
- Cultural Resources (including Tribal Cultural Resources)
- Energy
- Geology, Soils, and Paleontology
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Landform Alteration and Aesthetics
- Land Use and Planning
- Noise
- Public Safety

Tables S-1 and S-2, presented at the end of this chapter, provide summaries of the potentially significant environmental effects that may result from implementation of the 2018 Master Plan and feasible mitigation measures that would reduce to a less than significant level or avoid environmental impacts. For each impact, Tables S-1 and S-2

identify the significance of the impact before mitigation, applicable mitigation measures, and the level of significance of the potential environmental effect after the implementation of the mitigation measures.

Impacts to agricultural and forest resources, mineral resources, and transportation and traffic are considered to be "Effects Found Not to be Significant," according to Section 15128 of the CEQA Guidelines. Impacts to population and housing, public services, recreation, and utilities and service systems are considered to be "CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan." These issues are discussed further in Chapter 5 (Other CEQA Considerations) of this PEIR.

Alternatives to the 2018 Master Plan

The following alternatives are analyzed in detail in Chapter 6 (Alternatives) of this PEIR. The objective of the alternatives analysis is to consider a reasonable range of potentially feasible alternatives to foster informed decision-making and public participation. The 2018 Master Plan alternatives include:

- **No Project Alternative.** Under the No Project Alternative, the VWD Board of Directors would not adopt the 2018 Master Plan Update.

- **Reduced Footprint Alternative.** This alternative would reduce the development footprint of CIP projects located near sensitive biological resources and would remove CIP project R-11 to avoid designated scenic vista areas.

- **Alternative Outfall Alignment.** This alternative would revise the proposed locations of the CIP outfall subprojects LO-D1, LO-D2, LO-A1 and LO-A2 to avoid areas within and near sensitive biological resources.

CEQA Guidelines Section 15126.6(e)(2) requires that an EIR identify the environmentally superior alternative among the range of reasonable alternatives that are evaluated. The No Project Alternative assumes that none of the proposed CIP projects would be constructed at this time and would, therefore, avoid all potentially significant environmental impacts identified for the 2018 Master Plan. However, this alternative would not preclude iterative and unplanned implementation of some, if not all, of the CIP projects on a site-specific basis sometime in the future. Although these potential future CIP infrastructure projects would still be required to undergo individual environmental review, the impacts would be evaluated on a project-by-project basis and the potential cumulative impacts associated with all of the CIP projects within the 2018 Master Plan may not be addressed adequately. In other words, the overall programmatic environmental impacts could potentially be addressed in "piece-meal" manner, which may result in under-estimating the total extent of the program's environmental impacts in comparison to evaluating the entire Master Plan at the Program EIR level. In addition, this approach restricts the District's ability to properly plan for projected growth and to design infrastructure accordingly. So while new and upgraded infrastructure projects may still occur under this alternative, they would be implemented in a more disorganized, less

efficient, and likely more costly manner. In addition, this alternative would not meet any of the objectives of the 2018 Master Plan.

CEQA Guidelines Section 15126.6(e)(2) also requires that an EIR identify another alternative as environmentally superior, besides the No Project Alternative. In this case, the next environmentally superior alternative would be the Reduced Footprint Alternative, which would reduce, but not eliminate, potential impacts to biological resources, cultural resources, geology/soils, hydrology/water quality, landform alteration/aesthetics, land use, noise, and public safety. However, this alternative would only achieve two of the project objectives of the 2018 Master Plan. This project would not ensure that VWD facilities would be adequately designed and constructed to plan for future water and wastewater demand. Water demand and wastewater generation in the VWD service area will continue to grow regardless of Master Plan implementation; therefore, this alternative would hinder the District from being able to meet future demand.

Areas of Controversy/Issues of Concern

Section 15123 of the CEQA Guidelines requires the identification of any areas of controversy known to the Lead Agency including issues raised by other agencies and the public. In accordance with CEQA Guidelines, the VWD prepared a Notice of Preparation (NOP) for this PEIR. The NOP was circulated in November and December 2017 to public agencies and other interested parties to solicit comments on the scope of the PEIR. Comments received in response to the NOP included:

Letter from Latham & Watkins, LLP (dated December 7, 2017) expressing concerns about opportunities for public participation and requesting clarification regarding the District's water supply projections.

Letter from the State Water Resources Control Board (dated December 14, 2017) regarding requirements for Clean Water State Revolving Fund financing.

Letter from the County of San Diego Planning and Development Services (dated January 3, 2018) regarding watershed protection, transportation and traffic impacts, and vector control.

Letter from the California Department of Toxic Substances Control (dated January 3, 2018) regarding the identification of hazardous materials sites and recognized environmental conditions within the project area.

Letter from the San Diego Local Agency Formation Commission (dated January 3, 2018) regarding the District's sphere of influence.

Letter from the San Diego Archaeological Society (dated January 4, 2018) requesting to be included in the distribution of the Draft EIR for public review.

Letter from the City of San Marcos (dated January 5, 2018) requesting verification of the land use data used for growth projections, and requesting consideration of several new San Marcos development projects to be included in the PEIR buildout forecast analysis.

Letter from Latham & Watkins, LLP (dated January 5, 2018) requesting the PEIR consider the District's water supply projections, that it be limited to providing facilities for planned growth, that it analyze potential GHG impacts and biological resources impacts, fire safety, and urban decay.

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
4.1 Air Quality				
Consistency with Applicable Air Quality Plan	Growth assumptions made within the 2018 Master Plan to establish future service requirements have already been accounted for within the 2009 San Diego Air Pollution Control District Regional Air Quality Standards and State Implementation Plan; therefore, the 2018 Master Plan would not conflict with or obstruct implementation of the applicable air quality plan.	LS	No mitigation is required.	LS
Consistency with Air Quality Standards	Construction of proposed CIP projects would not result in emissions that would violate air quality standards.	LS	No mitigation is required.	LS
Objectionable Odors	The 2018 Master Plan would have the potential to create objectionable odors where new wastewater facilities would vent to open air.	S	**Air-1 Odor-Control Measures**. VWD will install odor-controlling features, such as activated carbon structures, at all vents along CIP wastewater pipelines and outfall alignments, at the Montiel Lift Station, and the bioxide station, to the extent required to ensure that nuisance odors cannot be detected at the nearest receptor.	LS
4.2 Biological Resources				
Candidate, Sensitive, or Special Status Species	Implementation of the 2018 Master Plan may result in direct and indirect impacts to sensitive plant and wildlife species.	S	Implementation of mitigation measures Geo-1 and Geo-2, in addition to the following: **Bio-1A Project-Level Biological Resource Surveys**. During the design phase and prior to the construction of individual CIP projects, VWD will retain a qualified biologist to conduct project-level biological resources surveys and prepare biological resources technical reports for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2. Surveys and reports will be conducted and prepared as part of the project-level CEQA documentation for these projects. VWD will map and quantify project-level impacts to special status species and habitats in a biological resources technical report as part of the CEQA documentation. Detailed project-specific avoidance and mitigation	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			measures for significant impacts to biological resources will be finalized as part of the approval and certification process for the subsequent project-level CEQA documentation. Project-specific avoidance and mitigation measures would be determined during project review, consultations, permitting, and/or negotiations between the VWD and the responsible local, state, and federal agencies from which approvals and permits would be required. If the project-level surveys and reporting determine that suitable habitat for special status species occurs, and that special status species could be present within the CIP project sites and/or could be adversely affected as a result of project implementation, including direct and/or indirect impacts to the species and occupied habitat, then the appropriate presence/absence and protocol-level surveys will be conducted, as necessary for required approvals. VWD would retain a qualified biologist to conduct rare plant surveys for CIP projects determined to have the potential to affect special status plant species. Further, VWD will retain a qualified biologist to conduct focused protocol-level surveys for CIP projects determined to have the potential to affect special status wildlife species. Surveys will follow protocols and guidelines approved by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society, and will be conducted by qualified biologists permitted by the USFWS and/or CDFW, where applicable. If the rare plant surveys or focused protocol-level surveys identified above determine the presence of federally or state-listed endangered or threatened species and occupied habitat on site, then, in compliance with Federal Endangered Species Act and California Endangered Species Act, and as stated in Section 3.3.5.4 of this PEIR, VWD will consult and obtain all applicable regulatory permits and authorizations from the USFWS and CDFW, and the conditions of the regulatory permits and authorizations will be implemented accordingly, and/or the underlying CIP project would be modified to avoid direct "take" of the species and/or minimize adverse effects to the species and occupied habitat. In accordance with consultation and/or permitting requirements, mitigation measures Bio-1B and Bio-1C below would prevent direct	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			"take" of listed species that are most likely to be affected by individual CIP projects (e.g., coastal California gnatcatcher and least Bell's vireo) and minimize potential impacts to individuals and occupied habitat in the vicinity of the CIP project sites that may be displaced from habitat or otherwise adversely affected. VWD will further mitigate the loss of habitat according to mitigation measures Bio-2A through Bio-2C. **Bio-1B Coastal California Gnatcatcher Avoidance Measures**. In addition to those mitigation measures described above within Bio-1A above, and any avoidance, minimization, and conservation measures prescribed by the USFWS during consultation and/or permitting, the following mitigation measures will be implemented for proposed CIP projects potentially affecting the federally threatened coastal California gnatcatcher, including suitable and/or occupied habitat, as applicable: 1. Within one year prior to CIP project construction, VWD shall retain a qualified biologist to commence focused surveys in accordance with USFWS protocols to determine the presence or absence of the coastal California gnatcatcher. Documentation of the survey results shall be provided to VWD and USFWS within 45 days of completing the final survey. If surveyed habitat is determined to be occupied by California gnatcatcher, then the following measures shall be implemented in addition to those described above within Bio-1A: a. Habitat occupied by gnatcatcher shall not be removed during the gnatcatcher breeding season (February 15 through August 30). Vegetation clearing, grading, and/or construction activities that have commenced within unoccupied habitat prior to the breeding season shall be allowed to continue without interruption. The contractor(s) should maintain continuous construction activities on or in the immediate vicinity (500 feet) of suitable habitat for gnatcatcher, until the work is completed, in order to minimize potential indirect impacts. If gnatcatchers move into an area within 500 feet of ongoing construction and attempt to nest, then it can be deduced that the noise and other indirect impacts are not great enough to discourage gnatcatcher nesting activities. In addition, if these activities are initiated prior to, and extend into, the breeding season, but they cease for any period of time	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			and the contractor wishes to restart work within the gnatcatcher breeding season window (February 15 through August 30), then updated surveys shall be conducted, as described above. If updated surveys indicate no breeding gnatcatchers occur on or within 500 feet of the proposed work, then construction activities shall be allowed to commence. However, if breeding gnatcatchers are confirmed, then construction activities shall be postponed until all nesting activities have ceased, as determined by a qualified biological monitor. b. Prior to vegetation clearing, grading and/or construction activities that shall occur on or in the immediate vicinity (within 500 feet) of coastal sage scrub and/or USFWS-designated Critical Habitat during the gnatcatcher breeding season (February 15 through August 30), VWD shall retain a qualified biologist to monitor construction activities. The biologist must be knowledgeable of gnatcatcher biology and ecology. VWD shall submit the biologist's name, address, and telephone number, and proposed work schedule, to the USFWS at least 7 days prior to construction activities. c. Noise monitoring shall be conducted if construction activities would occur during the gnatcatcher breeding season (February 15 through August 30), if the construction-related noise levels would exceed 60 decibels average sound level (dB L_{eq}; i.e., the noise threshold suggested by the USFWS for indirect impacts to gnatcatcher), and if gnatcatchers are found within 500 feet of the noise source. Noise monitoring shall be conducted by a biologist experienced in both the vocalization and appearance of California gnatcatcher, and in the use of noise meters. Construction activities that generate noise levels over 60 dB L_{eq} may be permitted within 300 feet of occupied habitat if methods are employed that reduce the noise levels to below 60 dB L_{eq} at the boundary of occupied habitat (e.g., temporary noise attenuation barriers or use of alternative equipment). During construction activities, daily testing of noise levels shall be conducted by a noise monitor with the help of the biologist to ensure that a noise level of 60 dB L_{eq} at the boundary of occupied habitat is not	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			exceeded. Documentation of the noise monitoring results shall be provided to VWD and USFWS within 45 days of completing the final noise monitoring event. **Bio-1C Least Bell's Vireo Avoidance Measures.** In addition to those mitigation measures described above within Bio-1A above, and any avoidance, minimization, and conservation measures prescribed by the USFWS and CDFW during consultation and/or permitting, the following mitigation measures shall be implemented for CIP projects potentially affecting the federally and state endangered least Bell's vireo, including suitable and/or occupied riparian habitat, as applicable: 1. Within one year prior to CIP project construction, VWD shall retain a qualified biologist to perform focused surveys in accordance with USFWS guidelines to determine the presence or absence of the least Bell's vireo on and within 500 feet of the CIP project site. Documentation of the survey results shall be provided to the USFWS and CDFW within 45 days of completing the final survey. If surveyed habitat is determined to be occupied by vireo, then the following measures shall be implemented in addition to those described above within Bio-1A: a. CIP projects shall not remove riparian habitat that is occupied by least Bell's vireo during the species' breeding season (March 15 through July 15). b. A minimum 100-foot-wide biological buffer shall be maintained between all construction activities and occupied vireo habitat at all times. c. VWD shall retain a qualified biologist to monitor all construction activities that would occur within 300 feet of occupied vireo habitat during the species' breeding season (March 15 through July 15). The biologist must be knowledgeable of vireo biology and ecology. VWD or its designated representative shall submit the biologist's name, address, and telephone number, and proposed work schedule, to the USFWS and CDFW at least seven days prior to construction activities.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			d. VWD shall retain a qualified biologist to perform noise monitoring of all construction activities that would occur within 300 feet of occupied vireo habitat. Noise levels at the riparian canopy edge shall be kept below 60 dB(A) [A-weighted decibels] L_{eq} from 5:00 a.m. to 11:00 a.m. between March 15 and July 15. For the remainder of the season, the noise levels shall not exceed 60 decibels, averaged over a one-hour period on an A-weighted decibel [dB(A); i.e., 1 hour L_{eq}/dB(A)]. Documentation of the noise monitoring results shall be provided to the USFWS and CDFW within 45 days of completing the final noise monitoring event. 2. Permanent and temporary impacts to riparian habitat shall be mitigated in full, as proposed within mitigation measures Bio-2A through Bio-2C, to ensure no net loss of the habitat and enhancement of functions and values. **Bio-1D Avoidance of Nesting Birds**. To prevent impacts to nesting passerines (song birds) and other non-raptors protected under the federal Migratory Bird Treaty Act and California Fish and Game Code, VWD shall enforce the following: 1. If construction occurs during the general nesting season (February 1 through August 31), and where any mature tree, shrub, or structure capable of supporting a bird nest occurs within 300 feet of proposed CIP project construction activities, VWD shall retain a qualified biologist to conduct a pre-construction survey for nesting birds prior to clearing, grading and/or construction activities. The survey shall be conducted within 72 hours prior to the start of construction. 2. If any nesting birds are present on or within 300 feet of the proposed project construction area, the following shall be required, as approved by the USFWS and/or CDFW: a. VWD shall retain a qualified biologist to flag and demarcate the location of all nesting birds and monitor construction activities. Temporary avoidance of active bird nests, including the enforcement of an avoidance buffer of 300 feet, as determined by the qualified biological monitor, shall be required until the qualified biological monitor has verified that the young have fledged or the nest has otherwise become inactive. Requests for	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			buffer reductions of less than 300 feet shall be provided to the Wildlife Agencies. Documentation of the nesting bird surveys and any follow-up monitoring shall be provided to USFWS and CDFW within 10 days of completing the final survey or monitoring event. **Bio-1E Avoidance of Raptor Nests**. To prevent impacts to nesting raptors protected under the federal Migratory Bird Treaty Act and California Fish and Game Code, VWD shall enforce the following: 1. If construction occurs during the raptor nesting season (January 15 through July 31), and where any mature tree or structure capable of supporting a raptor nest occurs within 500 feet of proposed CIP project construction activities, VWD shall retain a qualified biologist to conduct a pre-construction survey for nesting raptors prior to clearing, grading and/or construction activities. The survey shall be conducted within 72 hours prior to the start of construction. 2. If any nesting raptors are present on or within 500 feet of the proposed project construction area, the following shall be required, as approved by the USFWS and/or CDFW: a. VWD shall retain a qualified biologist to flag and demarcate the location of all nesting raptors and monitor construction activities. Temporary avoidance of active raptor nests, including the enforcement of an avoidance buffer of 500 feet shall be required until the qualified biological monitor has verified that the young have fledged or the nest has otherwise become inactive. Documentation of the raptor surveys and any follow-up monitoring, as necessary, shall be provided to USFWS and CDFW within 10 days of completing the final survey or monitoring event. 3. In the event that a California state fully protected species (e.g., white tailed kite) is found to be nesting on the project site, all work in the area shall stop and VWD shall notify the CDFW and/or USFWS. No impacts shall be permitted to occur to fully protected species. **Bio-1F Construction Fencing**. Prior to vegetation clearing, grading, and/or construction activities, VWD shall retain a qualified biologist to oversee installation of appropriate fencing and/or flagging to delineate the limits of construction and the approved construction staging areas for	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			protection of identified sensitive resources for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2. Temporary fencing (with silt barriers) shall be installed at the limits of project impacts (including construction staging areas and access routes) to prevent additional sensitive habitat impacts and to prevent the spread of silt from the construction zone into adjacent habitats to be avoided. Fencing shall be installed in a manner that does not impact habitats to be avoided. For projects potentially affecting special-status species and sensitive resources, and for which permits or approvals from the USFWS or CDFW require confirmation of project impacts and submittal of as-built plans, VWD shall submit to the USFWS and CDFW for approval, at least 30 days prior to initiating project impacts, the final plans for initial clearing and grubbing of sensitive habitat and project construction. These plans shall also be submitted to the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), or other local agency, from which, approval or permitting is required, as applicable. The final plans shall show the fenced limits of impact and all sensitive areas to be impacted or avoided. If work occurs beyond the fenced or demarcated limits of impact, all work shall cease until the problem has been remedied to the satisfaction of VWD and the USFWS, CDFW, USACE, and/or other agency. Temporary construction fencing shall be removed by VWD upon project completion. **Bio-1G Construction Staging Areas**. Prior to construction activities for CIP projects where it has been demonstrated through project-level studies that drainages, wetlands and areas supporting sensitive habitats or species could be affected by project construction, VWD shall design CIP project construction staging areas to avoid and setback from drainages, wetlands and areas supporting sensitive habitats or species, where feasible. Fueling of equipment shall occur in designated fueling zones within the construction staging areas. All equipment used within the approved construction limits shall be maintained to minimize and control fluid and grease leaks. Provisions to contain and clean up unintentional fuel, oil, fluid and grease leaks/spills shall be in place prior to construction.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			Bio-1H Pre-Construction Meeting. Prior to vegetation clearing, grading, and/or construction activities, VWD shall retain a qualified biologist to attend a pre-construction meeting to inform construction crews of the sensitive species and habitats for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16, P-56, P-30, P-64, P-42, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2. **Bio-1I Construction-Related Night Lighting**. All construction-related night lighting adjacent to sensitive habitat areas shall be of low illumination, shielded and directed downwards and away from adjacent native habitat areas. **Bio-1J Avoidance of Special Status Habitat Areas**. Prior to construction activities for CIP projects where it has been demonstrated through project-level studies that special status plant and wildlife species, as well as USFWS-designated Critical Habitat and coastal ESHA, could be affected by project construction and/or operation, VWD shall design and/or modify CIP projects to avoid and setback from special status plant and wildlife species, USFWS-designated Critical Habitat, and coastal ESHA, where feasible. Specific setback requirements for CIP project avoidance would be determined in consultation with the USFWS, CDFW, City of Carlsbad, and/or the California Coastal Commission.	

Table S-1
Master Plan Environmental Impacts and Mitigation Measures

Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
Riparian Habitat and Other Sensitive Natural Communities	Implementation of the 2018 Master Plan has the potential to result in impacts to upland, riparian, and wetland habitats that are considered sensitive natural communities.	S	Implementation of mitigation measures Bio-1A, Bio-1F, Bio-1G, Bio-1H, Bio-1J, Geo-1 and Geo-2, in addition to the following: **Bio-2A Habitat Replacement**. Unavoidable impacts to sensitive natural communities shall be mitigated by VWD according to the range of ratios provided below, and would be increased or decreased depending on whether the habitat supports special status species or other sensitive resources, and/or the impacts and mitigation would occur inside or outside an existing preserve area: **Sensitive Natural Community** — **Mitigation Ratio** Non-native grassland — 0:1 – 0.5:1 Valley needlegrass grassland — 1:1 – 3:1 Diegan coastal sage scrub — 1:1 – 2:1 Diegan coastal sage – chaparral scrub — 1:1 – 2:1 Chamise chaparral (granitic, mafic) — 1:1, 1:1 – 3:1 Scrub oak chaparral — 1:1 – 2:1 Southern maritime chaparral — 1:1 – 3:1 Southern mixed chaparral (granitic, mafic) — 1:1, 1:1 – 3:1 Coast live oak woodland — 1:1 – 3:1 Southern coastal live oak riparian forest — 1:1 – 3:1 Southern riparian forest — 1:1 – 3:1 Southern riparian scrub — 1:1 – 3:1 Coastal and valley freshwater marsh — 1:1 – 3:1 Permanent and temporary impacts to sensitive natural communities shall be mitigated in-kind by VWD through implementation of any one or combination of the following measures, as approved and/or amended by the USFWS, USACE, RWQCB, and/or CDFW for individual CIP projects, if applicable: 1. On site as creation of new habitat within avoided and preserved areas at the CIP project site; 2. On site as restoration of existing habitat within temporary impact areas and/or avoided and preserved areas at the CIP project site; 3. On site as enhancement of existing habitat within avoided and preserved areas at the CIP project site;	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			4. Off site as purchase of habitat credits within an approved mitigation bank(s) (e.g., North County Habitat Bank); 5. Off site as habitat preservation, creation, restoration, and/or enhancement within other properties or approved mitigation programs available at the time of grading; or 6. A combination of the above. For on- or off-site creation, restoration, and/or enhancement mitigation of upland sensitive natural communities (e.g., grassland, coastal sage scrub, chaparral, woodland), VWD shall prepare an Upland Habitat Restoration Plan, Habitat Mitigation and Monitoring Plan, or similar plan, detailing the specific upland habitat creation, restoration, and/or enhancement measures to be implemented as project mitigation. The Upland Habitat Restoration Plan shall be approved by the USFWS and CDFW prior to vegetation clearing, grading, and/or construction activities. For on- or off-site creation, restoration, and/or enhancement mitigation of riparian and wetland sensitive natural communities (e.g., riparian forest, riparian scrub, willow scrub, mule fat scrub, freshwater marsh), VWD shall prepare a Riparian/Wetland Habitat Restoration Plan, Habitat Mitigation and Monitoring Plan, or similar plan, detailing the specific riparian/wetland creation, restoration, and/or enhancement measures to be implemented as project mitigation. The Riparian/Wetland Habitat Restoration Plan shall be approved by the USFWS, USACE, RWQCB, and/or CDFW, as appropriate, prior to vegetation clearing, grading, and/or construction activities. **Bio-2B Riparian/Wetland Replacement Ratio**. Any upland or riparian/wetland habitat impacts that occur beyond the approved fencing described above within Bio-1F shall be mitigated at a ratio to be negotiated with the USFWS, USACE, RWQCB, and/or CDFW. **Bio-2C Hydroseeding of Graded Areas**. Unless otherwise required by the USFWS, USACE, RWQCB, and/or CDFW, and excluding those CIP projects where a permanent access road, path, or other permanent development is required, after completion of final grading for CIP projects located adjacent to native vegetation, the construction documents shall require that all graded areas within 100 feet of native	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			vegetation are hydroseeded and/or planted with native plant species similar in composition to the adjacent undisturbed vegetation communities. VWD or the construction contractor shall retain a qualified biologist to monitor these activities to ensure non-native or invasive plant species are not used in the hydroseed mix or planting palettes. The hydroseeded/planted areas shall be watered via a temporary drip irrigation system or watering truck. Irrigation shall cease after successful plant establishment and growth, to be determined by the biologist. Any irrigation runoff from hydroseeded/planted areas shall be directed away from adjacent native vegetation communities, and contained and/or treated within the development footprint of individual projects. All planting stock shall be inspected for exotic invertebrate pests (e.g., argentine ants) and any stock found to be infested with such pests shall not be allowed to be used in the hydroseeded/planted areas.	
Wetlands	Implementation of the 2018 Master Plan could result in impacts to waters, wetlands, and associated resources subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife, including federally protected wetlands as defined by Section 404 of the Clean Water Act.	S	Potential impacts to jurisdictional waters and wetlands would be considered less than significant with the preparation of wetland delineation studies; fulfillment of notification and permitting requirements from the USACE, RWQCB, and CDFW; and, implementation of mitigation measures Bio-2A through Bio-2C. No additional mitigation is required.	LS
Local Policies or Ordinances	Implementation of the 2018 Master Plan could conflict with the County of San Diego Resource Protection Ordinance (RPO) and City of Carlsbad Coastal Resource Protection Overlay Zone (CRPOZ) Ordinance.	S	Implementation of mitigation measures Bio-1A, Bio-1F, Bio-1G, Bio-1H, Bio-1J, Bio-2A, Bio-2B, Bio-2C, Geo-1 and Geo-2, in addition to the following: **Bio-3A Oak Tree Avoidance.** All oak trees and their root systems will be avoided by CIP projects R-4, P-16, and P-56 through project design or site selection, to the extent practicable. **Bio-3B Oak Tree Replacement.** To off-set any impacts to oak trees potentially resulting from CIP projects R-4, P-16, and P-56, VWD will implement the following measures: 1. Unavoidable impacts will be compensated by VWD at a ratio of 1:1 to 3:1. A minimum of one 15-gallon oak tree will be planted within approved areas at the CIP project site as a replacement for every	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			one oak tree damaged. For temporary impacts, trees will be replaced at the same location as the impact area. For permanent impacts, trees will be replaced within avoided areas at the CIP project site where natural water is available. 2. The landscape architect/designer for the project will design replacement trees into landscape plans which will be subject to review by the VWD and local jurisdiction in which the planting would occur. 3. Planting specifications will comply with the following: a. The newly planted trees will be planted high, as much as 0.75 foot above the new adjacent grade. b. Amend the backfill soil with wood shavings, unless existing soil is high in natural organic matter with a sandy loam texture as reflected in soils tests following County protocol.	
Habitat Conservation Plans	Implementation of the 2018 Master Plan could conflict with the Carlsbad Multiple Habitat Conservation Program (MHCP) Subarea Plan (Carlsbad Habitat Management Plan [HMP]).	S	Implementation of mitigation measures Bio-2A, Bio-2B, Bio-2C, Bio-1F, Bio-1G, Bio-1H, Bio-1J, Geo-1 and Geo-2, in addition to the following: **Bio-4A Project-Level Biological Studies**. During the design phase of CIP SP-13, LO-D1, LO-D2, LO-B, and LO-A2 occurring within the jurisdictional boundaries of the City of Carlsbad, VWD shall prepare project-level biological studies, to include consistency analysis with the Carlsbad MHCP Subarea Plan (Carlsbad HMP), in order to ensure that CIP projects would not conflict with this adopted plan. As necessary, VWD shall conduct project design and review of biological studies in consultation with the USFWS, CDFW, and City of Carlsbad when covered resources identified under the Carlsbad MHCP Subarea Plan have the potential to be affected by individual CIP projects. **Bio-4B Species and Habitat Avoidance within Carlsbad MHCP Subarea Plan**. VWD shall implement the following specific measures for CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 occurring within the Carlsbad MHCP Subarea Plan: 1. Impacts to narrow endemic species shall be avoided to the maximum extent practicable; however, where impacts to a narrow endemic species population are demonstrated to be unavoidable, impacts shall	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			be restricted to less than the maximum allowed under the Carlsbad MHCP Subarea Plan. 2. All development projects shall be located and designed to minimize overall impacts to natural habitat. 3. Impacts to wetland and riparian habitats within the Carlsbad MHCP Subarea Plan shall be avoided to the maximum extent feasible. All projects that would affect these habitats must demonstrate that the impacts: (1) cannot be avoided by a feasible alternative; (2) have been minimized to the maximum extent practicable; (3) are mitigated at a minimum 3:1 ratio; and (4) shall be mitigated in ways that assure no net loss of habitat value or function. **Bio-4C Habitat In-Lieu Fees**. Prior to issuance of permits from the City of Carlsbad, VWD may pay Habitat In-Lieu Mitigation Fees for impacts to Group E (Non-Native Grassland) and Group F (Disturbed Habitat, Eucalyptus Woodland) Habitats identified within the Carlsbad MHCP Subarea Plan for CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2. Fees may be paid in an amount to be determined by City Council, in lieu of providing on-site or off-site mitigation land. The Habitat In-Lieu Mitigation Fee shall also apply to off-site mitigation for impacts to Group D (Unoccupied Coastal Sage Scrub, Coastal Sage/Chaparral, Chaparrals – excluding Southern Maritime Chaparral) Habitat which is not conserved or mitigated on site in accordance with mitigation measures Bio-2A through Bio-2C, or otherwise required by the City of Carlsbad, USFWS, and CDFW during review of individual CIP projects.	
4.3 Cultural Resources				
Historic and Archaeological Resources	Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect historic resources and archeological resources within the VWD service area.	S	**Cul-1 Site-specific Records Search.** Prior to construction activities within a CIP project site, a qualified cultural resource professional shall be retained by VWD to complete a CIP project site-specific records search at the South Coastal Information Center to determine if the CIP project site has been subject to a professional survey. If a current cultural resources report to address potential impacts on cultural resources is available, VWD shall implement the mitigation measures provided within the report.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			Cul-2 Phase I Cultural Resources Study. In the event that a current and valid report is not available or if the entirety of the CIP project site has not been professionally surveyed (see Cul-1), a Phase I Cultural Resources Survey study shall be completed by a qualified cultural resource professional. a. If the Phase I study detects built-environment resources (buildings or structures aged 45 years old or older), and implementation of the CIP project will either disturb or destroy such buildings or affect their historic setting, then a cultural resource professional who minimally meets the Secretary of the Interior's Professional Qualifications Standards for Architectural History shall be contracted to determine if the resource site is significant and if the project may cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines. VWD shall be responsible for implementing methods for eliminating or reducing impacts on historical resources identified in the technical report or memorandum. Such methods could include, but are not limited to, written and photographic recordation of the resource in accordance with the level of Historic American Building Survey documentation that is appropriate to the significance (federal, state, local) of the resource. b. In the event that known or previously undetected archaeological resources are identified during the Phase I study then such resources must be recorded or updated onto Department of Parks and Recreation (DPR) 523 forms in accordance with all applicable regulations. In addition, any addressed resources must be evaluated for significance and eligibility for inclusion in federal, state and local registers of significant resources. This evaluation shall be undertaken by a cultural resource professional who minimally meets the SOI Professional Qualifications Standards for Archaeology. In the event that such resources are found to be historical resources pursuant to CEQA, potential adverse impacts must be analyzed as stated in Public Resources Code (PRC) Sections 21084.1 and 21083.2(l), and appropriate measures must be generated to avoid or reduce potential impacts on archaeological resources as necessary.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			Cul-3 Procedure for Unintentional Disturbance of Cultural Resources. If subsurface cultural resources are encountered during CIP project construction, or if evidence of an archaeological site or other suspected historic resources are encountered, all ground-disturbing activity shall cease within 100 feet of the resource. A qualified archaeologist shall be retained by VWD to assess the find, and to determine whether the resource requires further study. Potentially significant cultural resources could consist of, but are not limited to, stone, bone, fossils, wood or shell artifacts or features, including structural remains, historic dumpsites, hearths and middens. Midden features are characterized by darkened soil, and could conceal material remains, including worked stone, fired clay vessels, faunal bone, hearths, storage pits, or burials and special attention should always be paid to uncharacteristic soil color changes. Any previously undiscovered resources found during construction should be recorded on appropriate DPR 523 forms and evaluated by a qualified archaeologist retained by VWD for significance under all applicable regulatory criteria. a. No further grading shall occur in the area of the discovery until VWD approves the measures to protect the resources. Any archaeological artifacts recovered as a result of mitigation shall be donated to a qualified scientific institution approved by VWD where they would be afforded long-term preservation to allow future scientific study.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
Human Remains	Compliance with PRC Section 5097.98 and California State Health and Safety Code 7050.5 would ensure less than significant impacts to any human remains inadvertently discovered during CIP project construction.	S	**Cul-4 Procedure for Unintentional Disturbance of Human Remains.** Implementation of the procedures set forth in PRC Section 5097.98 and California State Health and Safety Code 7050.5 would reduce impacts to human remains to a less than significant level. The procedures outline steps to be followed upon unintentional disturbance of human remains. California State Health and Safety Code Section 7050.5 dictates that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined by the County Coroner to be Native American, the Native American Heritage Commission (NAHC) shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. A professional archaeologist with Native American burial experience shall conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD), if any, identified by the NAHC. As necessary and appropriate, a professional archaeologist shall be retained by VWD to provide technical assistance to the MLD, including but not limited to, the excavation and removal of the human remains. Compliance with California State Health and Safety Code Section 7050.5 and PRC Section 5097.98 would reduce any potential impacts to human remains from the 2018 Master Plan to a level below significance.	LS
Tribal Cultural Resources	Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect tribal cultural resources within the VWD service area.	LS	No mitigation is required.	LS
4.4 Energy				
Energy Consumption	The construction and operation of CIP projects under the 2018 Master Plan would not result in the inefficient, wasteful or unnecessary use of energy because all projects would be consistent with the energy efficiency recommendations of the CEC.	LS	No mitigation is required.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
4.5 Geology, Soils, and Paleontology				
Exposure to Seismic and Geologic Hazards	Portions of the proposed CIP facilities could be located on geologic units or soil that are unstable and could result in damage from liquefaction, lateral spreading, subsidence, expansive soils, and/or landslides.	S	**Geo-1 Site-specific Geotechnical Investigation.** Prior to construction of proposed CIP projects, a site-specific geotechnical investigation will be conducted to determine whether geologic or other hazardous conditions exist and, if so, provide recommendations for construction that would reduce the damage potential. Areas of liquefaction; static or groundshaking-induced landslides, lateral spreading, subsidence; liquefaction, soil collapse, expansive soils and/or mudslide potential will be identified as part of the geotechnical investigation. The investigations shall specifically address foundation and slope stability in liquefiable, landslide, expansive soils and mudslide areas proposed for construction. Recommendations made in conjunction with the geotechnical investigations shall be implemented during construction, including (as appropriate) but not necessarily limited to the following actions: 1. Over-excavate unsuitable materials and replace them with engineered fill. 2. For thinner deposits, remove loose, unconsolidated soils and replace with properly compacted fill soils, or apply other design stabilization features (i.e., excavation of overburden). 3. For thicker deposits, implement applicable techniques such as dynamic compaction (i.e., dropping heavy weights on the land surface), vibro-compaction (i.e., inserting a vibratory device into the liquefiable sand), vibro-replacement (i.e., replacing sand by drilling and then vibro-compacting backfill in the bore hole), or compaction piles (i.e., driving piles and densifying surrounding soil). 4. Lower the groundwater table to below the level of liquefiable soils. 5. Perform in-situ densification of soils or other alterations to the ground characteristics. 6. For landslides, implement applicable techniques such as stabilization (i.e., construction of buttress fills, retaining walls, or other structural support to remediate the potential for instability of cut slopes composed of landslide debris); remedial grading and removal of landslide debris (e.g., over-excavation and recompaction); or avoidance (e.g., structural setbacks).	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			7. To minimize or avoid lateral spreading of on-site soils, remove compressible soils and replace them with properly compacted fill, perform compaction grouting or deep dynamic compaction, or use stiffened conventional foundation systems. 8. To minimize or avoid differential compression or settlement of on-site soils, manage oversized material (i.e., rocks greater than 12 inches) via off-site disposal, placement in non-structural fill, or crushing or pre-blasting to generate material less than 12 inches. Oversized material greater than 4 feet shall not be used in fills, and shall not be placed within 10 feet of finished grade, within 10 feet of manufactured slope faces (measured horizontally from the slope face), or within 3 feet of the deepest pipeline or other utilities. 9. Locate foundations and larger pipelines outside of cut/fill transition zones and landscaped irrigation zones. 10. As part of the geotechnical investigation, a database search of hazardous materials sites pursuant to Government Code Section 65962.5 shall be performed within a one-mile radius surrounding the proposed CIP site. If the database search identifies hazardous material sites within the search parameters, a Phase I environmental assessment shall be required. In the event hazardous materials sites are identified within the database search and a Phase I environmental assessment is required, VWD shall retain a registered environmental assessor to perform a Phase I Environmental Site Assessment. The Phase I Environmental Site Assessment shall follow the current ASTM standard and the recommendations contained within the Phase I Environmental Site Assessment shall be implemented according to standard regulatory procedures.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
Soil Erosion or Topsoil Loss	Construction activities associated with CIP projects could result in soil erosion or loss of topsoil.	S	**Geo-2 Construction-Related Erosion Control Plan.** The construction bid documents for each proposed CIP project shall include either a 90 percent Erosion Control Plan (for projects that would result in less than one acre of land disturbance) or a 90 percent Storm Water Pollution Prevention Plan (SWPPP) (for projects that would result in one acre or greater of land disturbance). The Erosion Control Plan shall comply with the storm water regulations or ordinances of the local agency jurisdiction within which the proposed CIP project occurs; the SWPPP shall comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit. These plans shall be based on site-specific hydraulic and hydrologic characteristics, and identify a range of Best Management Practices (BMPs) to reduce impacts related to storm water runoff, including sedimentation BMPs to control soil erosion. The Erosion Control Plan or SWPPP shall identify the specific storm water BMPs to be implemented during the construction phase of a given CIP project. Typical BMPs to be implemented as part of the Erosion Control Plan or SWPPP may include, but may not be limited to, the actions listed below. 1. Development of a written plan that includes sequencing of construction activities and the implementation of erosion control and sediment control BMPs that shall take local climate (rainfall, wind, etc.) into consideration. The purpose of the written plan is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule. 2. Preserve existing vegetation to minimize the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion. 3. Use hydraulic mulch on disturbed soils to provide a layer of temporary protection from wind and water erosion. 4. Temporarily protect exposed soils from erosion by water and wind by applying hydraulic seeding, hydroseeding, or other appropriate soil cover. 5. Divert runoff or channel water to a desired location by constructing earth dikes or drainage swales. A drainage swale is a shaped and	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps. 6. Prevent scour of the soil caused by concentrated, high velocity flows by providing outlet protection; a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel. 7. Apply a compost blanket to slopes and earth disturbed areas to prevent erosion, and in some cases, increase infiltration and/or establish vegetation. The compost blanket can be applied by hand, conveyor system, compost spreader, or pneumatic delivery (blower) system. The blanket thickness is determined from the slope steepness and anticipated precipitation. A compost blanket protects the soil surface from raindrop erosion, particularly rills and gullies that may form under other methods of erosion control. 8. Detain sediment-laden water, promoting sedimentation behind a silt fence. A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. 9. Contain sediment-laden runoff in a sediment trap, allowing sediment to settle out before the runoff is discharged. Sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area. 10. Place fiber rolls at the toe and on the face of slopes along the contours. Fiber rolls intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can reduce sheet and rill erosion until vegetation is established. 11. Intercept or divert sheet flows with a sandbag barrier on a level contour. Sandbag barriers placed on a level contour pond sheet flow, allowing sediment to settle out.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			12. Construct a straw bale barrier to pond sheet-flow runoff and allow sediment to settle out. A straw bale barrier is a series of straw bales placed on a level contour to intercept sheet flows.	
Paleontological Resources	Construction of CIP projects proposed within the Santiago formation has the potential to disturb or destroy paleontological resources.	S	**Geo-3 Paleontological Resources Investigation.** For CIP projects that propose ground-disturbing activities located within the Santiago formation (potentially SP-6, SP-13, SP-15, SP-19, SP-20, SP-23, SP-28, SP-29, R-1, R-3, R-7, and the parallel land outfall), a project-level paleontological resources investigation shall be conducted by a qualified professional paleontologist in cooperation with the County of San Diego and the San Diego Natural History Museum. The paleontological resources investigation shall include: 1. A review of the records search performed in the Paleontological Resources Evaluation for the VWD Service Area (Appendix D of this PEIR) and, if necessary, an updated records search; 2. Project-level pedestrian surveys of portions of the proposed CIP site where paleontological resources could be encountered based on presence and depth of sensitive formations; 3. Formal evaluation of any potentially affected paleontological resources to determine whether they qualify as unique paleontological resources; and 4. Recommended measures to avoid, where feasible, impacts on unique paleontological resources, such as preservation in place, planning construction to avoid unique paleontological sites, placing paleontological sites into permanent conservation easements, or planning parks, green space, or other open space to incorporate paleontological sites. Where avoidance or preservation in place is not feasible, excavation and curation may be recommended as mitigation. 5. The results of the paleontological resources investigation shall be compiled into a technical report or memorandum and submitted to VWD for further coordination with the County of San Diego Department of Planning and Land Use and the San Diego Natural History Museum, as necessary.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
4.6 Greenhouse Gas Emissions				
Direct and Indirect Generation of Greenhouse Gas (GHG) and Consistency with Applicable Plans Adopted for Reducing GHG	Operation of the proposed CIP projects would not result in a net increase of GHG emissions that would exceed the screening threshold and therefore would not conflict with the applicable plan adopted for the purpose of reducing emissions of GHG.	LS	No mitigation is required.	LS
4.7 Hydrology and Water Quality				
Water Quality	Compliance with the Construction General Permit Order 2009-0009-DWQ, including the preparation of a SWPPP and implementation of applicable BMPs, would reduce the potential increase in pollutants associated with construction of the Master Plan CIP projects. The MS4 permit, required by NPDES, requires the development of a hydromodification management plan (HMP), which would ensure that operation of the CIP projects would not result in a violation of water quality standards or the degradation of water quality.	LS	No mitigation is required.	LS
Alteration of drainage patterns	Construction and operation of CIP projects and any associated access roads would comply with the Construction Storm Water General Permit and would not result in the alteration of drainage patterns, increased pollution runoff, flooding or an exceedence in the capacity of a storm water drainage facility.	LS	No mitigation is required.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
Mudflows, Dam Inundation, Tsunamis and Seiches	Above-ground 2018 Master Plan CIP projects (reservoirs, pump and lift stations) could be subject to potential damage by a mudflow.	S	Implementation of Geo-1 would reduce the exposure of above-ground CIP facilities to substantial adverse effects associated with mudflows to a less than significant level.	LS
4.8 Landform Alteration and Aesthetics				
Visual Character and Quality	Construction of CIP projects and access roads could both temporarily and permanently degrade the existing visual character of project sites and their surroundings during construction and in areas without existing VWD facilities.	S	**Aes-1 Landscaping Measures.** The following landscaping measures shall be implemented for all CIP projects: 1. For proposed pipeline projects and access roads installed in naturally vegetated areas, the short-term disturbance footprints associated with construction for the pipeline corridor and associated staging areas (with the exception of the drivable pathway, which shall remain clear) shall be hydroseeded, following backfilling and recontouring, using a non-irrigated native plant mix consistent with original site conditions and surrounding vegetation. 2. For proposed CIP reservoirs, pump stations, lift stations and access roads in naturally vegetated settings, any disturbed unpaved areas following construction that are not designated for vehicular or pedestrian access shall be revegetated (hydroseeding and/or plantings) using native plant materials consistent with original site conditions and surrounding vegetation. A temporary irrigation system shall be installed and maintained by VWD, or watering trucks shall be used at a frequency to be determined by VWD to maintain successful plant growth. Temporary irrigation shall be discontinued upon VWD's determination that the landscaping has permanently established, without the need for supplemental watering. 3. For proposed CIP reservoirs, pump stations and lift stations in urban settings, any disturbed unpaved areas following construction that are not designated for vehicular or pedestrian access shall be landscaped using plant materials consistent with original site conditions and/or surrounding ornamental vegetation in order to return the disturbed area to its existing visual character. 4. The landscaping plan for CIP reservoirs, pump stations and lift stations shall include the planting of large trees and/or shrubs in	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			addition to native vegetation, where appropriate, to adequate provide screening of the proposed structures. **Aes-2 Visually Compatible Design.** The following design measures shall be implemented for all CIP projects that include above-ground facilities (including access roads): 1. Reservoirs and access roads shall use appropriate building materials and color palettes that are visually consistent with the surrounding natural vegetation and/or built environment. 2. Reservoirs, pump station buildings, access roads and lift station buildings shall use low-reflective low-glare paint and materials unless required for safety or by law. 3. Access roads shall be designed to minimize grading, slope ratios and the blockage of existing views when possible. Access roads shall not contain features such as asphalt coating, lighting fixtures, signage, guard rails, walls, fences, curbing, pavement marking, or other service structures or appurtenances unless required for safety or by law.	
Scenic Vistas	CIP project R-11 would be located on an undeveloped hillside within the Merriam Mountains Resource Conservation Area and construction of the proposed reservoir has the potential to adversely impact scenic views.	S	**Aes-3 Visual Resources Report.** Prior to construction of proposed CIP Project R-11, a Visual Resources Report shall be prepared. The Visual Resources Report shall analyze the compatibility of the proposed reservoir with the existing aesthetic character of the surrounding area; assess the potential effect to the visual resources within the Resource Conservation Area, and determine whether any proposed security or emergency lighting would be detrimental to adjacent residential uses and/or wildlife.	LS
Lighting and Glare	Lighting associated with CIP projects would be limited to emergency lighting and temporary security lighting and would not create a substantial new lighting source. Glare impacts could occur from sunlight reflecting off of above-ground CIP facilities.	S	Implementation of Aes-1 and Aes-2 would reduce potential impacts associated with daytime glare from proposed CIP reservoirs, pump stations, and lift stations to a less than significant level.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
4.9 Land Use and Planning				
Land Use Incompatibilities and Conflicts with Land Use Plans and Biological Conservation Plans	The 2018 Master Plan has the potential to conflict with local land use policies and result in incompatibilities with surrounding land uses.	S	With implementation of mitigation measures identified in the following sections, the 2018 Master Plan would be compatible with adjacent land uses: Section 4.1(Air Quality), Section 4.2 (Biological Resources), Section 4.3 (Cultural Resources), Section 4.5 (Geology, Soils, and Paleontology), Section 4.7 (Hydrology and Water Quality), Section 4.8 (Landform Alteration and Aesthetics), Section 4.10 (Noise), and Section 4.11 (Public Safety).	LS
4.10 Noise				
Substantial Permanent Increases in Ambient Noise Levels	CIP pump and lift stations located adjacent to residential land uses would be fitted with masonry enclosures and would not result in substantial permanent increases in ambient noise levels.	LS	No mitigation is required.	LS
Temporary Increases in Ambient Noise	Construction of CIP projects would temporarily increase ambient noise levels in the project vicinity.	S	**Noi-1 Construction Noise Limits.** Construction activities shall comply with applicable local noise ordinances and regulations specifying sound control, including the County of San Diego, the City of San Marcos, the City of Escondido, the City of Carlsbad and the City of Vista. Measures to reduce construction/demolition noise to the maximum extent feasible shall be included in contractor specifications and shall include, but not be limited to, the following: 1. Construction activity shall be restricted to the hours specified within each respective jurisdiction's municipal code, depending on the location of the specific CIP project, as follows: a. Construction activity for CIP projects occurring within San Diego County shall occur between hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday (see Table 4.10-1). For construction activities on Sunday or during night hours, a variance from the County must be obtained. CIP projects subject to this provision include R-2, R-3, R-4, R-5, R-6, R-9, R-10, R-11, PS-3, PS-4, PS-5, PS-7, P-52, P-53, P-16, P-56, P-30, P-64, P-42, P-57, P-10, SP-15, SP-22 and SP-31.	LS

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
			b. Construction activity for CIP projects occurring within the City of San Marcos shall occur between hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday (see Table 4.10-2). For construction activities on Sunday or during night hours, a waiver from the City Manager must be obtained. CIP projects subject to this provision include PS-1, PS-6, PS-8, P-24, P-100, P-15, SB-1, SP-5, SP-6, SP-7, SP-8, SP-9, SP-10, SP-18, SP-19, SP-20, SP-21, SP-23, SP-24, SP-25, SP-26, SP-27, SP-28, SP-29, SP-30, SP-31, and SP-33. c. Construction activity for CIP projects occurring within the City of Escondido shall occur only between hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, and between the hours of 9:00 a.m. to 5:00 p.m. on Saturdays (see Table 4.10-3 of this PEIR section). For construction activities on Sunday or during night hours, a variance from the City Manager must be obtained. CIP projects subject to this provision include R-8, PS-2 and P-43. d. Construction activity for CIP projects occurring within the City of Carlsbad shall occur between 7:00 a.m. and before sunset, Monday through Friday, and between 8:00 a.m. and sunset on Saturday; construction shall be prohibited on Sundays, New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day. For construction activities on Sundays, Holidays or during night hours, a permit from the City must be obtained. Projects subject to this provision include SP-6 and SP-13 and the parallel land outfall. 2. Construction noise for CIP projects located within San Diego County, City of Vista and City of San Marcos shall not exceed an average sound level of 75 dB(A) for an eight-hour period at the CIP project's property boundary. 3. Construction noise for CIP projects located within the City of Escondido shall not exceed a one-hour average sound level limit of 75 dB(A) at any time, unless a variance has been obtained from the City Manager. 4. All construction equipment shall be properly outfitted and maintained with manufacturer-recommended noise-reduction devices.	

Table S-1 Master Plan Environmental Impacts and Mitigation Measures				
Issue	Impact	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation
Excessive Groundborne Vibration or Noise	Implementation of a Construction Vibration and Blasting Noise Management Plan would prevent the construction of CIP projects temporarily resulting in excessive groundborne vibration and noise.	LS	No mitigation is required.	LS
4.11 Public Safety				
Transport, Use, and Disposal of Hazardous Materials and Accidental Releases	The 2018 Master Plan would comply with applicable regulations, such as RCRA, EPCRA and CalARP, related to hazardous materials use and handling.	LS	No mitigation is required.	LS
Listed Hazardous Materials Sites	Excavation or trenching activities associated with construction of CIP projects could result in the accidental release of a hazardous material, resulting in a hazard to the public or the environment.	S	Mitigation measure Geo-1.	LS
Emergency Response and Evacuation Plans	The 2018 Master Plan would implement a traffic control plan that would prevent interference with an adopted emergency response plan or evacuation plan.	LS	No mitigation is required.	LS
S = Significant; LS = Less than significant; PS = Potentially significant				

Table S-2 Cumulative Impacts and Mitigation Measures			
Issue	Geographic Scope of Cumulative Impact Analysis	Significant Cumulative Impact?	Proposed Master Plan Contribution
4.1 Air Quality			
Consistency with applicable air quality plan.	The geographic context for air quality impacts is the San Diego Air Basin in San Diego County.	No	No cumulative impact.
Consistency with air quality standards.	The geographic context for air quality impacts is the San Diego Air Basin in San Diego County.	Yes	Not cumulatively considerable.
Objectionable odors.	The area immediately surrounding the odor source.	No	No cumulative impact.
4.2 Biological Resources			
Candidate, Sensitive, or Special Status Species	The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of Northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern. For federally listed species whose critical habitat occurs within the VWD service area (e.g., coastal California gnatcatcher), the geographic scope for the cumulative impact analysis encompasses all contiguous critical habitat units that extend beyond the boundaries of the VWD service area.	Yes	Not cumulatively considerable.
Riparian Habitat and Sensitive Natural Communities	The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of Northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern.	Yes	Not cumulatively considerable.
Wetlands	The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of Northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern.	Yes	Not cumulatively considerable.

Table S-2 Cumulative Impacts and Mitigation Measures			
Issue	Geographic Scope of Cumulative Impact Analysis	Significant Cumulative Impact?	Proposed Master Plan Contribution
Local Policies and Ordinances	The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of Northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern.	Yes	Not cumulatively considerable.
Habitat Conservation Plans	The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of Northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern.	Yes	Not cumulatively considerable.
4.3 Cultural Resources			
Regional loss of historic and archeological resources.	The geographic scope of cumulative impact analysis is the VWD service area, which includes 45-square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites.	Yes	Not cumulatively considerable with implementation of measures Cul-1, Cul-2, and Cul-3.
Regional loss of Native American human remains	The geographic scope of cumulative impact analysis is the VWD service area, which includes 45-square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites.	Yes	Not cumulatively considerable with implementation of Cul-4.
Regional loss of tribal cultural resources	The geographic context for the analysis of cumulative impacts to tribal cultural resources includes the VWD service area, which includes 45-square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites.	No	No cumulative impact.
4.4 Energy			
Energy Consumption	The VWD service area is the geographic scope of cumulative for energy	No	No cumulative impact.

Table S-2 Cumulative Impacts and Mitigation Measures			
Issue	Geographic Scope of Cumulative Impact Analysis	Significant Cumulative Impact?	Proposed Master Plan Contribution
4.5 Geology			
Localized soil erosion or loss of topsoil in affected watersheds due to development.	The Carlsbad and San Luis Rey watersheds directly downstream from CIP construction sites.	Yes	Not cumulatively considerable with implementation of mitigation measure Geo-2.
Regional loss of paleontological resources	The paleontologically sensitive geologic formations within the VWD service area.	Yes	Not cumulatively considerable with implementation of mitigation measure Geo-3.
4.6 Greenhouse Gas Emissions			
Direct and Indirect Generation of GHG and Consistency with Applicable Plans Adopted for Reducing GHG	Due to the nature of assessment of greenhouse gas emissions and the effects of climate change, impacts can currently only be analyzed from a cumulative context. Therefore, the geographic scope for the cumulative analysis of global climate change is the global atmosphere for greenhouse gas emissions.	Yes	Not cumulatively considerable.
4.7 Hydrology and Water Quality			
Regional increase in pollutant sources that could adversely affect water quality standards.	The portions of the Carlsbad and San Luis Rey watersheds.	Yes	Not cumulatively considerable.
Regional impacts to alteration of localized drainage patterns that can result in increased polluted runoff, flooding, and exceedance of capacity of storm water drainage facilities due to alteration of localized drainage patterns.	The portions of the Carlsbad and San Luis Rey watersheds.	Yes	Not cumulatively considerable.
4.8 Landform Alteration and Aesthetics			
Local degradation of visual character.	Public viewsheds from which above-ground CIP projects would be visible.	Yes	Not cumulatively considerable with implementation of Aes-1 and Aes-2.
Local degradation of scenic vistas.	Public viewsheds from which above-ground CIP projects would be visible.	Yes	Not cumulatively considerable with implementation of Aes-3.
Regional Light Pollution	The urban areas within the VWD service area.	Yes	Not cumulatively considerable with implementation of Aes-1 and Aes-2.

Table S-2 Cumulative Impacts and Mitigation Measures			
Issue	Geographic Scope of Cumulative Impact Analysis	Significant Cumulative Impact?	Proposed Master Plan Contribution
4.9 Land Use			
Incompatibilities with adjacent land uses.	Incompatibilities with adjacent land uses are generally site specific. Therefore, the geographic context for the analysis of cumulative impacts relative to adjacent land use incompatibilities includes development characteristics surrounding proposed 2018 Master Plan CIP facilities and zoning regulations in the vicinity of wastewater projects.	No	No cumulative impact.
4.10 Noise			
Substantial Permanent Ambient Noise Increases	Residential projects directly adjacent to CIP construction sites and pump stations, and projects adjacent to roadways and freeways used by construction-related traffic along which the projected increase in construction traffic would exceed noise standards.	No	No cumulative impact.
Temporary Increases in Ambient Noise	Residential projects directly adjacent to CIP construction sites and pump stations, and projects adjacent to roadways and freeways used by construction-related traffic along which the projected increase in construction traffic would exceed noise standards.	No	No cumulative impact.
Generation of Groundborne Vibration	Residential projects directly adjacent to CIP construction sites and pump stations, and projects adjacent to roadways and freeways used by construction-related traffic along which the projected increase in construction traffic would exceed noise standards.	No	No cumulative impact.
4.11 Public Safety			
Transport, use, and disposal of hazardous materials and accidental releases into the environment and near schools.	The roadways and freeways used by vehicles transporting hazardous materials to and from the CIP construction sites, and the CIP project sites that involve the use of hazardous materials	Yes	Not cumulatively considerable.

Chapter 1.0 Introduction

This Program Environmental Impact Report (PEIR) assesses the potential environmental impacts of the proposed 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) by the Vallecitos Water District (VWD or District) and supplements the 2011 PEIR (State Clearinghouse Number 2010071073) for the VWD 2008 Water, Wastewater, and Water Reclamation Master Plan Update.

To provide reliable and cost-effective service to its customers, the District routinely updates its Master Plan to evaluate the existing and future needs for water, wastewater, and recycled water services and also to develop a facilities plan and Capital Improvement Program (CIP) to accommodate these needs. The 2018 Master Plan is intended to update the VWD 2008 Water, Wastewater, and Water Reclamation Master Plan (2008 Master Plan) to plan for those projects that would be needed if development occurs as forecast and account for a reduction in the projected service demand. As such, the 2018 Master Plan includes reduced or deferred CIP projects as compared to the 2008 Master Plan.

This PEIR has been prepared by the District in compliance with the California Environmental Quality Act (CEQA) and Guidelines (Public Resources Code, Section 21000, et seq. and California Code of Regulations (CCR), Title 14, Section 15000, et seq. "CEQA Guidelines"). This PEIR is an informational document, the purpose of which is to inform the public and decision makers concerning the potential environmental impacts of the Master Plan, including any changes in potential impacts between the 2008 Master Plan and the 2018 Master Plan, and to identify feasible means by which any significant impacts can be avoided or reduced to less than significant through the application of mitigation measures and the evaluation of a reasonable range of project alternatives.

1.1 Master Plan Background

The VWD is a county water district governed by five representatives voted into office by local citizens. It is dedicated solely to the provision of water, wastewater, and water

reclamation services and has been in existence for more than 50 years. As a member agency of the San Diego County Water Authority (SDCWA), the VWD currently purchases all of the potable water that it delivers from the SDCWA. The SDCWA is responsible for transmission of the imported water supply within San Diego County to its member agencies, and is itself a member of the Metropolitan Water District of Southern California (MWD).

In 2002 and 2008, the VWD updated its Water, Wastewater, and Water Reclamation Master Plan to systematically accommodate changes in projected demands for distribution and storage; wastewater collection, treatment and disposal; and water reclamation treatment, storage and distribution through ultimate buildout. The purpose of the 2018 Master Plan is to provide a reasonable approach to meet the service demands of planned development as they arise, and integrate changes in the service level demand within the VWD service territory. The 2018 Master Plan would serve as a tool to plan for growth, analyze approved land use and density change service demand data to determine the level of projected future water and wastewater demands, and identify the potable water and wastewater CIP facilities (e.g., pump and lift stations, storage reservoirs, transmission mains, land outfall) needed to meet these projected water and wastewater demands within the VWD service area and sphere of influence through 2040.

The 2018 Master Plan would develop a phased approach to implement CIP projects during the following time frames: Phase 1 projects represent projects that are underway or expected to be completed by 2020. Phase 2 (2021-2025) projects represent high priority projects that should be planned or constructed over the next five years. Lower priority projects are identified as Phase 3 and Phase 4 projects that would be phased over the following 10 years (2026-2035). Phase 5 projects identified in this Master Plan are projects that would be required to meet the projected build-out, or ultimate demand conditions.

1.2 Environmental Review Process

1.2.1 Lead, Responsible, and Trustee Agencies

As the principal public agency responsible for carrying out and approving the Master Plan, the District is the lead agency responsible for preparing and considering the findings of this PEIR. The District is governed by its Board of Directors, which is composed of five representatives voted into office by local citizens. The Board of Directors will ultimately make a determination whether to approve or deny the Master Plan and to certify this PEIR. If mitigation identified in this PEIR would not reduce impacts to a level below significance, the Lead Agency would also be required to adopt the Findings and Statement of Overriding Considerations (Sections 15091 and 15093 of the CEQA Guidelines).

Implementation of the Master Plan may require subsequent actions involving responsible and trustee agencies. Responsible agencies, as defined pursuant to Section 15381 of the CEQA Guidelines, are public agencies that may have discretionary approval authority over certain aspects of a project, and include, but are not limited to: California Coastal Commission (CCC), SWRCB, Regional Water Quality Control Board (RWQCB), California

Department of Health Services (DHS), California Department of Transportation (Caltrans), County of San Diego Department of Environmental Health (DEH), San Diego Local Agency Formation Commission (LAFCO), the County of San Diego, and the cities of San Marcos, Carlsbad, Escondido, and Vista. Federal agencies that may have discretionary authority over certain aspects of the CIP projects described in the Master Plan include, without limitation, the U.S. Fish and Wildlife Service (USWFS) and the U.S. Army Corps of Engineers (USACE).

As defined in Section 15386 of the CEQA Guidelines, a trustee agency is a state agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of the state of California. The California Department of Fish and Wildlife (CDFW) is a trustee agency responsible for ensuring appropriate conservation of the state's biological resources including rare, threatened, and endangered plant and animal species which may be impacted by subsequent projects implemented in accordance with the Master Plan. As stated in their comment letter in response to the Notice of Preparation (NOP), the Native American Heritage Commission (NAHC) is also a trustee agency and is responsible for the protection and preservation of Native American cultural resources within the state that may be impacted by future CIP projects implemented under the Master Plan.

1.2.2 Purpose of a Program EIR

According to Section 15168(a) of the CEQA Guidelines, a PEIR can be prepared when a series of actions can be characterized as one large project and are related either:

1. Geographically,
2. As logical parts in a chain of contemplated actions,
3. In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
4. As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

The Master Plan meets all four of these criteria. This PEIR evaluates the broad programmatic implementation of the Master Plan as the project and, as a result, can provide for a more thorough consideration of potential environmental effects, including cumulative impacts, mitigation measures, and alternatives, than would be provided for individual projects included in the program (i.e., CIP projects). Evaluation of these factors at the early stages of the planning process can simplify later environmental review for specific projects within the program by focusing such later review solely upon new effects not considered in the PEIR.

Therefore, this PEIR is tailored to serve as the first tier environmental analysis, namely, the program planning process for the Master Plan, contemplating that additional detail and environmental analysis may be necessary for individual CIP projects at the second tier. This second tier would involve the individual projects included in the program that may

involve site-specific or project-specific effects not addressed in the PEIR. As stated in Section 15168(c)(5) of the CEQA Guidelines:

> A PEIR would be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible. With a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the PEIR, and no further environmental documents would be required.

This PEIR analyzes the programmatic implementation of the Master Plan. Neither the adoption of the Master Plan nor certification of the Final PEIR shall constitute an approval of or a commitment to any specific CIP project or activity, construction schedule, or funding priority. This PEIR includes conceptual plans and potential construction assumptions for future CIP projects; however, this does not constitute a commitment to such CIP projects. If conceptual plans for CIP projects within this PEIR are altered at time of implementation, subsequent environmental documentation pursuant to CEQA may be required (Section 15168(c) of the CEQA Guidelines).

The PEIR process and the information it generates will be used for the following purposes:

- To give responsible and trustee agencies, other governmental bodies, and the public the opportunity to provide input into the PEIR and the decision-making process;
- To provide public agencies with the information necessary in order to determine if they have jurisdiction over some aspect of the Master Plan implementation, and, if so, to identify any requirements it may have for project permits, approvals, licenses, or other entitlements;
- To inform the public as well as the decision-makers of the potential environmental consequences of the Master Plan implementation and its alternatives and to assist the District in making decisions and taking actions to avoid or reduce any environmental effects to a less than significant level; and
- To assist the public in understanding the potential environmental effects and how decision-makers plan to respond to and mitigate such effects.

1.2.3 Environmental Review for Future Actions

As previously detailed, the Master Plan includes potential CIP projects, such as pipeline replacements, pump stations, and other infrastructure. In accordance with Section 15168(c) of the CEQA Guidelines, when a subsequent CIP project is proposed for construction, the District (as Lead Agency) will examine the project to determine whether its effects have been adequately addressed in the PEIR. If the Lead Agency determines that the project is within the scope of the program examined in the PEIR, that no new or more severe effects not already examined in the PEIR may occur, and that no new information shows that new mitigation measures or alternatives are required, the Lead Agency may approve the project

as being within the scope of the PEIR, and no additional environmental documentation would be required (14 CCR 15168(c)(1)-(2)).

If the subsequent project would have effects not analyzed in the PEIR, then further environmental review would be required pursuant to the CEQA Statues and Guidelines for those effects. The determination of the appropriate type of environmental documentation would be made by the Lead Agency; in this case the District. The PEIR may be used as a basis for future initial studies to evaluate potential impacts of future activities. In addition, it may be used as a first-tier EIR for later project-level environmental documents, thereby focusing later review of projects on specific environmental effects of those projects that were not fully evaluated in the PEIR. It may also serve as a database for the environmental setting, cumulative impacts, project alternatives, and other sections of later, project-specific environmental documents. In this way, the PEIR will streamline and focus future project-specific environmental documents on just those impacts that were not previously analyzed.

1.2.4 Project-Level Analysis of the Diamond Siphon Replacement Project

The District has identified one of the CIP wastewaster pipeline projects, the Diamond Siphon Replacement project (CIP project SP-10), as being the highest priority project for future development. As such, whereas the potential impacts of other CIP projects have been analyzed at the program level, the Diamond Siphon Replacement project has been analyzed at the project level for each environmental issue area of this PEIR. Where potential impacts of the Diamond Siphon Replacement project have been determined to be no more significant than those of the other CIP projects and reduced to a less than significant level with the mitigation prescribed in this PEIR, the Diamond Siphon Replacement project can be concluded to be fully evaluated by the program-level analysis included in this PEIR.

1.2.5 Notice of Preparation and Scoping Process

Scoping is the process followed to ensure that the relevant environmental concerns of individuals, organizations, and agencies about a project are adequately addressed within the project's environmental document. Scoping is an integral part of the CEQA process because it allows interested parties to directly participate in the preparation of the PEIR, and to identify potentially significant environmental impacts and alternatives for consideration.

To initiate the public scoping process for this PEIR Supplement in accordance with CEQA, the District circulated a NOP through direct mailings and published a legal notice in the *San Diego Union-Tribune* on November 26, 2017, and December 3, 2017. The 45-day public review period for the NOP ended January 5, 2018. A total of 8 comment letters were received during the NOP public scoping period.

Appendix A to this PEIR includes the NOP and associated legal newspaper publication as well as copies of the written comments received during the NOP public scoping period.

1.2.6 Draft PEIR

The PEIR review process occurs in two basic stages. The first stage is the Draft PEIR, which offers the public and interested and affected agencies the opportunity to comment on the document, while the second stage is the Final PEIR.

The Draft PEIR is distributed for review to the public and interested and affected agencies for a review period for the purpose of providing comments "on the sufficiency of the document in describing the project, identifying and analyzing the potential effects on the environment, and mitigation measures which would reduce avoidable impacts mitigated to a less than significant level" (Section 15204 of the CEQA Guidelines). In accordance with Section 15105 of the CEQA Guidelines, the public review period for a Draft PEIR shall not be less than 30 days nor should it be longer than 60 days except under unusual circumstances. When a Draft PEIR is submitted to the State Clearinghouse for review by state agencies, the public review period shall not be less than 45 days, unless the State Clearinghouse approves a shorter period. During public review, the Draft PEIR is circulated to responsible agencies and trustee agencies with resources affected by the project, state agencies with jurisdiction by law, federal agencies, and interested parties and individuals.

In reviewing the Draft PEIR, reviewers should focus on the sufficiency of the document in identifying and analyzing potentially significant effects on the environment and avoiding or mitigating the significant effects of the proposed project. The PEIR public review period began on October 22, 2018 and will end on December 7, 2018. The document can be reviewed online at www.vwd.org, and hard copies are available for review at the engineering counter of the Vallecitos Water District office. A public hearing on the Draft PEIR will be held during the public review period to gather additional testimony on the project and the adequacy of the Draft PEIR. Notification of the date and time of the public hearing will be distributed prior to the scheduled date. In addition, comment letters on this Draft PEIR may be submitted in writing and addressed to:

Robert Scholl
Vallecitos Water District
201 Vallecitos de Oro
San Marcos, CA 92069
Email: rscholl@vwd.org

1.2.7 Final PEIR

Following the end of the public review period, the District will provide written responses to comments received on the Draft PEIR per Section 15088 of the CEQA Guidelines and will consider all comments in completing the Final PEIR and in making its decision whether to approve the 2018 Master Plan. Following responses to the comments received during public review, a Mitigation Monitoring and Reporting Program (MMRP), Findings of Fact, and a Statement of Overriding Considerations for impacts identified in the Draft PEIR as

significant and unavoidable would be prepared (if applicable) and compiled as part of the PEIR finalization process.

The Final PEIR will be made available for public review at least 10 days prior to the first public hearing in order to provide the public and those that commented on the Draft PEIR the opportunity to review the written responses to their comment letters. The culmination of this process is a public hearing where the Board of Directors will determine whether to certify the Final PEIR, and adopt the MMRP, Findings of Fact, and Statement of Overriding Consideration as being complete and in accordance with CEQA.

1.3 PEIR Scope, Content, and Organization

1.3.1 Scope and Content

The scope of analysis for this PEIR was determined by the District as a result of the scoping process (previously detailed in Section 1.2.5). Through these scoping activities, the Master Plan update was determined to have the potential to result in significant environmental impacts in the areas set forth below. These potential effects are fully analyzed within this PEIR:

- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology, Soils, and Paleontology
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Landform Alteration and Aesthetics
- Land Use and Planning
- Noise
- Public Safety

A significant effect on the environment is defined as a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (Section 15382 of the CEQA Guidelines). The purpose of the analysis section of this PEIR (Chapter 4) is to determine whether implementation of the 2018 Master Plan may have a significant effect on the environment. The 2018 Master Plan would not result in one or more potentially significant effects on the following environmental factors: agricultural resources, mineral resources, transportation and traffic, population and housing, public services, recreation, and utilities and service systems. The rationale for this determination is set forth in Chapter 5 of this PEIR.

Pursuant to Section 15126 of the CEQA Guidelines, all components of the Master Plan are considered in this PEIR when evaluating its potential impacts on the environment. Impacts are identified as direct or indirect, and short-term or long-term. The analysis addresses the

impacts that would result from implementation of the Master Plan compared to existing baseline conditions.

1.3.2 Organization

The content and format of this PEIR are designed to meet the requirements of CEQA. This PEIR includes the following:

- **Executive Summary.** The Executive Summary summarizes the proposed Master Plan, environmental impacts that would result from implementation of the 2018 Master Plan, recommended mitigation measures that would avoid or reduce impacts, and the level of significance of impacts both before and after mitigation. The Executive Summary also identifies areas of controversy known to the District and issues to be resolved including the choice among alternatives and whether or how to mitigate identified significant effects.

- **Chapter 1.0, Introduction.** The Introduction provides an introduction and overview describing the purpose and intended use of the PEIR, the PEIR's compliance with CEQA, and the scope and organizational format of the PEIR.

- **Chapter 2.0, Environmental Setting.** The Environmental Setting provides a description of the physical environmental conditions within the Plan Area, as they exist at the time the NOP is published, which constitute the baseline physical conditions by which the significance of potential impacts will be assessed. This section also includes a discussion of the regional setting, including resources that are rare or unique to the region.

- **Chapter 3.0, Project Description.** The Project Description provides a detailed description of the 2018 Master Plan, including background, objectives, key features, environmental design considerations, and implementation phasing.

- **Chapter 4.0, Environmental Effects Analysis.** The Environmental Effects Analysis subsections contain program-level analysis for the environmental issues previously identified in Section 1.3.1. The subsection for each environmental issue contains a description of the existing environmental setting, regulatory framework, impact analysis, cumulative impact analysis, mitigation measures, CEQA checklist items deemed not significant, and references cited.

- **Chapter 5.0, Other CEQA Considerations.** The Other CEQA Considerations section provides discussions required by Sections 15126 and 15128 of the CEQA Guidelines, including issues found not to be significant during the PEIR process, growth inducing impacts, significant environmental effects that cannot be avoided, and significant irreversible environmental changes that would result from implementation of the project.

- **Chapter 6.0, Project Alternatives.** The Alternatives section describes alternatives to the 2018 Master Plan that could avoid or substantially lessen

significant effects and evaluates their environmental effects in comparison to the Master Plan.

- **Chapter 7.0, List of Preparers.** The Preparers section provides a list of the PEIR preparers and their roles in preparing the document.

1.4 Other Related Environmental Documents

This PEIR incorporates by reference and is intended to supplement the 2011 PEIR for the VWD 2008 Water, Wastewater, and Water Reclamation Master Plan Update (2008 Master Plan; State Clearinghouse Number 2010071073). Section 15150 of the CEQA Guidelines requires that relevant information be summarized in the subsequent environmental document provided that the previous environmental document is made available for review by the public. The PEIR for the 2008 Master Plan is available to the public for review at the VWD office address listed in Section 1.2.6, and is available online at www.vwd.org.

Chapter 2.0
Environmental Setting

The purpose of this chapter is to provide an overview of the regional and local environmental setting of the District's potable water supply, storage, and delivery systems, its wastewater collection and treatment systems, and its wastewater reclamation, storage and delivery systems, and of the area in which the 2018 Master Plan would be implemented. This chapter also contains generalized information regarding natural resources and land use within the Vallecitos Water District's (VWD or District) service territory (Plan Area).

2.1 Regional Context

Within the context of water supply, the District purchases water from the San Diego County Water Authority (SDCWA) and from Poseidon Water, and SDCWA purchases water from the Metropolitan Water District of Southern California (MWD).

MWD is a cooperative of 26 cities and water agencies serving 19 million people in six counties within southern California. Their service area extends from Oxnard, eastward to Perris, and southward through San Diego County to the international border. MWD's water resources are mostly from the Colorado River and the California State Water Project (primarily water from northern California).

SDCWA's service area extends over 920,463 acres of western San Diego County. The SDCWA distributes water to its member agencies through 286 miles of pipelines. These pipelines carry water to San Diego County from the MWD's storage, treatment, and conveyance facilities in southwestern Riverside County.

San Diego County is located in the southwestern corner of California and encompasses approximately 2.9 million acres. The County is bordered by Riverside and Orange counties to the north; Imperial County to the east; the country of Mexico to the south; and the Pacific Ocean to the west.

2.2 Local Setting

The Plan Area is located in the central portion of northern San Diego County (North County), approximately 40 miles north of downtown San Diego (Figure 2-1). The Plan Area encompasses approximately 45 square miles and includes the city of San Marcos, parts of the cities of Carlsbad, Escondido, Vista, and unincorporated areas within the county of San Diego (Figure 2-2). Land uses within the service area are primarily residential with a mix of agricultural/rural, light industrial, and commercial. Regional access to the Plan Area is generally provided by Interstate 15 (I-15), a north-south freeway, and State Route 78 (SR-78), an east-west highway that links Interstate 5 (I-5) with I-15. A brief overview of each jurisdiction in which the Plan Area is located is provided below. Information concerning each jurisdiction is from their respective general plans, accessible online.

2.2.1 County of San Diego

Almost half of the Plan Area is located in the low-lying coastal plain region within the unincorporated areas of San Diego County. Portions of the Plan Area are within the North County Metropolitan Subregion of the San Diego County General Plan, the Bonsall community planning area (CPA), and the San Dieguito CPA. The North County Metropolitan Subregion is characterized by a mixture of steep, rugged terrain, rolling hills and valleys, and level farmland. The Bonsall CPA is characterized by low-density residential development with lots ranging from one to ten acres and agricultural uses. The San Dieguito CPA is characterized by a distinctive town center with concentrated commercial uses known as the Rancho Santa Fe Village.

2.2.2 City of San Marcos

A majority of the Plan Area covers land within the city of San Marcos, which has an estimated population of more than 90,000 residents. San Marcos contains a variety of landforms, such as the mountain ranges in the northern and southern portions of the city, which contribute to its scenic corridors. Biological habitats and water resources, such as riparian areas along San Marcos Creek and its tributaries, provide a diverse environment of plant and animal habitats. San Marcos contains eight unique neighborhoods. The most prevalent existing land uses are residential, consisting of approximately 31 percent; vacant lands, consisting of approximately 25 percent; and parks, recreation facilities, and open space comprising approximately 14 percent.

2.2.3 City of Escondido

Escondido‘s geographic setting, characterized by hills and mountains surrounding an open valley bisected by Escondido Creek, governs the manner in which the city has built out. The city of Escondido has an estimated population of over 150,000 residents. Expanding out from its historic downtown and urban core are established single and multi-family neighborhoods that have replaced agricultural groves. Densities diminish and streets follow

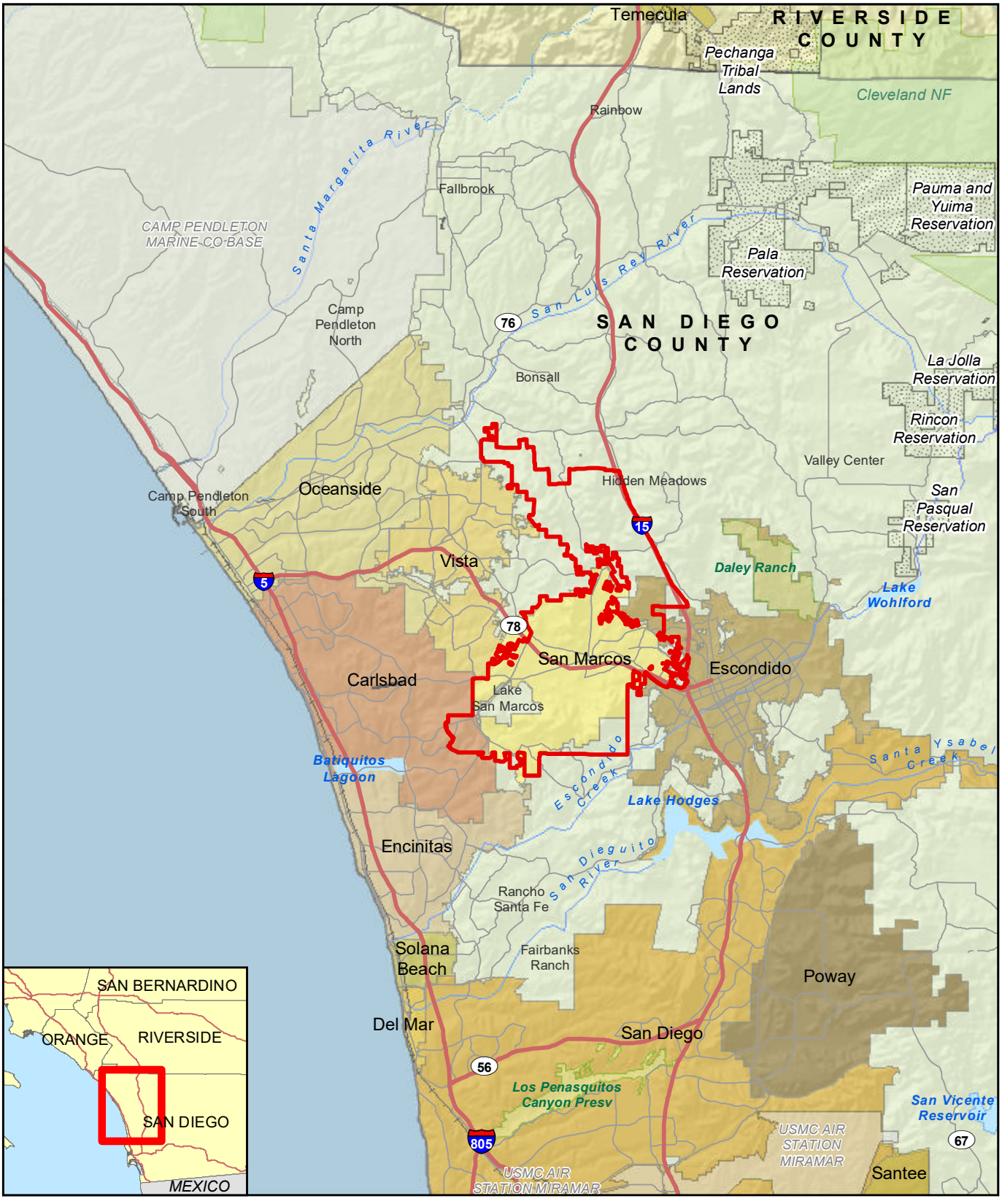

FIGURE 2-1
Regional Location

RECON

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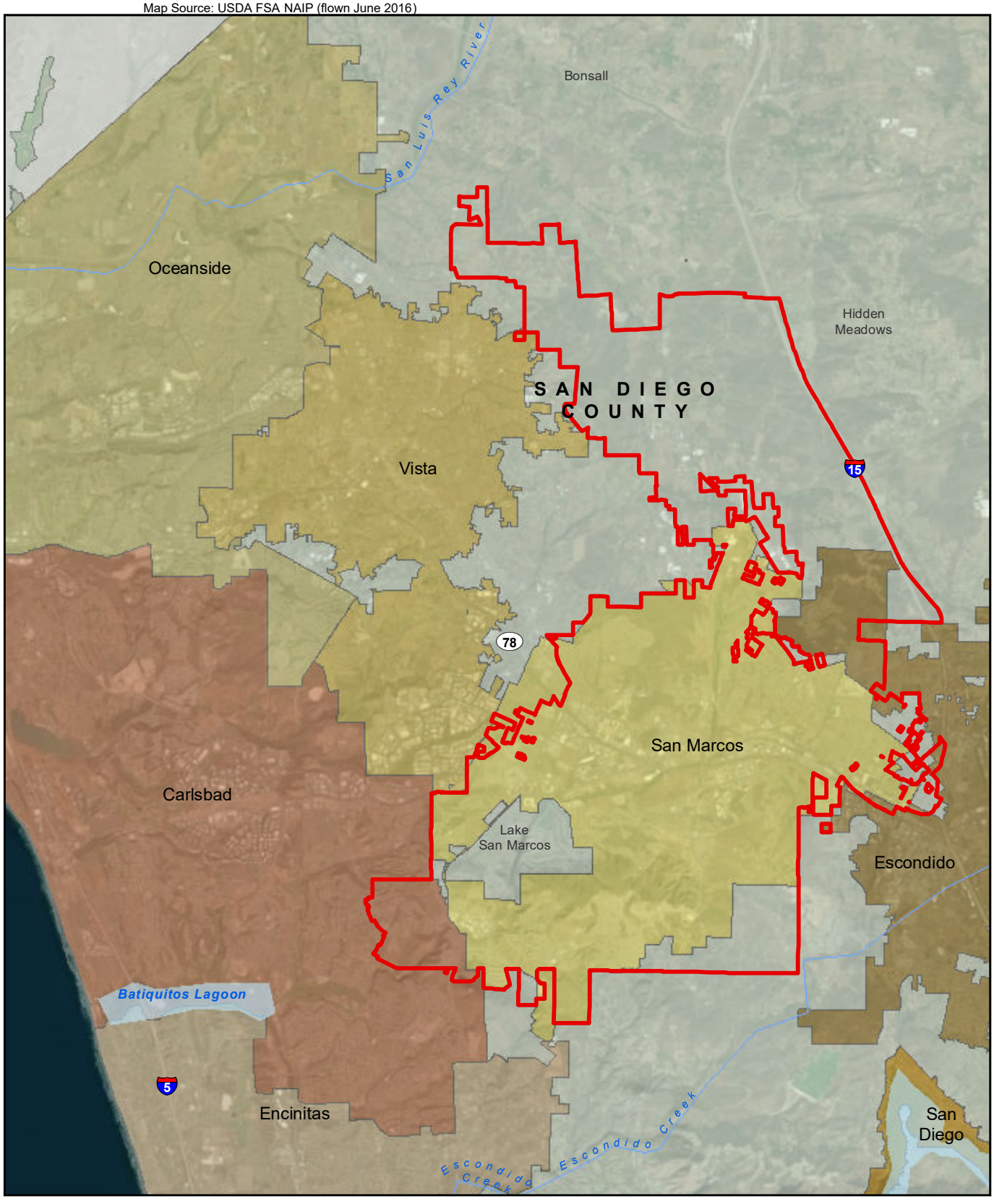

FIGURE 2-2
VWD Service Area

RECON

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topographic contours in outlying areas as the community transitions to higher elevations where agricultural operations remain in many areas along with open space. The community's primary employment area parallels SR-78 and the rail line, first constructed in the 1880s, that links Escondido to the coast.

2.2.4 City of Vista

Vista is largely built out with an estimated population of 102,000 residents. The majority of existing developed land is dedicated to residential uses; there are approximately 32,000 residential units throughout the city. Commercial and industrial square footage is approximately 37,000,000 square feet. Topography within the city ranges from lowland creek beds to steep slopes along the San Marcos Mountains. Vista has two major creeks that flow through its boundaries, Buena Vista Creek and Agua Hedionda Creek.

2.2.5 City of Carlsbad

Carlsbad occupies approximately 39 square miles of rolling hills, beaches, and bluffs along the northern coast of San Diego County. Its population is approximately 114,000 residents. Along Carlsbad's northern edge, urban development abuts SR-78, with the highway and Buena Vista Lagoon acting as a boundary between Carlsbad and Oceanside. Similarly, Batiquitos Lagoon along the city's southern edge defines the boundary between the cities of Carlsbad and Encinitas. To the east, city boundaries are less distinctive, as a mix of hillsides and urban development are located adjacent to the cities of Vista and San Marcos and unincorporated lands. The geographically dominant land use in Carlsbad is single-family residential, with neighborhoods distributed throughout the city. There are 45,522 residential units in the city, which consist of 31,650 single-family detached and attached (two-family) units (69.5 percent of the total residential units), 12,592 multi-family units (28 percent), and 1,280 mobile homes (2.8 percent).

2.3 Existing Facilities Environmental Setting

The District serves a population of approximately 103,233 people in its 45-square-mile boundary. The District has approximately 21,885 actively billed water meters that deliver over 16,500 acre-feet per year (AFY) of potable water through approximately 356 miles of pipe. The District's water distribution system consists of 27 pressure zones that serve potable water at hydraulic grades ranging from 622 feet above mean sea level (AMSL) to 1,608 feet AMSL. Historically, the District has obtained 100 percent of its water from the SDCWA via five different connections (turnouts). However, significant efforts have been made in recent years to diversify the region's water supply and have some impact on the District's water distribution system. This section summarizes the existing and potential supply sources available to meet the District's demands.

The District continues to receive water from the SDCWA through five potable water turnouts from the SDCWA's aqueduct system. The potable water storage hub of the system, where the largest of the District's connections to the SDCWA is located, lies in the Twin

Oaks valley. This site holds two buried concrete reservoirs with a total storage capacity of 73 million gallons. This site allows the District to move potable water from this location to anywhere within the Plan Area.

The District recently began receiving water from the Claude "Bud" Lewis Carlsbad Desalination Plant, located in the city of Carlsbad. The desalinated water connection currently provides approximately 3,500 acre-feet per year of new water supply to the District and provides a local source of water in the event there is an interruption of flow from the MWD to the north.

The District entered an agreement in 2012 to purchase a minimum of 2,750 AFY of treatment services from the Olivenhain Municipal Water District's (OMWD's) David C. McCollom Water Treatment Plant. This additional capacity will help improve operational flexibility and reliability during SDCWA aqueduct service outages. Under this agreement, potable water is transported from OMWD to District customers via a newly constructed San Elijo Hills Pump Station located at the existing connection site between OMWD and the District.

VWD's wastewater system serves approximately 20,179 connections through approximately 255 miles of pipe. The average wastewater flow in the collection system is currently at 7.5 million gallons per day (MGD). Approximately 3 MGD of this flow is collected by VWD's land outfall and sent to the Encina Water Pollution Control Facility in Carlsbad for treatment. Approximately 4.5 MGD is intercepted before reaching the land outfall and diverted to the Meadowlark Water Reclamation Facility, which also collects local wastewater flows from San Elijo Hills and eastern Carlsbad. The Meadowlark Water Reclamation Facility is a wastewater scalping plant capable of producing Title 16-quality recycled water with a total capacity of 5 MGD. Recycled water produced by the Meadowlark Water Reclamation Facility is sold under contract to the City of Carlsbad and the OMWD for non-potable purposes such as landscape irrigation.

2.4 Existing Physical Characteristics

2.4.1 Air Quality/Climate

The Plan Area is located in the San Diego Air Basin. As with most of the County's coastal areas, it has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The dominant meteorological feature affecting the region is the Pacific High Pressure Zone, which produces the prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from the coast toward the inland areas. Consequently, air quality near the coast is generally better than that which occurs at the base of the coastal mountain range.

2.4.2 Biological Resources

Generally, 10 vegetation communities characterize the Plan Area. These include disturbed habitat, agriculture, grassland, coastal sage scrub, chaparral, woodland, riparian, wetland,

open water, and urban/developed. These vegetation communities host a variety of sensitive plant and animal species. The Plan Area is within the boundaries of two regional conservation plans: the North County Multiple Habitat Conservation Program (MHCP) and the County of San Diego Multiple Species Conservation Plan (MSCP). The MHCP and MSCP are large-scale, multi-jurisdictional plans with long-term conservation goals and objectives for protecting sensitive plant and wildlife species and their habitats through the establishment of large, interconnected preserve areas. Subarea Plans for both the MHCP and MSCP have been prepared by local jurisdictions within San Diego County. Subarea Plans that have been approved are implemented by the local jurisdiction.

The Plan Area falls within the following MHCP and MSCP Subarea Plans:

1. Final City of Carlsbad MHCP Subarea Plan (Carlsbad Habitat Management Plan);
2. Draft City of Escondido MHCP Subarea Plan;
3. Draft City of San Marcos MHCP Subarea Plan; and
4. Draft County of San Diego MSCP North County Segment (North County Plan).

The only approved MHCP or MSCP Subarea Plan that occurs within the Plan Area is the Carlsbad Habitat Management Plan.

2.4.3 Cultural and Paleontological Resources

Cultural resources are generally categorized into three subtopics: archaeological, historic, and paleontological. Archaeological resources are generally located below ground surface. An historic resource (generally located above ground) is any building, structure, or object that is at least 45 years of age and may be significant architecturally or culturally in local, state, or national history. A paleontological resource refers to fossils consisting of the remains and/or traces of prehistoric plant and animal life.

Numerous archaeological resources also exist throughout the Plan Area. Some areas of high archaeological sensitivity are found within the vicinity of the Batiquitos and Agua Hedionda lagoons, San Marcos Creek, Double Peak and Mount Whitney, the central city area of San Marcos, and the Merriam Mountains. Historic-age resources are present within the Plan Area, and some of these structures are listed in the National Register of Historic Places (NRHP) or comprise NRHP Districts, and are considered eligible for listing in the California Register of Historic Resources.

Paleontological resources generally correlate to geologic formations. For example, a geologic formation composed of sandstone is more likely to contain paleontological resources than a formation composed of volcanic material. Geologic formations within the Plan Area include the Santiago formation, unconsolidated Quaternary deposits, and the more ancient hill and ridge rocks composed of igneous or meta-volcanic material.

2.4.4 Geology

The Plan Area is situated in the Peninsular Ranges Geomorphic Province. This province spans approximately 900 miles from the Transverse Ranges and the Los Angeles Basin in the north to the southern tip of Baja California. This province varies in width from approximately 30 to 100 miles and is bounded by the Colorado Desert in the east and the coastal plain in the west. In general, the Peninsular Ranges Province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest.

The Plan Area is characterized by a mixture of steep, rugged terrain, rolling hills and valleys, and level farmland. Some of the most prominent landforms are the mountain ranges, which include Merriam Mountains, San Marcos Mountains, Double Peak, Franks Peak, Mount Whitney, and Owen Mountain.

2.4.5 Hydrology and Water Quality

In terms of drainage and water quality, the region is subdivided into watersheds, hydrologic units, and hydrologic areas. The Plan Area is within the Carlsbad Watershed and the San Luis Rey River Watershed.

The Carlsbad Watershed is approximately 210 square miles in area extending from the headwaters above Lake Wohlford and the City of Escondido in the east to the Pacific Ocean in the west, and from the cities of Vista and Oceanside in the north to the city of Solana Beach and the community of Rancho Santa Fe to the south. The cities of Carlsbad, San Marcos, and Encinitas are entirely within this watershed. There are numerous important surface hydrologic features within the watershed, including four unique coastal lagoons, three major creeks, and two large water storage reservoirs. The potential beneficial uses of Agua Hedionda, Buena Vista, and San Elijo lagoons have been impaired due to excessive coliform bacteria and sediment loading from upstream sources. Other water bodies in the watershed have been identified as impaired for elevated coliform bacteria including several locations in the Pacific Ocean near creek and lagoon outlets.

The San Luis Rey River Watershed is located in North County. The San Luis Rey River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level, as well as several other mountain ranges along the western border of the Anza Borrego Desert Park. The river extends over 55 miles across North County, forming a watershed with an area of approximately 360,000 acres or 562 square miles. The river ultimately discharges to the Pacific Ocean near the city of Oceanside. With regards to water quality impairments, bacteria levels at the mouth of the San Luis Rey River and within the lower San Luis Rey River have been identified as a high priority concern for this watershed.

Chapter 3.0
Project Description

The purpose of this chapter is to describe the proposed project (e.g., the implementation of the Vallecitos Water District [VWD or District] 2018 Water, Wastewater, and Recycled Water Master Plan [2018 Master Plan]) for the public, reviewing agencies, and decision-makers.

3.1 Goals and Objectives

VWD's mission is to provide planned, reliable, effective, equitable and fiscally sound water and sewer service to its residential, commercial, and institutional customers. The primary objectives for the 2018 Master Plan include the following:

- Plan facilities to meet treated and untreated water demand and supply projections.
- Optimize the use of existing infrastructure.
- Protect the public's health, safety, and welfare by maintaining a safe and reliable water supply.
- Plan facilities that are cost-effective.
- Develop facility plans adaptive to changes in future conditions.
- Update water demands and wastewater flows based on current land uses, approved land uses, and projected growth-based land uses using capital improvement program (CIP) phasing periods corresponding with the phases used in relevant growth projection data.
- Ensure that proposed CIP facilities are sized to serve the "build-out" land use through either upgrades of existing facilities or expansion of the existing system,

and to construct CIP projects within existing rights-of-way, to the extent feasible, to avoid and minimize environmental impacts.

- Update VWD's wastewater treatment capacity needs at both Encina Water Pollution Control Facility and Meadowlark Water Reclamation Facility, and review and update wastewater land outfall capacity needs based on the new wastewater flow forecast.

3.2 Background

VWD is an independent special district governed by five representatives in five divisions voted into office by the local citizens. It is dedicated solely to the provision of water, wastewater, and water reclamation services and has been in existence for over 60 years. A group of local farmers who recognized that a more substantial water supply than the groundwater found in the San Marcos and Twin Oaks valleys was needed to serve the area formed VWD on March 12, 1955 as a water-only district. VWD, originally named the San Marcos County Water District, was initially established as a County Water District pursuant to Section 30000 et seq., Division 12 of the California Water Code, with the purpose of bringing outside water into the area through the development and operation of a public water supply system that tapped Colorado River water.

With the passage of a $998,000 bond issue in 1956, water system construction began. Initially, water deliveries from the San Diego County Water Authority (SDCWA) to the San Marcos County Water District were handled through the Bueno Colorado Municipal Water District. Growth in population and business activities drove the need for a sewer system. In 1958, an improvement district was formed to finance the construction of a wastewater collection system. A second improvement district was formed that same year to finance the construction of a wastewater treatment plant, which was completed in 1961.

3.3 Master Plan

3.3.1 Purpose

The purpose of the 2018 Master Plan is to update the 2008 Master Plan as a reasonable planning tool to meet the demands of planned development and future growth-based development within the VWD service boundary. This Program Environmental Impact Report (PEIR) supplements the 2011 PEIR for the VWD 2008 Water, Wastewater, and Water Reclamation Master Plan Update (2008 Master Plan; State Clearinghouse Number 2010071073).

The 2018 Master Plan updates the land use, potable water, wastewater, and recycled water projections utilized in the 2008 Master Plan to accommodate the projected population growth within the District. VWD routinely updates its Master Plan to:

- Evaluate the existing and future needs for water, wastewater, and recycled water services to meet the demands of growth forecast for the region by the San Diego Association of Governments (SANDAG) through 2035, and through ultimate build-out; and

- Develop a facilities plan and CIP to accommodate these needs.

The 2018 Master Plan addresses many local and regional issues, including requirements for water conservation, local water supply development, service territory growth, and wastewater collection, treatment, and disposal capacity. The 2018 Master Plan includes a comprehensive CIP that provides VWD with the strategy and capability for meeting projected water supply, wastewater, and recycled water customer service demands in a timely and reliable manner up to the year 2036 and through ultimate build-out. The complete 2018 Master Plan is available for review at the VWD office, located at 201 Vallecitos de Oro, San Marcos, California 92069, and online at www.vwd.org.

3.3.2 Capital Improvement Program Overview

CIP projects proposed in the 2018 Master Plan include a combination of water storage reservoirs, water pump/wastewater lift stations, and water/wastewater pipelines. Table 3-1 depicts a comparison in the CIP projects included in the 2008 Master Plan and those included in the 2018 Master Plan. The following paragraphs provide an overview of definitions, issues, and construction information associated with each of these facilities. The 2018 Master Plan CIP projects would generally be constructed in a similar manner as described in the 2011 PEIR for the 2008 Master Plan; however, changes in projected growth estimates and service demand have slightly altered the size and phasing of the CIP projects, and negated the need for certain CIP projects.

Water storage projects generally involve the construction and/or alteration of potable water-holding reservoirs. Typical reservoir sites consist of a steel or concrete storage tank (reservoir) constructed on a level graded pad; and include buried water supply and delivery pipelines, fencing for security purposes, and an access road for maintenance purposes. In addition, the placement of storage projects is an essential attribute of the facility because optimizing the elevation at which a storage project is located can greatly increase efficiency by reducing the amount of pumping (energy) needed to move water to and from a reservoir. In general, reservoir capacity is reported in units of millions of gallons (MG).

Table 3-1 2008 Master Plan Versus 2018 Master Plan Comparison						
		2008 Master Plan CIP Description[1]		2018 Master Plan Description		
CIP ID#	Proposed Project Title	Added Capacity or Length	Phased Years	Added Capacity or Length	Phased Years	Net Difference
Potable Water Storage CIPs						
R-1	Meadowlark Reservoir #3	2.80 MG	Up to 2010	2.47 MG	2020	-0.33 MG
R-2	Wulff Reservoir #2	0.35 MG	2011-2015	--	--	-0.35 MG
R-3	Coronado Hills Reservoir #2	4.73 MG	2011-2015	2.6 MG	2021-2025	-2.13 MG
R-4	Deer Springs Reservoir #2; Demolition of Deer Springs Reservoir #1	1.00 MG	2016-2020	1.00 MG	2021-2025	0 MG
R-5	Coggan Reservoir #2; Demolition of Coggan Reservoir #1	6.00 MG	2016-2020	6.00 MG	2026-2030	0 MG
R-6	North Twin Oaks Reservoir #3; Demolition of North Twin Oaks Reservoir #1	3.60 MG	2021-2025	3.60 MG	Ultimate	0 MG
R-7	Meadowlark Reservoir #4; Demolition of Meadowlark Reservoir #1	0.64 MG	2021-2025	3.50 MG	Ultimate	+2.86 MG
R-8	Palos Vista #1 Reservoir Rehabilitation & Expansion	0.52 MG	2026-2030	0.53 MG	Ultimate	+0.01 MG
R-9	Coronado Hills Reservoir #3	3.21 MG	2026-2030	7.50 MG	Ultimate	+4.29 MG
R-10	Twin Oaks Reservoir #3	10.72 MG	2021-2025	8.00 MG	Ultimate	-2.72 MG
R-11	Coggan Reservoir #3	6.10 MG	2026-2030	3.70 MG	Ultimate	-2.40 MG
					Net Difference Storage CIPs	**-0.77 MG**
Potable Water Pump Station CIPs						
PS-1	Desalinated Water Pump Station	2,100 gpm	2011-2015	--	--	-2,100 gpm
PS-2	High Point Hydro Pump Station	1,200 gpm	2011-2015	1,800 gpm	2020	+600 gpm
PS-3	Deer Springs Pump Station Expansion	2,475 gpm	2016-2020	2,775 gpm	Ultimate	+300 gpm
PS-4	Mountain Belle Pump Station	3,000 gpm	2016-2020	4,500 gpm	2021-2025	+1,500 gpm
PS-5	North Twin Oaks Pump Station Expansion	6,000 gpm	2026-2030	7,200 gpm	Ultimate	+1,200 gpm
PS-6	South Lake Pump Station Expansion	3,450 gpm	2026-2030	6,450 gpm	Ultimate	+3,000 gpm
PS-7	Coggan Pump Station Expansion	3,000 gpm	2026-2030	2,100 gpm	Ultimate	-900 gpm
PS-8	Schoolhouse Pump Station Expansion (New Pumps)	1,350 gpm	2026-2030	1,500 gpm	2021-2025	+150 gpm
					Net Difference Pump Station CIPs	**+3,750 gpm**

Table 3-1 2008 Master Plan Versus 2018 Master Plan Comparison						
		2008 Master Plan CIP Description[1]		2018 Master Plan Description		
CIP ID#	Proposed Project Title	Added Capacity or Length	Phased Years	Added Capacity or Length	Phased Years	Net Difference
Potable Water Pipeline CIPs						
P-16 & P-56	Deer Springs Pump Station to Deer Springs Reservoir Pipeline Replacement/Upsize	8,500 LF/10-inch diameter	2016-2020	8,700 LF/16-inch diameter	Ultimate	+200 LF
P-24	San Marcos Boulevard to Las Posas Road Pipeline Replacement/Upsize	2,680 LF/18-inch diameter	2016-2020	-	-	-2,680 LF
P-30	Mountain Belle Reservoir to 1330 Zone	1,800 LF/16-inch diameter	2016-2020	1,800 LF/16-inch diameter	2021-2025	0
P-42	North Twin Oaks II Reservoir to Huckleberry Lane Pipeline	7,000 LF/12-inch diameter	2026-2030	6,400 LF/12-inch diameter	Ultimate	-600 LF
P-43	High Point Hydro Zone to Wulff Zone Pipeline	2,800 LF/12-inch diameter	2011-2015	3,000 LF/12-inch diameter	2020	+200 LF
P-52	Corre Camino Road and Elevado Road north	9,900 LF/10-inch diameter	2016-2020	--	--	-9,900 LF
P-53	Via del Prado and Elevado Road south to the North Twin Oaks Reservoir #2 Pipeline	5,900 LF/16-inch diameter	2016-2020	--	--	-5,900 LF
P-57	Deer Springs Reservoir south to the limits of the 1235 Zone Replacement	7,600 LP/10-inch diameter	2026-2030	--	--	-7,600 LF
P-64	North Twin Oaks Pump Station to North Twin Oaks Reservoir Pipeline Replacement/Upsize	10,400 LF/16-inch diameter 2,000 LF/18-inch diameter	2021-2025	12,600 LF/20-inch diameter	Ultimate	+200 LF
P-100	Rock Springs Road and Bennett Avenue to Rees Road Pipeline Replacement/ Upsize	1,300 LF/10-inch diameter	2026-2030	1,600 LF/10-inch diameter	Ultimate	+300 LF
P-101	Schoolhouse Pump Station to San Elijo Road	--	--	600 LF/20-inch diameter	2021-2025	+600 LF
P-300	South Lake Pump Station to San Elijo Road	--	--	3,900 LF/20-inch diameter	Ultimate	+3,900 LF
P-301	Twin Oaks Valley Road – Village Drive to South Lake Pump Station	--	--	3,100 LF/20-inch diameter	Ultimate	+3,100 LF
P-400	El Norte Parkway and Rees Road to Woodland Parkway Pipeline Replacement/ Upsize	--	--	5,300 LF/20-inch diameter	2021-2025	+5,300 LF
P-600	Coggan Pump Station to Coggan Reservoir Pipeline	--	--	8,900 LF/20-inch pipe	Ultimate	+8,900 LF
					Net Difference Potable Pipeline CIPs	**-3,980 LF**

Table 3-1 2008 Master Plan Versus 2018 Master Plan Comparison						
		2008 Master Plan CIP Description[1]		2018 Master Plan Description		
CIP ID#	Proposed Project Title	Added Capacity or Length	Phased Years	Added Capacity or Length	Phased Years	Net Difference
Sewer Lift Station CIPs						
LS-1	Montiel Lift Station Pump Replacement	400 gpm	2016-2020	400-gpm	2020	0
					Net Difference Lift Station CIPs	0
Sewer Pipeline CIPs						
SP-2	San Marcos Interceptor Phase I Pipeline Replacement	3,200 LF/39-inch diameter	Up to 2010	--	--	-3,200 LF
SP-3	Linda Vista East Sewer Pipeline Replacement	3,400 LF/15-inch diameter	Up to 2010	--	--	-3,400 LF
SP-5	Rock Springs Road Sewer Replacement	500 LF/15-inch diameter 2,000 LF/12-inch diameter	Up to 2010	1,700 LF/12-inch diameter 900 LF/15-inch diameter	2020	+100 LF
SP-6	Old Questhaven Road Sewer Replacement	1,400 LF/24-inch diameter	2011-2015	2,100 LF/36-inch pipe	2021-2025	+700 LF
SP-7	Pico Ave/San Marcos Blvd Sewer Pipeline Replacement	1,500 LF/12-inch diameter	2011-2015	--	--	-1,500 LF
SP-8	Pico Avenue Sewer Replacement	1,200 LF/12-inch diameter	2011-2015	1,400 LF/12-inch diameter	2020	+200 LF
SP-9	Nordahl Shopping Center Sewer Replacement	3,400 LF/12-inch diameter	2011-2015	700 LF/12-inch diameter 3,100 LF/15-inch diameter	2021-2025	+400 LF
SP-10	Diamond Siphon Replacement	100 LF/15-inch diameter	2011-2015	200 LF/15-inch diameter	2020	+100 LF
SP-11	San Marcos Interceptor Phase 2 Replacement	1,400 LF/36-inch diameter 800 LF/8-inch diameter	2011-2015	1,900 LF/42-inch diameter	2020	-300 LF
SP-12	San Marcos Interceptor Phase 3 Replacement	2,000 LF/36-inch diameter	2011-2015	1,800 LF/42-inch diameter	2020	-200 LF
SP-13	Camino de Amigos Sewer Replacement	3,200 LF/12-inch diameter	2016-2020	3,500 LF/12-inch diameter	Ultimate	+300 LF
SP-15	San Pablo Walkway Sewer Replacement	1,800 LF/10-inch diameter	2016-2020	1,800 LF/12-inch diameter	2026-2030	0
SP-18	Mission Alley Sewer Replacement	1,500 LF/10-inch diameter	2016-2020	1,500 LF/12-inch diameter	2020	0

Table 3-1 2008 Master Plan Versus 2018 Master Plan Comparison						
		2008 Master Plan CIP Description[1]		2018 Master Plan Description		
CIP ID#	Proposed Project Title	Added Capacity or Length	Phased Years	Added Capacity or Length	Phased Years	Net Difference
SP-19	Bingham Sewer Replacement	2,100 LF/15-inch diameter	2021-2025	700 LF/12-inch diameter	2021-2025	-1,400 LF
SP-20	Discovery Street East Sewer Replacement	2,100 LF/12-inch diameter	2021-2025	2,100 LF/12-inch diameter	2026-2030	0
SP-21	Rock Springs West Sewer Replacement	1,300 LF/15-inch diameter	2021-2025	1,300 LF/15-inch diameter	2031-2035	0
SP-22	Rock Springs East Sewer Replacement	800 LF/12-inch diameter	2021-2025	800 LF/12-inch diameter	2031-2035	0
SP-23	Pacific Street and Descanso Sewer Replacement	2,100 LF/10-inch diameter	2021-2025	2,100 LF/12-inch	Ultimate	0
		2,200 LF/12-inch diameter		1,800 LF/15-inch		-400 LF
SP-24	Craven Road Pipeline Replacement	2,000 LF/12-inch diameter	2021-2025	2,700 LF/12-inch	2021-2025	+700 LF
SP-25	San Marcos Interceptor East Pipeline Replacement	800 LF/21-inch diameter	2021-2025	800 LF/24-inch diameter	2026-2030	0
SP-26	Woodward Street Pipeline Replacement	1,600 LF/10-inch diameter	2026-2030	3,200 LF/12-inch diameter	Ultimate	+1,600 LF
SP-27	Vineyard Road Sewer Replacement	3,000 LF/12-inch	2026-2030	2,800 LF/12-inch diameter	Ultimate	+2,900 LF
				3,100 LF/15-inch diameter		
SP-28	Linda Vista & Rancho Santa Fe Intersection Sewer Replacement	80 LF/12-inch	2026-2030	2,000 LF/12-inch diameter	2031-2035	+1,920 LF
SP-29	Vallecitos Pipeline Replacement	2,500 LF/12-inch	2026-2030	--	--	-2,500 LF
SP-30	Madrid Manor Sewer Pipeline Replacement	2,000 LF/10-inch diameter	2026-2030	--	--	-2,000 LF
SP-31	N. Twin Oaks Valley Sewer Replacement Project	2,500 LF/12-inch diameter	2026-2030	16,700 LF/18-inch diameter	2031-2035	+300 LF
		13,900 LF/15-inch diameter				
SP-33	San Marcos Boulevard West Sewer Replacement Project	--	--	6,600 LF/12-inch diameter	2021-2025	+6,600 LF
SP-34	San Marcos Creek North of Mission Road Sewer Replacement	--	--	1,000 LF/24-inch diameter	2031-2035	+1,000 LF

Table 3-1 2008 Master Plan Versus 2018 Master Plan Comparison						
		2008 Master Plan CIP Description[1]		2018 Master Plan Description		
CIP ID#	Proposed Project Title	Added Capacity or Length	Phased Years	Added Capacity or Length	Phased Years	Net Difference
SP-35	Mission Road and Mulberry Drive Sewer Replacement	--	--	3,600 LF/12-inch diameter	2026-2030	+3,600 LF
SP-36	Richland Road Sewer Replacement	--	--	2,000 LF/18-inch diameter	2031-2035	+2,000 LF
				Net Difference Sewer Pipeline CIPs		+7,520 LF
Sewer Land Outfall CIPs						
LO-1	Gravity Section D Outfall Project	12,900 LF/36- to 48-inch diameter	2011-2015	-	-	-12,900 LF
LO-D1	Outfall Section Gravity D Replacement Segments	--	--	1,200 LF/36-inch, 5,400 LF/42-inch, 1,300 LF/48-inch diameter	2020	+7,900 LF
LO-D2	Outfall Section Gravity D Replacement Segments	--	--	1,200 LF/36-inch, 3,700 LF/42-inch diameter	Ultimate	+4,900 LF
LO-2	Gravity Section B – Main Section and Siphon Inlet Outfall Project	1,600 LF/24- to 36-inch diameter	2016-2020	-	-	-1,600 LF
LO-B	Outfall Section Gravity B Replacement Segments	--	--	1,500 LF/36-inch diameter	2026-2030	+ 1,500 LF
LO-3	Gravity Section A – Tunnel Section to Siphon A Outfall Project	1,800 LF/30- to 36-inch diameter	2016-2020	-	-	-1,800 LF
LO-4	Siphon Section A Outfall Project	17,000 LF/24-inch diameter	2021-2025	-	-	-17,000 LF
LO-A1	Outfall Section A Improvement Project (Replacement)	--	--	1,500 LF/42-inch diameter	2021-2025	+1,500 LF
LO-A2	Outfall Section A Improvement Project (Parallel)	--	--	18,200 LF/30-inch diameter	2026-2030	+18,200 LF
LO-5	Gravity Section A – Lift Station #1 through the Tunnel Outfall Project	1,400 LF/24- to 36-inch diameter	2021-2025	-	-	-1,400 LF
		3,700 LF/24- to 36-inch diameter		-		-3,700 LF
LO-6	Siphon Section B, Gravity Section C, Siphon Section C	2,450 LF/24- to 36-inch diameter	2026-2030	-	-	-2,450 LF
				Net Difference Land Outfall CIPs		-6,850 LF

MG = million gallons; gpm = gallons per minute; LF = linear feet;
[1]-- indicates that the CIP was not included in the respective Master Plan.

Pump and lift station projects involve the movement of water or wastewater uphill, or to higher pressure zones. Pressure reducing valves are used when water is moving to lower pressure zones (downhill). Pump and lift stations typically consist of buildings containing pumps, electric power-line connections, pipeline connections, fencing, and access roads. Pressure-reducing valves are installed along pipelines and typically in a vault. In general, pump capacity is reported in units of gallons per minute (gpm).

Pipeline projects (including the wastewater land outfall) typically involve trench excavation, preparing the bed for pipe placement, laying the pipe in the trench, filling the trench, and restoring the disturbed surface area. Where pipelines are not installed within street rights-of-way, and to the extent feasible, an access road traverses the length of the pipeline installation. VWD intends to align all pipelines within existing and planned street rights-of-way as much as possible. Where it is not feasible to install a pipeline within a street right-of-way, VWD strives to use the shortest possible route between connection points to minimize ground-level impacts. In this practice, the VWD considers factors such as engineering principles and site-specific constraints. Transmission lines generally transport large quantities of water or wastewater over broad areas. Pipeline size is generally reported in inches, which refers to the pipe's diameter.

As stated in the 2011 PEIR for the 2008 Master Plan, California Environmental Quality Act (CEQA) analysis has been conducted separately for CIP projects R-1, R-7, SP-11, and SP-12. The VWD Board of Directors certified a Mitigated Negative Declaration (MND) for CIP projects R-1 and R-7 on December 5, 2007 (Meadowlark Reservoir Project; SCH No. 2006101137), an MND for CIP projects SP-11 and SP-12 on March 7, 2001 (San Marcos Interceptor Project; SCH No. 2001011064), and an Addendum to the 2001 Interceptor MND in March 2011.

3.3.3 Phasing

The 2018 Master Plan categorizes the proposed CIP projects among five planning phases, as shown in Table 3-2. Phase 1 projects represent projects that are expected to be completed by 2020. Phase 2 (2021 to 2025) projects represent high priority projects that should be planned or constructed over the following five years. Lower priority projects are identified as Phase 3 and Phase 4 projects that would be phased over the following 10 years (2026 to 2035). Phase 5 projects identified in the 2018 Master Plan are projects that would be required to meet the projected build-out, or ultimate demand conditions.

Table 3-2
2018 Master Plan Phases

Phase	Years
1	2020
2	2021 to 2025
3	2026 to 2030
4	2031 to 2035
5	Ultimate

CIP project phasing is based on land development phasing and projected water demand and wastewater flows. Phasing for the CIP projects may be accelerated or deferred as required by actual land use development to account for changes in development project schedules, changes in development plans, availability of land or right-of-way for construction, project funding limitations, environmental concerns, and other considerations.

3.3.4 Description of CIP Projects

The CIP projects identified in the 2018 Master Plan are classified into two categories: potable water projects and wastewater (sewer) projects. Each CIP project included in the 2018 Master Plan is discussed in the following subsections.

3.3.4.1 Potable Water Projects

The 2018 Master Plan potable water CIP projects include 10 storage, 7 pump station, and 11 pipeline projects. Implementation of these projects would meet the anticipated potable water needs of the projected growth forecast developed by SANDAG (and reviewed by the County of San Diego and the cities of Carlsbad, Escondido, San Marcos, and Vista) up to the year 2036, and through ultimate build-out. These jurisdictions were asked to review and confirm the land use projections or provide updated land use plans that were approved as of June 30, 2014. While some of these CIP projects were listed in the 2008 Master Plan, in some cases, the size and timing of the projects' construction have changed in the 2018 Master Plan due to actual growth patterns and updated growth projections. According to demand projections in the 2018 Master Plan, as of 2017 VWD had an average daily potable water demand of 14.8 million gallons per day (MGD). Based on the SANDAG growth forecast for the region encompassing the VWD service territory and related demand projections, the ultimate potable water demand would be approximately 33.6 MGD, which is slightly lower than the 34.1 MGD projected in the 2008 Master Plan. The District currently has 120.45 MG of potable water storage, and based on future demand projections a total of 155.55 MG of storage would be required under ultimate conditions.

As discussed in the PEIR for the VWD 2008 Master Plan, the proposed CIP projects would be planned, funded, and constructed by VWD or private developers. Additional laterals and certain distribution pipelines would be required to serve specific customers, but would be the responsibility of the individual customers/developers. Some pipeline alignments may change as actual development plans are revised and/or refined in the future. As development projects are proposed, the project proponents would be required to prepare a study that would define the distribution and storage infrastructure required to serve the development, including the necessary regional CIP facilities.

In addition, the projected volume and timing of the proposed projects as described in this document would inevitably be affected by the actual growth patterns realized in the VWD service area. Growth patterns in the VWD service area are affected by the region's employment base, settlement characteristics, socioeconomic trends, transportation infrastructure, and environmental constraints, among other factors. As such, the possibility

exists that some of these proposed CIP projects may not be built as currently planned or may not be built at all due to growth patterns varying from projected growth data.

a. Potable Water Storage Projects

Ten potable water storage CIP projects are identified in the 2018 Master Plan, as shown on Figure 3-1, listed in Table 3-3, and described in the following subsections. Table 3-3 also lists the pressure zone the project is within, capacity of the new reservoir, and phase the project is needed. These projects were described in detail and evaluated in the 2011 PEIR for the VWD 2008 Master Plan, though capacity needs may have changed. A comparison of the CIPs between the 2008 Master Plan and 2018 Master Plan is provided in Table 3-1.

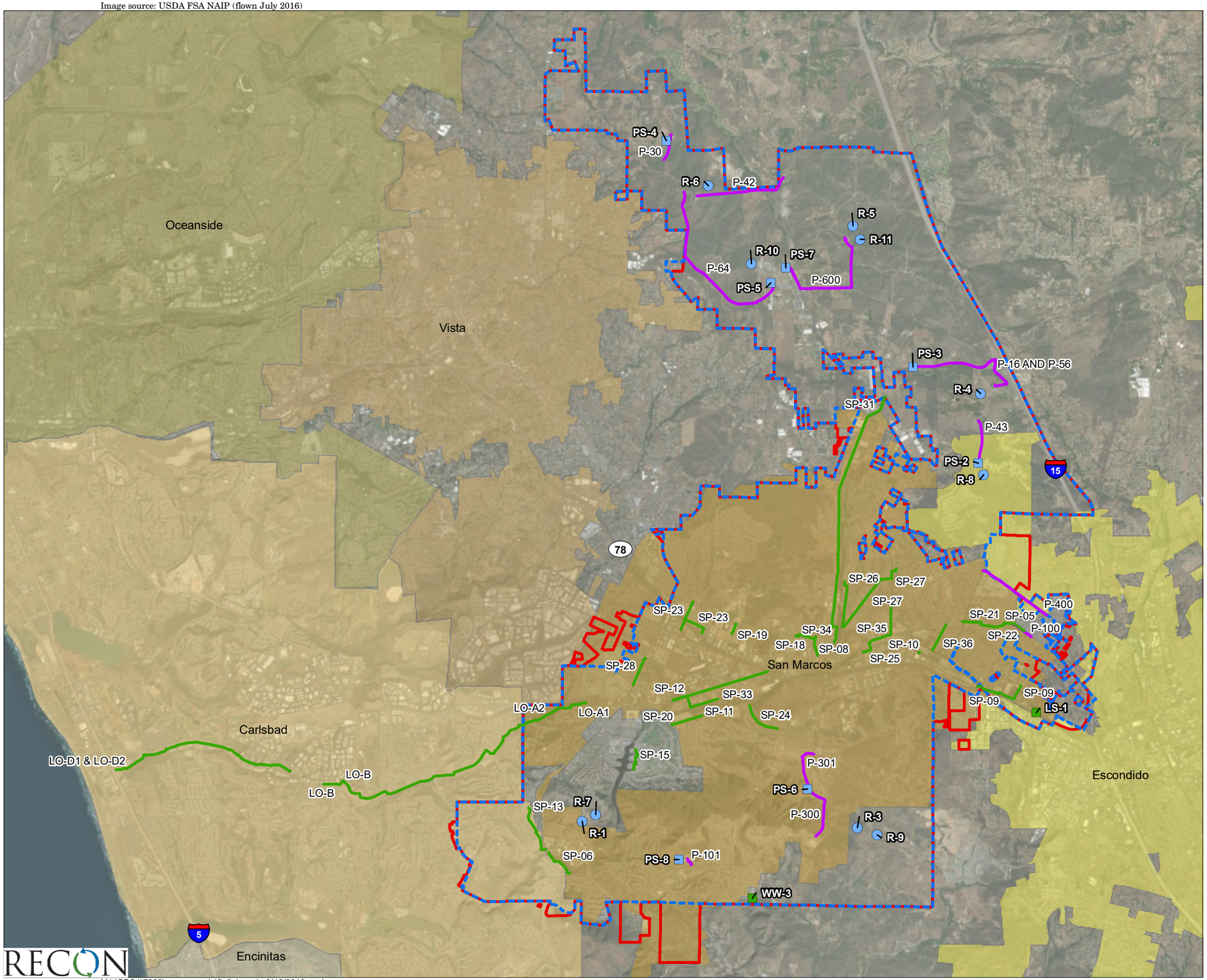
Table 3-3
2018 Master Plan Potable Water Storage Projects

CIP ID#	Reservoir	Pressure Zone	Capacity (MG)	Phase Needed
R-1	Proposed Meadowlark III	815	2.47	1
R-3	Proposed Coronado Hills II	1530	2.60	2
R-4	Proposed Deer Springs II; Demolition of Deer Springs I	1235	1.00	2
R-5	Proposed Coggan II; Demolition of Coggan I	1608	6.00	3
R-6	Proposed North Twin Oaks III; Demolition of North Twin Oaks I	1330	3.60	5
R-7	Proposed Meadowlark IV; Demolition of Meadowlark I	815	3.50	5
R-8	Proposed Palos Vista Rehabilitation & Expansion	1500	0.53	5
R-9	Proposed Coronado Hills III	1530	7.50	5
R-10	Proposed Twin Oaks III	1028	8.00	5
R-11	Proposed Coggan III	1608	3.70	5
MG = million gallon				

b. Potable Water Pump Station Projects

Seven potable water pump station CIP projects are proposed in the 2018 Master Plan. Proposed potable water pump stations are shown on Figure 3-1, listed in Table 3-4, and are described in the following subsections. Table 3-4 also lists the pressure zone the project is within, total capacity of the existing pump station, total capacity of the new pump station, and phase the project is needed. These projects were described in detail and evaluated in the 2011 PEIR for the 2008 Master Plan, though capacity needs may have changed. A comparison of the CIPs between the 2008 Master Plan and 2018 Master Plan is provided in Table 3-1.

Image source: USDA FSA NAIP (flown July 2016)



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VWD Service Area
Vallecitos Water District
Sewer Pump Station CIP
Sewer Line CIP
Water Reservoir CIP
Water Pump Station CIP
Water Line CIP

0 Miles 1.2

FIGURE 3-1
CIP Project Locations

Table 3-4
2018 Master Plan Pump Station Projects

CIP ID#	Pump Station	Pressure Zone	Existing Firm Capacity (gpm)	Proposed Firm Capacity (gpm)	Phase Needed
PS-2	High Point Hydro	1625	N/A*	1,200	1
PS-3	Deer Springs	1235	1,500	3,400	5
PS-4	Mountain Belle	1330	N/A	3,000	2
PS-5	North Twin Oaks	1330	2,000	6,800	5
PS-6	South Lake	1530	2,200	6,500	5
PS-7	Coggan	1608	4,000	5,400	5
PS-8	Schoolhouse	1115	2,100	3,100	2

*N/A indicates that the pump station is new construction and not a replacement.
gpm = gallons per minute

c. Potable Water Pipeline Projects

Eleven potable water pipeline CIP projects are proposed in the 2018 Master Plan. The proposed potable water pipeline projects are shown on Figure 3-1, listed in Table 3-5, and described in the following subsections. Table 3-5 also lists the pressure zone each project is within, the diameter and length of the pipeline to be installed, project category, and phase the project is needed. With the exception of newly proposed CIP projects P-101, P-300, P-301, P-400 and P-600, these projects were described in detail and evaluated for potential environmental impacts in the 2011 PEIR for the 2008 Master Plan, though capacity needs may have changed. Construction of the new CIP projects in the 2018 Master Plan would be conducted in a similar manner as the CIP projects included in the 2008 Master Plan.

The three categories of potable water pipeline projects include upsizing, emergency, and developer. Upsizing projects are intended to replace pipeline segments where demand has exceeded (or would exceed, as of its intended phase) the original design criteria. Emergency projects would address service needs in times of drought or other water shortages. Developer improvements are those required to serve either new development or redevelopment.

Table 3-5 2018 VWD Master Plan Potable Water Pipeline Projects							
CIP ID#	Potable Water Pipeline Location	Pressure Zone	Existing Diameter (inch)	Proposed Diameter (inch)	Length (feet)	Category	Phase Needed
P-16 & P-56	Deer Springs Pump Station to Deer Springs Reservoir	1235	10	16	8,700	Upsizing	5
P-30	Mountain Belle Reservoir to North Twin Oaks Zone	900	*	16	1,800	Emergency	2
P-42	North Twin Oaks II Reservoir to Huckleberry Lane	1228	*	12	6,400	Emergency	5
P-43	High Point Hydro Zone to Wulff Zone	1625	*	12	3,000	Developer	1
P-64	North Twin Oaks Pump Station to North Twin Oaks Reservoir	1330	12	20	12,600	Upsizing	5
P-100	Rock Springs Road and Bennett Avenue to Rees Road	920	8	10	1,600	Upsizing	5
P-101	Schoolhouse Pump Station to San Elijo Road	1115	16	20	600	Upsizing	2
P-300	South Lake Pump Station to San Elijo Road	1530	16	20	3,900	Upsizing	5
P-301	Twin Oaks Valley Road – Village Drive to South Lake Pump Station	920	14	20	3,100	Upsizing	5
P-400	El Norte Parkway and Rees Road to Woodland Parkway	920	*	20	5,300	Upsizing	2
P-600	Coggan Pump Station to Coggan Reservoir	1608	*	20	8,900	Upsizing	5
*Pipeline is new construction and not a replacement.							

3.3.4.2 Wastewater (Sewer) Projects

The 2018 Master Plan CIP projects proposed for VWD's wastewater (sewer) collection system include 1 lift station, 25 pipeline, and 5 parallel land outfall projects. While some of these CIP projects were listed in the 2008 Master Plan, in some cases, the size and timing of the projects' construction have changed in the 2018 Master Plan due to actual growth patterns and updated growth projections. Currently, VWD has an average annual wastewater flow of 7.5 MGD. At ultimate build-out, the projected average annual wastewater flow for VWD is 14.4 MGD. While the VWD has existing excess wastewater treatment capacity at Encina Water Pollution Control Facility, additional treatment capacity would be needed in the future. At ultimate build-out (Phase 5), it is anticipated that 3.93 MGD of additional solids handling capacity and 1.73 MGD of additional liquids handling capacity would be required.

As with the proposed potable water CIP projects, the projected capacity, alignment, and timing of these proposed wastewater pipeline projects would inevitably be affected by the actual growth patterns realized in the VWD service area. As is noted above, growth patterns in the VWD service area are affected by the region's employment base, settlement

characteristics, socioeconomic trends, transportation infrastructure, and environmental constraints, among other factors. As such, the possibility exists that some of these proposed CIP projects may not be built as currently planned or may not be built at all due to growth patterns varying from projected growth data.

As discussed in the EIR for the 2008 Master Plan, CIP wastewater projects would be planned, funded, and constructed by VWD or developers. Additional wastewater collection system pipelines could be required to serve specific customers, but would be the responsibility of the individual customers/developers. As new development projects are proposed, the project proponents would be required to prepare a study that would, at a minimum, define the location and size of the wastewater facilities required to serve the development, including the necessary regional collection, transfer, and treatment infrastructure.

a. Wastewater Lift Station Projects

One wastewater lift station project—CIP LS-1—is proposed in the 2018 Master Plan and would be needed during Phase 1. This CIP was also included in the 2008 Master Plan and evaluated in the 2011 PEIR. This project is shown on Figure 3-1. CIP LS-1 would upgrade the existing 100 gpm pumps at the Montiel Lift Station with two new 200 gpm pumps.

b. Wastewater Pipeline Projects

Twenty-five wastewater pipeline projects are identified in the 2018 Master Plan. Proposed pipeline projects are shown on Figure 3-1, listed in Table 3-6, and described below. Table 3-6 also lists the diameter and length of pipeline to be installed and the phase the project is needed. With the exception of SP-33, these projects were described in detail and evaluated in the 2011 PEIR for the 2008 Master Plan, though capacity needs and pipeline lengths may have changed.

Table 3-6
2018 Master Plan Wastewater Pipeline Projects

CIP ID#	Project Name	Existing Diameter (inch)	Proposed Diameter (inch)	Length (feet)	Phase Needed
SP-05	Rock Springs Road Sewer Replacement	8	12	1,700	1
			15	900	
SP-06	Old Questhaven Road Sewer Replacement	21	36	2,100	2
SP-08	Pico Avenue Sewer Replacement	8	12	1,400	1
SP-09	Nordahl Shopping Center Sewer Replacement	8	12	700	2
		8	15	3,100	
SP-10	Diamond Siphon Replacement	10	15	200	1
SP-11	San Marcos Interceptor Phase 2 Replacement	21	42	1,900	1
SP-12	San Marcos Interceptor Phase 3 Replacement	21	42	1,800	1
SP-13	Camino de Amigos Sewer Replacement	8	12	3,500	5
SP-15	San Pablo Walkway Sewer Replacement	8	12	1,800	3
SP-18	Mission Alley Sewer Replacement	8	12	1,500	1
SP-19	Bingham Sewer Replacement	8	12	700	2
SP-20	Discovery Street East Sewer Replacement	8	12	2,100	3
SP-21	Rock Springs West Sewer Replacement	12	15	1,300	4
SP-22	Rock Springs East Sewer Replacement	8	12	800	4
SP-23	Pacific Street and Descanso Sewer Replacement	8	12	2,100	5
		8	15	1,800	
SP-24	Craven Road Sewer Replacement	8	12	2,700	2
SP-25	San Marcos Interceptor East Sewer Replacement	18	24	800	3
SP-26	Woodward Street Sewer Replacement	8	12	3,200	5
SP-27	Vineyard Road Sewer Replacement	8	12	2,800	5
		8	15	3,100	5
SP-28	Linda Vista & Rancho Santa Fe Intersection Sewer Replacement	8	12	2,000	4
SP-31	North Twin Oaks Valley Sewer Replacement	8	18	16,700	4
SP-33	San Marcos Boulevard West Sewer Replacement Project	8	12	6,600	2
SP-34	San Marcos Creek North of Mission Road Sewer Replacement	18	24	1,000	4
SP-35	Mission Road and Mulberry Drive Sewer Replacement	8	12	3,600	3
SP-36	Richland Road Sewer Replacement	15	18	2,000	4

c. Wastewater Land Outfall Projects

The 2008 Master Plan included the proposed construction of an approximately 8-mile wastewater land outfall pipeline that would run parallel to the existing VWD land outfall pipeline. Due to the total length of the outfall project and the anticipated timing of needed improvements, the parallel land outfall was divided into six distinct parallel land outfall subprojects. The 2011 PEIR for the 2008 Master Plan described the existing land outfall and the six parallel land outfall pipeline subprojects that were planned.

In the 2018 Master Plan, the six previously proposed outfall projects were reorganized into five new proposed outfall projects in order to consolidate the various improvement needs by outfall segment and timing of need. A parallel land outfall is recommended in some sections and replacement of the existing line is recommended in other sections due to easement space restrictions. In the future, these improvements could be broken into smaller packages based on contractor capabilities, preferred project sizes, timing, length of construction, or other factors. Such a phasing plan is recommended to be developed as part of a more detailed condition assessment and hydraulic evaluation of the outfall.

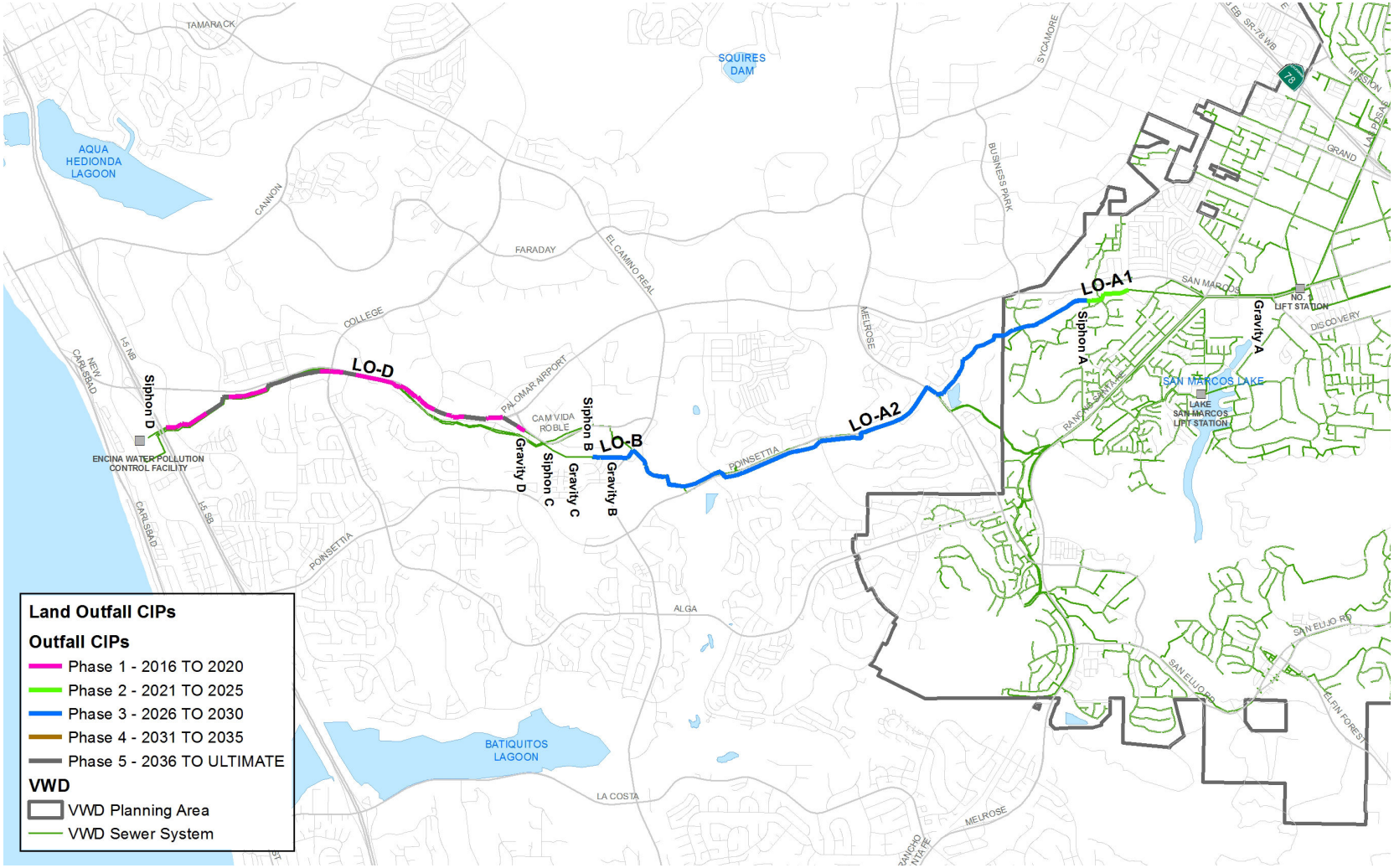
The changes between the six outfall projects of the 2008 Master Plan and the five outfall projects of the 2018 Master Plan are shown in Table 3-1. The five outfall projects of the 2018 Master Plan are listed below in Table 3-7 and shown on Figure 3-2.

Table 3-7
2018 VWD Master Plan Wastewater Land Outfall Projects

CIP ID#	Potable Water Pipeline Location	Proposed Diameter (inch)	Length (feet)	Category	Phase Needed
LO-D1	Outfall Section Gravity D Replacement Segments	36 to 48	7,900	Replacement	1
LO-D2	Outfall Section Gravity D Replacement Segments	36 to 42	4,900	Replacement	5
LO-B	Outfall Section Gravity B Replacement Segments	36	1,500	Replacement	3
LO-A1	Outfall Section A Improvement Project (Replacement)	42	1,500	Replacement	2
LO-A2	Outfall Section A Improvement (Parallel)	30	18,200	Parallel	3

Outfall Subprojects LO-D1 and LO-D2 (Gravity Section D). These subprojects would include replacing approximately 12,800 feet of existing sewer pipeline (7,900 feet for LO-D1, and 4,900 feet for LO-D2) that would convey wastewater flows from Palomar Oaks Way westerly along Palomar Airport Road to Armada Road, where the pipeline would head south-westerly in the canyon to Interstate 5, as shown on Figure 3-2. The size of the replacement pipeline would range from 36 to 48 inches in diameter depending on the final vertical alignment chosen. Subproject LO-D1 would be constructed in Phase 1, and subproject LO-D2 would be constructed in Phase 5.

Map Source: SANDAG



0 Mile 1

FIGURE 3-2

Proposed Land Outfall Improvements

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Outfall Subproject LO-B (Gravity Section B). This subproject would include replacing approximately 1,500 feet of existing sewer pipeline that would convey wastewater flows from Siphon A through the Peroxide Metering Station, south along El Camino Real where it joins flows from Carlsbad, and then westerly across El Camino Real to Siphon Section B south of Camino Vida Roble. The size of the parallel pipeline would be 36 inches in diameter. This subproject would be constructed in Phase 3.

Outfall Subprojects LO-A1 and LO-A2. These subprojects involve the replacement of 1,500 feet of gravity sewer sections with 42-inch diameter pipe, and the installation of 18,200 feet of a new parallel with 30-inch diameter pipe. Subproject LO-A1 would be constructed in Phase 2 (replacement of 1,500 feet of 42-inch pipe) and Subproject LO-A2 would be constructed in Phase 3 (replacement of 18,200 feet of 30-inch pipe).

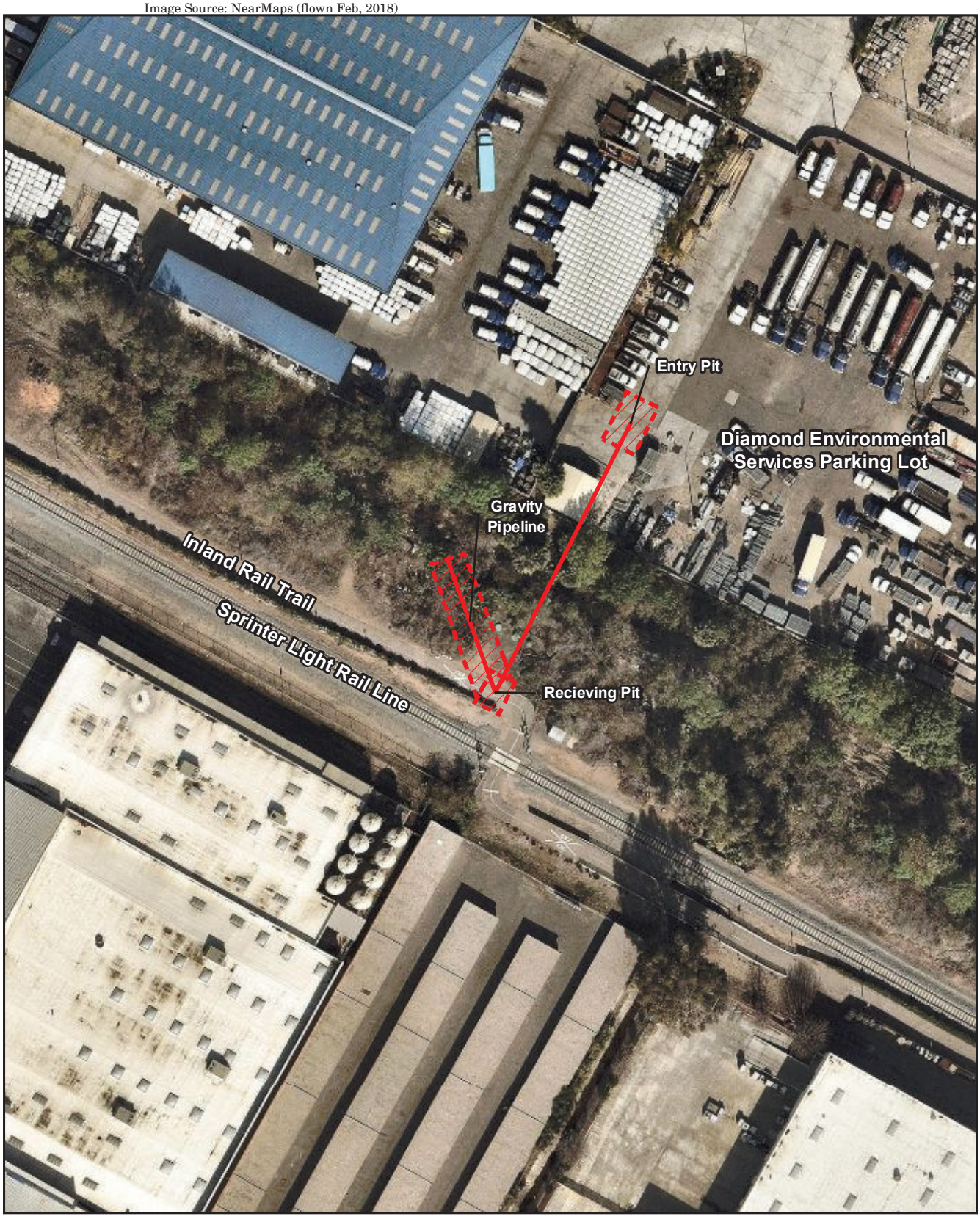
3.3.5 Diamond Siphon Replacement Project

The Diamond Siphon Replacement sewer pipeline project (project SP-10 from Tables 3-1 and 3-6) is the only CIP project being further evaluated for construction at this time. Under the CIP, the District is proposing replacement of 85 feet of two existing adjacent pipelines consisting of an 8-inch diameter and 10-inch diameter double-barrel ductile iron pipe siphon. The existing pipelines cross beneath San Marcos Creek, running northeast-southwest between the Diamond Environmental Services parking lot and the Inland Rail Trail and Sprinter light rail line. Although the project is in the design stage, and specific construction methods are yet to be determined, Project SP-10 has been sufficiently planned to a level of certainty that it is ready for detailed environmental impacts analysis associated with its implementation. Thus, a project-level analysis can and has been performed for Project SP-10. Currently, there are two construction options being considered for Project SP-10:

Option 1: Replacement in place of both pipelines beneath San Marcos Creek with 200 feet of double-barrel 15-inch gravity mains and new siphon (Figure 3-3). This project design may include a trenchless option.

Option 2: Rerouting and replacement of the sewer line with 1,770 feet of 15-inch diameter gravity pipeline. This option would involve cutting, plugging, and abandoning the portion of the existing pipeline that makes a 90-degree bend in front of Diamond Environmental Services on Mission Road. The proposed alignment would continue west on Mission Road for approximately 1,320 feet, make a 90-degree turn into 753 East Mission Road, continue south for approximately 450 feet, and connect to the existing sewer system that runs along San Marcos Creek (Figure 3-4).

Image Source: NearMaps (flown Feb, 2018)



0 Feet 80

Construction Option 1 Replacement Pipeline

Impact Area

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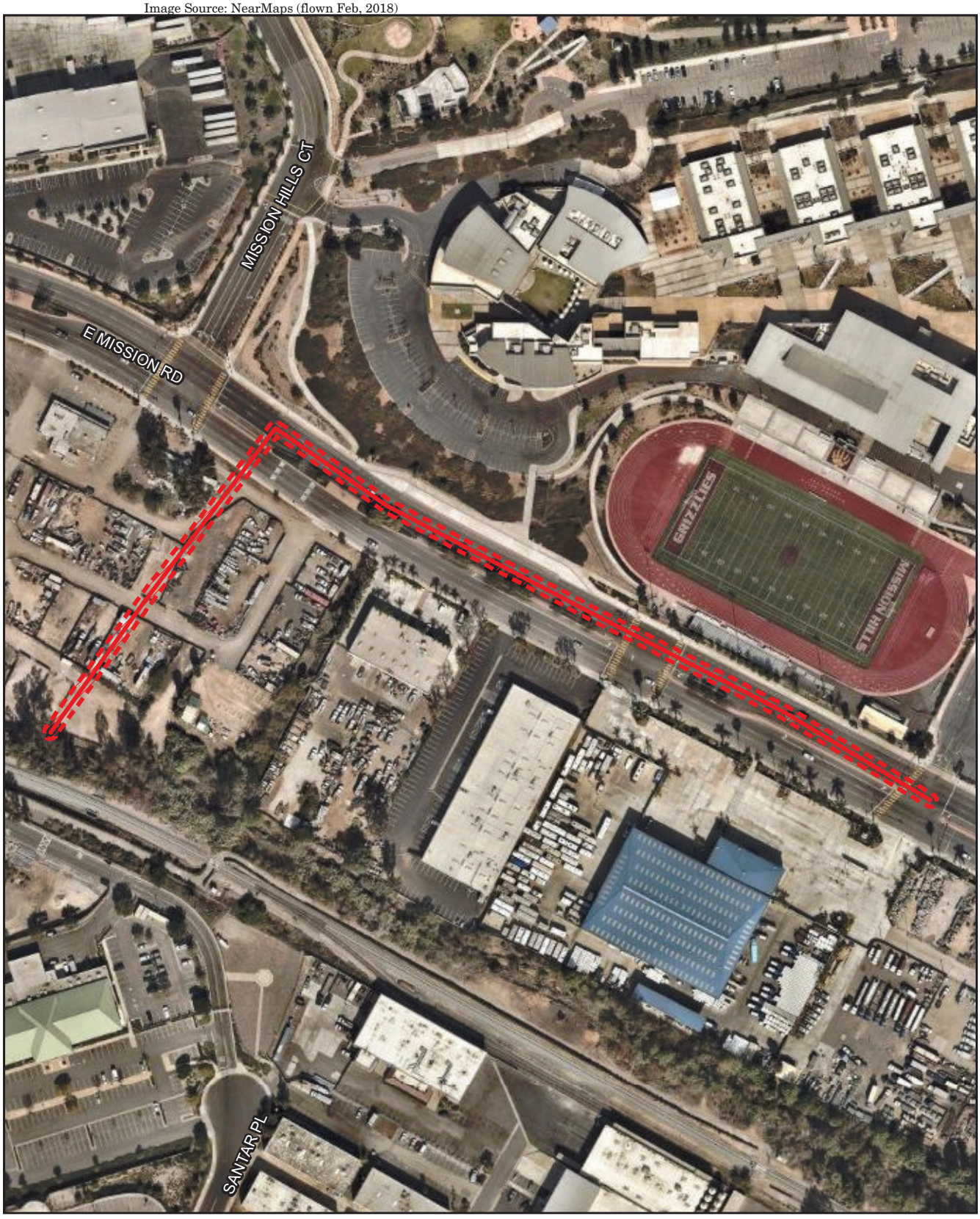
FIGURE 3-3
Diamond Siphon
Replacement Project Option 1

Image Source: NearMaps (flown Feb, 2018)



0 Feet 220

Construction Option 2 Replacement Pipeline

Impact Area

FIGURE 3-4
Diamond Siphon Replacement Project Option 2

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3.3.6 Construction

Methods to construct the CIP projects, including open trenching, jack-and-bore, and micro-tunneling, were described in the 2011 PEIR for the 2008 Master Plan and remain applicable to the CIP projects included in the 2018 Master Plan update. Construction of the CIP projects would occur in five phases, and would utilize equipment such as bulldozers, rollers, dewatering pumps, backhoes, loaders, and delivery and haul trucks. Trenchless pipeline installation would occur for some storm drain and utility crossings or for deep pipeline installations beginning at 15 feet in depth. Open trenching installation requires a trench of approximately 6 feet in depth. Construction of the CIP lift stations and pump stations would take approximately 12 months and construction of the potable water reservoirs would take approximately 9 months.

3.3.7 Regulatory Compliance

Construction and operation of the CIP projects proposed in the 2018 Master Plan would be conducted in compliance with all applicable federal, state, and local laws and regulations. Section 3.3.5.4 of the 2011 PEIR for the 2008 Master Plan lists some of the environmental laws and regulations that would apply to the CIPs.

3.3.8 Project Design Features

The CIP projects proposed in the 2018 Master Plan would incorporate the following project design features described in the 2011 PEIR.

Traffic Control Plan

In the event that CIP construction activities would require a lane or roadway closure, or could otherwise substantially interfere with traffic circulation, the contractor would submit a traffic control plan to the local land use agency and local fire protection agency to ensure that adequate emergency access and egress is maintained and that traffic would move efficiently and safely in and around the construction site. The traffic control plan may include, but not be limited to, the following measures:

1. Install traffic control signs, cones, flags, flares, and lights in compliance with the requirements of local jurisdictions, and relocate them as the work progresses to maintain effective traffic control.
2. Provide trained and equipped flag persons to regulate traffic flow when construction activities encroach onto traffic lanes.
3. Control parking for construction equipment and worker vehicles to prevent interference with public and private parking spaces, access by emergency vehicles, and owner's operations.
4. Traffic control equipment, devices, and post settings shall be removed when no longer required. Any damage caused by equipment installation shall be repaired.

5. For CIP construction activities that may affect school access, the contractor shall notify school officials of the construction schedule and coordinate with school officials to maintain acceptable school access.

High Efficiency Pumps and Motors

Proposed CIP projects featuring electric pumps and motors, which include PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, and LS-1, would use high-efficiency pumps and motors that meet or exceed the energy efficiency levels listed in the National Electric Manufacturers Associations MGI-1993 publication, as recommended by the California Energy Commission.

Energy Efficient Security Lighting

All security and emergency lighting installed at the proposed above-ground CIP facilities (i.e., water storage reservoirs, water pump stations, and wastewater lift stations) would be shielded and directed downward and away from surrounding areas. In addition, CIP projects would use low illumination, advanced fluorescent interior lighting, high-intensity discharge outdoor lighting, and lighting controls such as timers or motion detectors. Lighting would only be used when personnel are onsite at night and lighting is required.

Periodic Pump Efficiency Testing

VWD would conduct periodic (annual or as needed) pump efficiency tests at each proposed CIP project site featuring electric pumps, which includes PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, and would correct any significant decreases in efficiency through the repair or replacement of appropriate pump components or other cause.

Soft Start and Stop Motors

VWD would employ soft starts and stops on proposed CIP project pumps and motors, where applicable, to reduce total electricity consumption during operation of pumps and motors.

Variable-frequency Drives

VWD would install variable-frequency drives that provide continuous control on CIP project pumps and motors, where appropriate, to reduce total electricity consumption during operation of pumps and motors by matching motor speed to the specific demands of work being performed.

Masonry Enclosures

Proposed CIP pump and lift station projects located adjacent to residential land uses would place pumps, emergency generators, and any other motorized equipment within a masonry enclosure that minimizes exterior noise.

Noise Management

Proposed CIP projects located adjacent to residential land uses within San Diego County, San Marcos and Escondido (PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, LS-1) would not exceed a one-hour exterior noise limit of 50 A-weighted decibels [dB(A)] at the property line

during daytime hours (7:00 a.m. to 10:00 p.m.) and 45 dB(A) during nighttime hours (10:00 p.m. to 7:00 a.m.).

Construction Vibration and Blasting Noise Management Plan

At least five days prior to construction of any CIP project within 200 feet of a building containing vibration sensitive equipment, VWD would notify the building occupants of any construction activity involving heavy construction equipment. The extent and duration of the construction activity would be included in the notification. For all construction activities that include blasting, the following additional measures would be implemented.

1. For any construction activities which include blasting, a qualified blasting consultant and geotechnical consultant shall prepare all required blasting plans and monitor all blasting activities.
2. Prior to blasting, the contractor shall secure all permits required by law for blasting operations and provide notification at least five work days in advance of blasting activities within 300 feet of a residence or commercial building, or within 600 feet of a vibration sensitive land use.
3. Monitoring of all blasting activities shall be in conformance with the Standards of the State of California, Department of Mines and in no case shall blasting intensities exceed the safety standards established by the U.S. Department of Mines.

3.3.9 Permits, Approvals, and Regulatory Requirements

Implementation of the proposed CIP projects require that VWD obtain the applicable approvals, permits, licenses, certifications or other entitlements from various federal, state, and local agencies. The approvals and permits that are anticipated to be required are listed in Table 3-7 of the 2011 PEIR. Due to regulatory changes since the 2011 PEIR, Table 3-8 lists additional regulatory requirements that would also apply to the VWD under the 2018 Master Plan CIPs.

Table 3-8
Additional Regulatory Requirements Since 2011

Agency/Department	Requirement	Action Associated With or Required For
California Native American Tribes	Tribal Consultation (Assembly Bill 52)	CEQA Review
California Executive Order B-30-15	Strengthened Greenhouse Gas Emissions Reductions	CEQA Review

Chapter 4.0
Environmental Effects Analysis

Sections 4.1 through 4.11 of Chapter 4.0 of this Program Environmental Impact Report (PEIR) contain a discussion of the potentially significant environmental effects that may result from implementation of the proposed 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan), including information related to existing environmental conditions, analyses of the type and magnitude of individual and cumulative effects that implementation of the 2018 Master Plan may have on such existing environmental conditions, and feasible mitigation measures that could avoid or reduce environmental impacts to a less than significant level.

Scope of the PEIR

The environmental factors set forth below would be potentially affected by the 2018 Master Plan, involving at least one effect that is a potentially significant effect, as discussed in Sections 4.1 through 4.11.

- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology, Soils, and Paleontology
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Landform Alteration and Aesthetics
- Land Use and Planning
- Noise
- Public Safety

Tribal cultural resources is a topic that has been added to CEQA since the 2011 PEIR was prepared and certified and that has been addressed in this PEIR. Potential impacts to tribal cultural resources are discussed in Chapter 4.3, and have been determined to be less than significant.

The 2018 Master Plan would not result in one or more potentially significant effects on the following environmental factors: agricultural resources, mineral resources, transportation and traffic, population and housing, public services, recreation, and utilities and service systems. The rationale for this determination is set forth in Chapter 5.0 of this PEIR.

Format of the PEIR

The potentially significant effects of the 2018 Master Plan are analyzed in Section 4.1 through 4.11 by considering the conditions, principles, and standards for analysis set forth by the CEQA Guidelines. The methodology used to determine impacts, as well as definitions for terms to describe the level of significance of impacts, are described in the following subsections of this chapter.

4.1 Air Quality

This section of the PEIR evaluates the potential impacts on air quality resulting from implementation of the 2018 Master Plan. This evaluation includes the potential for the 2018 Master Plan to conflict with or obstruct implementation of an applicable air quality plan, to violate an air quality standard, to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is not in attainment, or to expose sensitive receptors to substantial pollutant concentrations. Climate change impacts and greenhouse gas emissions associated with the 2018 Master Plan are discussed in Section 4.6 (Greenhouse Gas Emissions) of this PEIR.

Section 4.1 of the 2011 Program Environmental Impact Report (PEIR) for the Vallecitos Water District (VWD) 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) evaluated the potential impacts on air quality resulting from implementation of the 2008 Master Plan.

The 2011 PEIR for the 2008 Master Plan identified one potentially significant impact associated with air quality (potential to create objectionable odors where new wastewater facilities would vent to open air). The 2011 PEIR identified mitigation measure Air-1 to reduce this impact to a less than significant level. The 2018 Master Plan update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan), and no new mitigation measures would be required.

4.1.1 Environmental Setting

4.1.1.1 Climate and Meteorology

Regional climate and local meteorological conditions influence ambient air quality. All 2018 Master Plan Capital Improvement Program (CIP) projects are located in the San Diego Air Basin (SDAB). The climate of the SDAB is dominated by a semi-permanent high-pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. It also drives the dominant onshore circulation and helps create two types of temperature inversions, subsidence and radiation, that contribute to local air quality degradation.

Subsidence inversions occur during 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 represents a temperature inversion that traps pollutants below it. Radiation inversions typically develop on winter nights with low wind speeds, when air near the ground cools by radiation, and the air aloft remain warm. A shallow inversion layer that can trap pollutants is formed between the two layers.

In the vicinity of the VWD service area, the nearest meteorological monitoring station is located in the city of Escondido. Based on data from this station, the average maximum daily temperature is 88 degrees Fahrenheit (°F) in August, and the average minimum daily temperature is 37°F in January (WRCC 2017). Historical precipitation in the San Marcos area is 16 inches annually, occurring primarily from November through April. The prevailing wind direction is westerly.

4.1.1.2 Existing Air Quality within the VWD Service Area

Historically, air quality laws and regulations have divided air pollutants into two broad categories: "criteria air pollutants" and "toxic air contaminants." Criteria air pollutants are a group of common air pollutants regulated by the federal and state governments by means of ambient standards based on criteria regarding health and/or environmental effects of pollution (U.S. Environmental Protection Agency [U.S. EPA] 2010). Toxic air contaminants (air toxics or toxic air pollutants) are often referred to as "non-criteria" air pollutants because ambient air quality standards have not been established for them. Under certain conditions, toxic air contaminants may cause adverse health effects, including cancer and/or acute and chronic noncancerous effects. The following sections provide a description of relevant criteria air pollutants and toxic air contaminants, in addition to summarizing the existing air quality of the VWD service area.

4.1.1.3 Criteria Air Pollutants

The criteria air pollutants pertinent to the analyses in this PEIR are carbon monoxide (CO), nitrogen oxides (NO_x), ozone, particulate matter (PM), and sulfur dioxide (SO_2). Other criteria air pollutants that national or state ambient standards have been established for include lead, visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. Neither the existing VWD facilities, nor the proposed 2018 Master Plan facilities, would emit lead, visibility-reducing particles, sulfates, hydrogen sulfide, or vinyl chloride. Therefore, these pollutants are not addressed in this PEIR. The following describes the health effects for each of the remaining identified criteria air pollutants based on information published by the U.S. EPA and the California Air Resources Board (CARB) (U.S. EPA 2010; CARB 2010).

a. Carbon Monoxide

A colorless, odorless, poisonous gas, produced by incomplete burning of carbon-based fuels, including gasoline, oil, and wood. Carbon monoxide is also produced from incomplete combustion of many natural and synthetic products. For instance, cigarette smoke contains

carbon monoxide. When carbon monoxide gets into the body, it combines with chemicals in the blood and prevents the blood from providing oxygen to cells, tissues, and organs. Because the body requires oxygen for energy, high-level exposures to carbon monoxide can cause serious health effects.

b. Nitrogen Oxides

A general term pertaining to compounds, including nitric oxide, nitrogen dioxide, and other oxides of nitrogen. Nitrogen oxides are produced from burning fuels, including gasoline, diesel, and coal. Nitrogen oxides are smog formers, which react with volatile organic compounds to form smog. Nitrogen oxides are also major components of acid rain.

c. Ozone

Ozone is a corrosive gas composed of three oxygen atoms linked together. Ozone exists in two layers of the atmosphere. It occurs naturally in the stratosphere (upper atmosphere) where it absorbs and provides a protective shield against the sun's damaging ultraviolet radiation. Ozone also exists in the troposphere (lower atmosphere), and even near ground level, where it can cause health effects in humans including respiratory and eye irritation and decreases in lung function and capacity. Ozone is not emitted directly in the air, but at ground level is formed by chemical reactions of "precursor" pollutants – nitrogen oxides and volatile organic compounds (VOCs) – in the presence of sunlight. Ozone levels are higher during the spring and summer months.

d. Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter includes dust, soot, and other tiny bits of solid materials that are released into and move around in the air. Particulates are produced by many sources, including burning of diesel fuels by trucks and buses, incineration of garbage, mixing and application of fertilizers and pesticides, road construction, industrial processes such as steel making, mining operations, agricultural burning (field and slash burning), and operation of fireplaces and woodstoves. Particulate pollution can cause eye, nose, and throat irritation and other health problems. Particulate matter is measured in microns, which are one millionth of a meter in length (or one-thousandth of a millimeter). PM_{10} is small (respirable) particulate matter measuring 10 microns in diameter; while $PM_{2.5}$ is fine particulate matter no more than 2.5 microns in diameter.

e. Sulfur Dioxide

Sulfur dioxide is a pungent, colorless gas formed primarily by the combustion of sulfur-containing fossil fuels, especially coal and oil. Some industrial processes, such as production of paper and smelting of metals, produce sulfur dioxide. Sulfur dioxide emissions have not been a problem in the SDAB because of the low sulfur fuels used in the region (San Diego Air Pollution Control District [SDAPCD] 2007).

4.1.1.4 Toxic Air Contaminants

Toxic air contaminants (TAC) are a category of air pollutants that have been shown to have an impact on human health but are not classified as criteria pollutants. Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. Air toxics are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as farms, landfills, construction sites, and residential areas. Adverse health effects of toxic air contaminants can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic.

The VWD does not currently generate substantial sources of TAC emissions that could pose or contribute to a health risk. Although some TACs could potentially be generated by VWD in small quantities, no VWD facilities are currently listed within the 2015 Air Toxics "Hot Spots" Program Report for San Diego County (SDAPCD 2017). This document lists the facilities in the county that are required to prepare health risk assessments (HRA) due to their generation of TACs, as well as the results of their annual HRAs. Companies and organizations listed within the aforementioned report are those considered to pose possible health risks to the community of San Diego with regards to TACs.

4.1.1.5 Air Quality Monitoring Data

The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of air pollutants and determine whether the ambient air quality meets the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). The closest ambient monitoring station to the VWD service area is the Escondido (East Valley Parkway) station. Table 4.1-1 presents a summary of the ambient pollutant concentrations monitored at the Escondido station during the last three years (2014 through 2016). The corresponding NAAQS and CAAQS are presented in Table 4.1-2. The SDAB is currently designated as a nonattainment area for the state standard for PM_{10}, $PM_{2.5}$, 1-hour and 8-hour ozone, and the federal 8-hour standard for ozone.

As shown in Table 4.1-1, the 1-hour ozone concentration exceeded the state standard one time during 2014, and no violations occurred during 2015. The 8-hour ozone concentration exceeded both the state and federal standard in 2014 and 2015. The daily PM_{10} concentration did not exceed federal or state standards in 2014 or 2015. With one exception during October 2003, the SDAB has not violated the state or federal standards for carbon monoxide since 1990 (SDAPCD 2007).

Table 4.1-1
Air Quality Monitoring Data

Pollutant	2014	2015	2016
Ozone			
Maximum 1-hour concentration (ppm)	0.099	0.079	NA
Days above 1-hour state standard (>0.09 ppm)	1	0	NA
Maximum 8-hour concentration (ppm)	0.080	0.071	NA
Days above 8-hour state standard (>0.07 ppm)	8	3	NA
Days above 8-hour federal standard (>0.075 ppm)	7	2	NA
Carbon Monoxide			
Maximum 8-hour concentration (ppm)	NA	NA	NA
Days above state or federal standard (>9.0 ppm)	NA	NA	NA
Respirable Particulate Matter (PM_{10})			
Peak 24-hour concentration ($\mu g/m^3$)	43.0	30.0	NA
Days above state standard (>50 $\mu g/m^3$)	0	0	NA
Days above federal standard (>150 $\mu g/m^3$)	0	0	NA
Fine Particulate Matter ($PM_{2.5}$)			
Peak 24-hour concentration ($\mu g/m^3$)	77.5	29.4	NA
Days above federal standard (>35 $\mu g/m^3$)	1	0	NA
Nitrogen Dioxide			
Peak 1-hour concentration (ppm)	63.0	48.0	NA
Days above state 1-hour standard (0.18 ppm)	0	0	NA

ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter
SOURCE: CARB 2017.

Table 4.1-2
State and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM_{10})[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		–		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m³)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m³)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chroma-tography			

See footnotes on next page.

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standards of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB 2016.

4.1.2 Regulatory Framework

Federal, state, and local air quality regulations that pertain to the VWD 2008 Master Plan are discussed in Sections 4.1.2.1, 4.1.2.2, and 4.1.2.3 of the 2011 PEIR. Additional air quality regulations instated since the time the 2011 PEIR was issued are summarized below.

- As reflected in Table 4.1-2, the federal standard for 8-hour ozone concentration was reduced from 0.075 ppm to 0.070 ppm in December 2015.
- SDAPCD New Source Review Rules (i.e., Rules 20.1, 20.2, and 20.3) were updated in April 2016 through SDAPCD Resolution 16-041; an additional Air Quality Impact Analysis (AQIA) trigger level of 67 pounds per day of $PM_{2.5}$ was added for permit applications construct, modify, or operate equipment.
- An update to the San Diego Regional Air Quality Strategy (RAQS) and associated regional transportation control measures (TCMs) was adopted in December 2016.

4.1.3 Master Plan Impacts and Mitigation

4.1.3.1 Issue 1 – Consistency with Applicable Air Quality Plan

Air Quality Issue 1 Summary	
Would implementation of 2018 Master Plan result in a conflict with or obstruct implementation of the applicable air quality plan?	
Impact: Growth assumptions made within the 2018 Master Plan to establish future service requirements have already been accounted for within the 2016 SDAPCD RAQS and State Implementation Plan (SIP); therefore, the 2018 Master Plan would not conflict with or obstruct implementation of the applicable air quality plan.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** No mitigation required.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, an impact is considered significant if implementation of the 2018 Master Plan would result in a conflict with or obstruct implementation of the San Diego County RAQS or applicable portions of the SIP.

b. Impact Analysis

The most current air quality planning document for the SDAPCD and thus the applicable air quality plan to the 2018 Master Plan is the 2016 RAQS (SDAPCD 2016). As discussed in Section 4.1.2.3 of the 2011 PEIR, this plan was prepared by the SDAPCD for CARB as part of the SIP, to demonstrate how the SDAB would either maintain or strive to attain the NAAQS. Since the SDAB is classified as a nonattainment area for either state or federal standards for ozone, $PM_{2.5}$, and PM_{10}, the aforementioned plan outlines specific actions (emission control measures) that the SDAPCD will take towards achieving attainment of these pollutants. The California SIP would also be applicable to the VWD service area. California SIP documents are prepared by CARB to demonstrate how the entire state of California will maintain or attain the NAAQS. These documents are based on a collection of information from each of the local APCDs.

The 2016 RAQS was developed based on growth assumptions, land use, and other information from SANDAG. The 2016 RAQS was based on SANDAG's Regional Plan, San Diego Forward (SANDAG 2015). Growth assumptions made within the 2018 Master Plan to establish appropriate future service requirements were also derived from SANDAG growth assumptions and land use information. The 2018 Master Plan is also based on the San Diego Forward regional growth forecasts. Therefore, the 2018 Master Plan, including the Diamond Siphon project alternatives, is consistent with the applicable SDAPCD air quality management plan and the California SIP, as these documents use the same growth assumptions. Therefore, implementation of the 2018 Master Plan would not conflict with or obstruct implementation of an applicable air quality plan and the impact would be less than significant.

c. Mitigation Measures

Implementation of the 2018 Master Plan would not conflict with or obstruct implementation of an applicable air quality plan; therefore, potential impacts are less than significant. No mitigation is required.

4.1.3.2 Issue 2 – Consistency with Air Quality Standards

Air Quality Issue 2 Summary	
Would implementation of the 2018 Master Plan violate any air quality standard or contribute substantially to an existing or projected air quality violation?	
Impact: Construction of proposed CIP projects would not result in emissions that would violate air quality standards or contribute substantially to a violation.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, an impact is considered significant if implementation of the 2018 Master Plan would violate any air quality standard or contribute substantially to an existing or projected air quality violation including pollutant emissions for which the region is in federal or state nonattainment.

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related projects. However, the SDAPCD does specify AQIA trigger levels for new or modified stationary sources (SDAPCD Rules 20.1 through 20.3) If these incremental levels are exceeded, an AQIA must be performed. Although these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes, these levels may be used to evaluate the increased emissions from these projects. For CEQA purposes, the screening level thresholds can be used to demonstrate that a project's total emissions would not result in a significant impact to air quality. Because the AQIA screening thresholds do not include VOCs, the screening level for VOCs used in this analysis are from the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD. The thresholds listed in Table 4.1-3 are used in this analysis to determine whether the 2018 Master Plan has the potential to violate an air quality standard or contribute substantially to an existing or projected air quality violation.

b. Impact Analysis

Implementation of the 2018 Master Plan would have the potential to violate air quality standards through construction activities or during operation of the proposed CIP projects, as discussed below.

Table 4.1-3
San Diego Air Pollution Control District Pollutant Thresholds

Pollutant	Pounds Per Hour	Pounds Per Day	Tons Per Year
Carbon monoxide (CO)	100	550	100
Nitrogen Oxides (NOx)	25	250	40
Respirable Particulate Matter (PM_{10})	--	100	15
Fine Particulate Matter ($PM_{2.5}$)	--	67	10
Oxides of Sulfur (SOx)	25	250	40
Lead (Pb)	--	3.2	0.6
Volatile Organic Compounds (VOC)	--	75(1)	13.7[1]

SOURCE: SDAPCD Rules 20.1 through 20.3.
[1]Based on VOC threshold from South Coast Air Quality Management District.

Construction Emissions

Construction of CIP projects proposed under the 2018 Master Plan, including the Diamond Siphon project alternatives, would result in temporary increases in air pollutant emissions. These emissions would be generated in the form of fugitive dust emissions (PM_{10} and $PM_{2.5}$) and ozone precursor emissions (NO_x, VOC). Operation of heavy equipment and vehicles during the construction phases would generate exhaust emissions from fuel combustion. Fugitive dust emissions would be generated from earth disturbance during site grading and structure demolition, as well as from construction vehicles operating on open fields or dirt roadways within or adjacent to CIP construction sites.

Construction of the 2018 Master Plan CIP projects would take place over five planning phases. Each phase would include a period of five years, and the last phase would be completed after 2035. Section 3.3.5, Description of CIP Projects, lists the projects that would occur in each phase. The significance thresholds for construction criteria pollutant emissions are based on pounds of emissions per day. To analyze estimated daily construction emissions, the following analysis assumes a worst-case daily construction scenario, where the most intense amount of construction for each type of facility would be done concurrently:

- Construction of one new 8-million-gallon reservoir (R-10)
- Upgrade of one sewer lift station to 400 gallons per minute (LS-1)
- Construction of one new 10,200-gallon-per-minute pump station (PS-5)
- Installation of 12,600 feet of new 20-inch water pipeline construction (P-64)
- Replacement of 16,700 feet of 18-inch sewer pipeline (SP-31)
- Replacement of 19,700 feet of parallel 30-inch and 42-inch outfall pipeline (LO-A1 & LO-A2)

This scenario is based on constructing the two segments of the east portion of the parallel land outfall project (Outfall Subprojects LO-A1 & LO-A2), along with the largest water

reservoir project (R-10), the lift station project (LS-1), the largest new pump station project (PS-5), and the longest water (P-64) and wastewater (SP-31) pipeline projects simultaneously. This figure is extremely conservative since VWD staffing levels are not projected to have the ability to manage this amount of workload during construction simultaneously. Assumptions for the duration of construction and equipment used were provided by the VWD and are described below.

As discussed in Section 4.1.3.2 of the 2011 PEIR, construction of the reservoir project is assumed to take 9 months. Construction of the lift station and pump station projects is assumed to take 12 months. No grading would be required for the replacement of the existing lift station (LS-1) because this project would utilize the existing building pad. Whereas the R-10 was previously assumed to require approximately 6.25 acres of grading, the reduction in proposed capacity from 10.72 million gallons to 8.0 million gallons would warrant a proportionally reduced assumption of approximately 4.7 acres of grading. PS-5 would require 0.25 acre of grading for the building pads. It is assumed that all graded material would be replaced on-site. It is assumed that the reservoir and pump station would require approximately 0.25 acre of grading and paving each for new access roads. The size of the pump and lift station sites are estimated to be 4,000 square feet based on the average size of a pump station. The pump and lift stations are assumed to be 12 feet tall.

As discussed in Section 4.1.3.2 of the 2011 PEIR, VOC emissions from architectural coatings for the reservoir, pump station, and lift station are based on the estimated surface areas of the proposed CIP projects. It is assumed that the proposed CIP projects would utilize a self-priming two-coat system. R-10 would be a concrete reservoir and would only require coating on the exterior walls and roof of the reservoir. It is assumed that the proposed pump and lift stations would not require painting or coating inside the facilities, but would be painted on the outside walls and roof. It is assumed that an epoxy coating would be required for pump and lift stations as well. This is conservative because these facilities are generally painted with general purpose exterior paint. VOC content is based on product data sheets for a self-priming base coat and a top coat and that meet the low VOC standard of 100 grams per liter. The data sheets also provide an estimate for the number of square feet a gallon of product typically covers. Based on the data sheets, the VOC content of the base coat is assumed to be 0.79 pound per gallon, and each gallon would cover 176 square feet (Tnemec Company 2010). The VOC content of the top coat is assumed to be 1.22 pounds per gallon (after required thinning) and each gallon would cover 391 square feet (Tnemec Company 2008).

Construction of the pipeline projects is assumed to take 12 months and would require a trench width of 5 feet. It is assumed that trenches would be 15 feet deep. As compared to the 2008 Master Plan, the length of potable water pipeline associated with P-64 has increased from 12,400 to 12,600 linear feet; the length of sewer pipeline associated with SP-31 has increased from 16,400 to 16,700 linear feet; and the length of sewer land outfall piping associated with the largest concurrent CIP project (formerly LO-4 and LO-5; now LO-A1 & LO-A2) has decreased by 2,400 linear feet. Despite these changes, the estimated daily disturbance area for the water pipeline project (P-64) and sewer pipeline project (SP-

31) would remain less than 0.01 acre of disturbance per day. As URBEMIS cannot calculate emissions for a disturbance less than 0.01 acre, the disturbance area was modeled as 0.01 acre. Regardless of the slight decrease in the linear length of the sewer land outfall pipelines, the daily disturbance area for the sewer land outfall (LO-A1 & LO-A2) would remain 0.01 acre. Thus, changes in proposed lengths would result in changes in daily disturbance areas that would be less than round-off error in the URBEMIS model.

The maximum daily emissions associated with construction of CIP projects are assessed in Section 4.1.3.2 of the 2011 PEIR. With the exception of updating the modeling year for construction activities and reducing the anticipated grading area for R-10, all modeling parameters for the worst-case construction scenario for the 2018 Master Plan would remain the same as the modeling parameters for the worst-case construction scenario for the 2008 Master Plan. The emission estimates in the 2011 PEIR would be considered conservative as construction-related emissions have generally been reduced over time due to improvements in fuel formulations and exhaust emission reduction requirements for off-road vehicles. As discussed, implementation of the 2008 Master Plan would not violate any air quality standard or contribute substantially to an existing or projected air quality violation with regards to construction sources. Therefore, the 2018 Master Plan similarly would not violate any air quality standard or contribute substantially to an existing or projected air quality violation with regards to construction sources.

Diamond Siphon Project Construction Emissions

Option 1 for the Diamond Siphon Replacement project would involve replacement of pipelines beneath San Marcos Creek with 200 feet of double-barrel 15-inch gravity mains and new siphon. Option 2 for the Diamond Siphon Replacement project would involve rerouting and replacement of the sewer line with 1,770 feet of 15-inch diameter gravity pipeline from Diamond Environmental Services to Mission Road, along Mission Road, and across 753 East Mission Road. For more detailed descriptions of each alternative, see Section 3.3.5.

Emissions associated with each option were estimated using the Road Construction Emissions Model (RCEM) Version 8.10; this model was developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) to calculate emissions associated with linear roadway construction and maintenance activities. The RCEM model identifies typical construction equipment and scheduling scenarios for these activities and estimates the daily and total air and GHG emissions associated with projects. The RCEM model is capable of modeling construction projects occurring between 2014 and 2025. Each option was modeled assuming construction would involve up to 20 workers per day, up to 200 feet of disturbance per day, a 15-foot-wide disturbance area along the alignment, and standard construction equipment associated with trenching and undergrounding of utilities. For the full input and output RCEM files, see Appendix B.

As shown in Table 4.1-4, project construction would not exceed the applicable thresholds of significance. Therefore, as project construction emissions would be below these limits, construction associated with the Diamond Siphon Project would not result in emissions that

would exceed NAAQS or CAAQS, or contribute to existing violations, resulting in a less than significant impact.

Table 4.1-4
Summary of Maximum Daily Emissions for the Diamond Siphon Project
(pounds per day)

	Pollutant					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Option 1	3	25	22	>1	3	1
Significance Threshold	75	250	550	250	100	67
Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Option 2	3	25	22	>1	3	1
Significance Threshold	75	250	550	250	100	67
Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gas; NO_X = oxides of nitrogen; CO = carbon monoxide;
SO_X = oxides of sulfur; PM_{10} = 10-micron particulate matter; $PM_{2.5}$ = 2.5-micron particulate matter

Operational Emissions

Operational impacts associated with the 2018 Master Plan would be incremental emissions of air pollutants resulting from two emission source categories: stationary and mobile sources. The following describes these emissions associated with the 2018 Master Plan.

Stationary Sources

Stationary sources of air pollutant emissions associated with the 2018 Master Plan include fuel combustion emissions from diesel-powered emergency back-up generators. In the 2018 Master Plan, the only CIP projects that may require such equipment would be pump and lift station projects.

The maximum daily emissions associated with emergency generator testing are assessed in Section 4.1.3.2 of the 2011 PEIR. The capacity of proposed generators was not known when the 2011 PEIR was prepared. Therefore, the air emissions estimate in the 2011 PEIR conservatively assumed each pump and lift station would require a 470 horsepower generator, which is the capacity of the largest emergency generator at an existing pump or lift station. The 2018 Master Plan includes one fewer pump station than the 2008 Master Plan (PS-1 removed). All pump and lift stations proposed in the 2018 Master Plan were included in the 2008 Master Plan and the assumption of generator capacity is still conservative. Therefore, implementation of the 2018 Master Plan would result in lesser air emissions than were assessed in the 2011 PEIR.

As discussed, the 2011 PEIR concluded that implementation of the 2008 Master Plan would not violate any air quality standard or contribute substantially to an existing or projected air quality violation with regards to stationary sources. As the 2018 Master Plan would result in lesser air emissions than were assessed in the 2011 PEIR, the 2018 Master Plan would not violate any air quality standard or contribute substantially to an existing or projected air quality violation with regards to stationary sources.

Mobile Sources

Mobile sources of air pollutant emissions for the 2018 Master Plan would be primarily associated with vehicular trips by employees for maintenance of the CIP facilities. All pump and lift stations proposed in the 2018 Master Plan were included in the 2008 Master Plan. The replacement of the old pumps and lift stations would not generate new vehicle trips because maintenance trips are already made to the facilities. Mobile source air emissions associated with the current vehicle trip requirements for the existing and proposed VWD facilities were assessed in Section 4.1.3.2 of the 2011 PEIR and were found to be less than significant. The implementation of the 2018 Master Plan would not be anticipated to result in a net increase vehicle trips over the 2008 Master Plan. Therefore, the 2018 Master Plan also would not violate any air quality standard or contribute substantially to an existing or projected air quality violation with regards to mobile sources.

c. Mitigation Measures

Implementation of the 2018 Master Plan would not violate any air quality standard; therefore, potential impacts are less than significant. No mitigation is required.

4.1.3.3 Issue 3 – Objectionable Odors

Air Quality Issue 3 Summary	
Would implementation of the 2018 Master Plan create objectionable odors affecting a substantial number of people?	
Impact: The 2018 Master Plan would have the potential to create objectionable odors where new wastewater facilities would vent to open air.	**Mitigation:** Odor-control measures (Air-1).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, an impact is considered significant if implementation of the 2018 Master Plan would create objectionable odors affecting a substantial number of people, consistent with SDAPCD Rule 51 (Public Nuisance) and California Health and Safety Code, Division 26, Part 4, Chapter 3, Section 41700, which prohibit the emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health or safety of the public.

b. Impact Analysis

Implementation of the 2018 Master Plan would have the potential to generate objectionable odors through construction activities and during operation of certain of the proposed CIP projects, as discussed below.

CARB's Proposed Air Quality and Land Use Handbook (2009) includes a list of the most common sources of odor complaints received by local air districts. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Construction activities are not a typical source of nuisance odors, although construction could result in minor amounts of odorous compounds associated with diesel heavy equipment exhaust. The smell of diesel exhaust is due in most part to the presence of sulfur and the creation of hydrocarbons during combustion (Nett Technologies 2010). Construction of the 2018 Master Plan would not result in significant emissions of sulfur oxides. Additionally, construction equipment associated with the 2018 Master Plan would be operating at various locations throughout the service area and would not take place all at once. Odorous hydrocarbons emissions would dissipate beyond the emissions sources and would only affect receptors in the immediate vicinity of the construction site. Construction-related operations would also be temporary in nature and would cease at the completion of construction. Therefore, construction activities, including those associated with the Diamond Siphon project alternatives, would not result in nuisance odors. Odor impacts associated with construction would be less than significant.

Based on CARB's list of common sources of odor complaints, potable water projects do not typically result in a source of nuisance odors associated with operation. The 2018 Master Plan does not propose a new sewage treatment plant; however, the wastewater CIP facilities would transport raw sewage and certain of these proposed CIP projects would have the potential to result in nuisance odors. The proposed wastewater pipelines are sealed and do not release odors to open air, except where the pipes vent to the outside. Proposed wastewater pipelines that would replace existing facilities that include vents would not result in a new source of odor, provided that the new pipelines would include the odor-controlling measures currently implemented by VWD. VWD utilizes carbon structures that contain activated carbon to control odors. These structures are currently installed in gravity-to-force main and force main-to-gravity transitions, lift stations, water reclamation facilities, and land outfall facilities throughout the service area. The 2018 Master Plan also includes new wastewater pipelines that would not replace existing facilities and would result in new vents that could be a new source of odor. The land outfall would generally contain odors within the proposed underground pipelines; however, similar to the wastewater pipelines, odors would generally only be detectable where the pipelines vent to the open air. These vents would be a new source of odor. A comment letter received from the City of Carlsbad in response to the NOP for the previous 2008 Master Plan indicated that odors generated by vents in the existing sewer outfall are a nuisance. Similar to the 2008 Master Plan projects, the 2018 Master Plan CIP projects include replacement of the Montiel Lift Station, which would also have the potential to result in a new source of odor if the odor-control measures currently implemented at the pump station are not installed in

the replacement lift station. Therefore, the 2018 Master Plan would have the potential to result in significant objectionable odors.

c. Mitigation Measures

Implementation of mitigation measure Air-1 would reduce potential impacts related to odors created by the 2018 Master Plan wastewater CIP projects to a less than significant level.

Air-1 **Odor-Control Measures.** VWD will install odor-controlling features, such as activated carbon structures, at all vents along CIP wastewater pipelines and outfall alignments, at the Montiel Lift Station, and the bioxide station, to the extent required to ensure that nuisance odors cannot be detected at the nearest receptor.

4.1.4 Cumulative Impacts

Air Quality Cumulative Issue Summary		
Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative Air Quality impact considering past, present, and probable future projects?		
Cumulative Impact	**Significant?**	**Proposed Master Plan Contribution**
Consistent with applicable air quality plan.	No	No cumulative impact.
Consistent with air quality standards.	Yes	Not cumulatively considerable.
Objectionable Odors	No	No cumulative impact.

4.1.4.1 Consistency with Applicable Air Quality Plans

The geographic context for the analysis of cumulative impacts relative to criteria air pollutants is the SDAB. The RAQS and SIP are intended to address cumulative impacts in the SDAB based on future growth predicted by SANDAG in the Series 13: 2050 Regional Growth Forecast. SANDAG uses growth projections from the local jurisdictions' adopted general plans; therefore, development consistent with the applicable general plan would be generally consistent with the growth projections in the air quality plans. Cumulative development is not expected to result in a significant impact in terms of conflicting with the SDAPCD air quality management plans and the California SIP because the majority of cumulative projects would propose development that is consistent with the applicable projections anticipated in the air quality management plans. As stated within Section 4.1.3.1 (Issue 1), calculations of future capacity needs under the 2018 Master Plan

were based upon the same growth assumptions from SANDAG, as were the RAQS and the SIP. Therefore, the 2018 Master Plan, in combination with the other cumulative projects, would not conflict with or obstruct implementation of the RAQS or SIP air quality plans. Therefore, no cumulatively considerable contribution would occur.

4.1.4.2 Consistency with Air Quality Standards

The geographic context for the analysis of cumulative impacts relative to criteria air pollutants is the SDAB. As noted within Section 4.1.3.2 (Issue 2), the SDAB is designated as being in non-attainment for the federal standards PM_{10} and $PM_{2.5}$, the state 1-hour standard for ozone and the state and federal 8-hour standard for ozone. Therefore, the baseline cumulative impact to the SDAB due to air pollution from stationary and mobile source emissions associated with basinwide polluting activities is significant.

According the County of San Diego's Guidelines for Determining Significance for cumulative emissions of criteria pollutants, a project would result in a cumulative impact if the proposed project, alone or in combination with the construction of another cumulative project, would exceed the significance thresholds listed in Table 4.1-3 during construction (County of San Diego 2007). During operation, a project would result in a significant cumulative impact if it would conflict with the RAQS or SIP during operation, or exceed the significance thresholds listed in Table 4.1-3.

A localized pollutant concentration analysis is appropriate to the determination of the cumulative impacts of construction emissions because construction emissions would be temporary. Pollutant emissions would disperse or settle out following construction and would not contribute to long-term concentrations of emissions in the SDAB. Based on an air emissions dispersion equation used by the SCAQMD to determine localized PM_{10} concentration, PM_{10} concentration generally decreases by approximately 95 percent beyond 200 meters (650 feet). Construction of the CIP projects would not take place all at once or in the same location. Construction would be spread out throughout the VWD service area. Regarding other cumulative projects in the service area, due to the size and urbanized nature of the service area, construction projects take place throughout the service area intermittently. The cumulative projects are scattered over three cities and unincorporated San Diego County. Due to the variability in location and construction timing for the cumulative projects, and the relatively short construction periods anticipated for each CIP project, it is not anticipated that construction of the CIP projects would be located within 650 feet of simultaneous cumulative projects so that the significance thresholds would be violated. Based on the Localized Significance Thresholds established by the SCAQMD (SCAQMD 2009), $PM_{2.5}$ generally travels farther than PM_{10} before settling out. However, particles would also disperse farther from the source and reduce the concentration of pollutants. The worst-case construction scenario would not result in $PM_{2.5}$ emissions that would exceed the significance thresholds. Due to the distance between the CIP project and the cumulative projects, emissions of $PM_{2.5}$ from simultaneous construction projects would be expected to disperse and settle out to the extent that combined construction emissions of $PM_{2.5}$ would not exceed the significance threshold at the point where emissions would combine. The 2018 Master Plan would not exceed the significance threshold for NO_x

emissions, a precursor for ozone, during construction. Based on the Localized Significance Thresholds established by the SCAQMD, NO_x disperses more rapidly than PM_{10}. Therefore, the 2018 Master Plan would not result in a cumulatively considerable contribution to a cumulative impact during construction.

As discussed in Section 4.1.3.2 (Issue 2), operational emissions associated with proposed CIP pump and lift stations, reservoirs, pipelines and the land outfall would not violate any air quality standard. Additionally, as discussed in Section 4.1.3.1 (Issue 1), the 2018 Master Plan would not conflict with the RAQS or the SIP. Therefore, the 2018 Master Plan would comply with the applicable air quality standards and air quality plans. The potential air emissions associated with operation of the proposed CIP projects would not adversely impact the ability of the SDAB to meet the CAAQS and NAAQS. Operation of the 2018 Master Plan CIP projects would not exceed any significance thresholds for criteria pollutants. Therefore, the 2018 Master Plan would not result in a cumulatively considerable contribution to the local cumulative impact area represented by the SDAB.

4.1.4.3 Objectionable Odors

Impacts relative to objectionable odors are limited to the area immediately surrounding the odor source and are not cumulative in nature because the air emissions that cause odors disperse beyond the sources of the odor. As the emissions disperse, the odor becomes less and less detectable. Additionally, as discussed above in Section 4.1.3.3 (Issue 3), with implementation of mitigation measure Air-1, the 2018 Master Plan would not result in substantial nuisance odors because it would install odor-control features at all CIP wastewater pipeline vents, the bioxide station, and the Montiel Lift Station. None of the proposed cumulative projects, Past, Present and Probable Projects Having Cumulative Impacts, propose development that is a typical source of odor complaints. Therefore, the 2018 Master Plan, in combination with other cumulative projects, would not result in a cumulatively significant impact associated with objectionable odors.

4.1.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would implementation of the 2018 Master Plan expose sensitive receptors to substantial pollutant concentrations?

The VWD is not listed within the 2015 Air Toxics "Hot Spots" Program Report for San Diego County (SDAPCD 2017) as a company or organization posing possible health risks to San Diego County with regards to TACs. Therefore, the only potential air emissions that could pose a threat to sensitive receptors as a result of implementation of the 2018 Master Plan would be carbon monoxide. Intersections for which there are severe traffic congestion issues can have potential risks associated with carbon monoxide "hot spots," defined as areas where high concentrations of carbon monoxide result from idling vehicles. Intersections that tend to exhibit a significant carbon monoxide concentration typically operate at level of service D or worse. Mobile sources of air pollutant emissions for the 2018

Master Plan would be primarily associated with vehicular trips by employees for maintenance of the CIP facilities. All pump and lift stations proposed in the 2018 Master Plan were included in the 2008 Master Plan. Thus, the 2018 Master Plan would not be anticipated to result in a net increase in vehicle trips over the 2008 Master Plan. Therefore, the 2018 Master Plan would not have a potential to contribute to an increase in CO concentrations at congested intersections and would not expose sensitive receptors to substantial pollutant concentrations. Therefore no impact would occur and no further evaluation is necessary.

4.1.6 References

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4.2 Biological Resources

This section of the Program Environmental Impact Report (PEIR) describes the potential environmental impacts associated with biological resources, including special status species, sensitive natural communities, wetlands, wildlife movement corridors, and conflicts with local policies and plans protecting biological resources that may occur as a result of the Capital Improvement Program (CIP) projects within the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

4.2.1 Environmental Setting

4.2.1.1 Research Methods

Information regarding biological resources that occur or have the potential to occur within the District's service area was obtained from a search of biological resources databases; a review of pertinent literature, prior environmental documents, and aerial imagery; and site visits to selected CIP project sites. With the exception of SP-10, the Diamond Siphon Replacement Project, no site-specific biological surveys, vegetation mapping, special-status species protocol-level surveys, or wetland delineation surveys were conducted. The following provides a summarized list of the primary resources consulted for the preparation of this section:

Databases

- Calflora Plant Observation Library (Calflora 2017)
- California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CDFW 2017a)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2017)
- Consortium of California Herbaria (Consortium 2010)
- Jepson eFlora (Jepson Flora Project 2017)
- SanGIS Interactive Map and GIS Data (SanGIS 2010)
- U.S. Department of Agriculture (USDA) Web Soil Survey (USDA 2010)
- U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (USFWS 2017)
- USFWS National Wetlands Inventory Wetlands Mapper (USFWS 2012).

Literature Review

- CDFW State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2017b)
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2017c)
- CDFW Special Special Animals List (CDFW 2017d)
- CDFW State and Federally Listed Endangered, Threatened, and Rare Animals of California (CDFW 2017e)
- Draft City of Escondido Multiple Habitat Conservation Program (MHCP) Subarea Plan (City of Escondido 2001)
- Draft City of San Marcos MHCP Subarea Plan (City of San Marcos 2001)
- Draft County of San Diego (County) Multiple Species Conservation Program (MSCP) North County Subarea Plan (County of San Diego 2009)
- Final City of Carlsbad MHCP Subarea Plan (City of Carlsbad 2004)
- Final MHCP Plan (AMEC et al. 2003)
- Final MSCP Plan (Ogden et al. 1998)

Biological resources information obtained from these sources applies to the entire VWD service area, as opposed to individual proposed CIP project sites. In general, the research would identify vegetation communities, special-status species, critical habitat, and other sensitive biological resources with the potential to occur within the service area. Furthermore, special-status species, habitat, and other resources identified in the MHCP and MCSP planning areas may extend beyond the 2018 Master Plan service area; therefore, some of these resources may not actually occur within the service area itself. As such, the biological resources discussed in the following sections are described at a programmatic level and may not necessarily occur within individual CIP project sites.

4.2.1.2 Biological Resources

The vegetation communities assessment contained herein takes a broad-based approach toward identifying vegetation communities or habitat types that occur within the 2018 Master Plan service area. For the purposes of this assessment, vegetation communities within the service area have been identified based on existing data for the region and aerial imagery. As environmental conditions change and more specific analyses are conducted over time and with later California Environmental Quality Act (CEQA) reviews of proposed CIP projects, it is likely that deviations from the large-scale assessment contained herein would occur, and more fine-scale mapping would reveal a greater diversity of habitat types.

In addition to urban/developed land, a total of nine general vegetation communities characterize the service area. These are described below and include disturbed habitat, agriculture, native and non-native grasslands, coastal sage scrub, chaparral, woodland, riparian, wetland, and open water. The names and definitions of vegetation communities

are discussed below and are suggested based on general definitions provided by Holland (1986) and Oberbauer (1996).

a. Urban/Developed

Urban/developed land consists of all residential, commercial, and industrial developments, and land covered by non-native ornamental (landscape) vegetation. For the purposes of this assessment, windrows and woodlands comprised of gum trees (*Eucalyptus* spp.) are also considered urban/developed. Non-native plant species typical of urban/developed areas include ornamental trees such as pine (*Pinus* spp.), pepper (*Schinus* spp.), palm (*Washingtonia* spp., *Phoenix* spp.), and gum; shrubs such as acacia (*Acacia* spp.) and oleander (*Nerium oleander*); and groundcover such as turf grass, red apple (*Aptenia cordifolia*), and hottentot-fig (*Carpobrotus edulis*). Most urban/developed areas provide little habitat for native species, but do support non-native species such as European starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), Virginia opossum (*Didelphis virginiana*), mice, and rats. Native species that have adapted to urban environments include the northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), black phoebe (*Sayornis nigricans*), and striped skunk (*Mephitis mephitis*). Migrating songbirds use large stands of ornamental plantings during spring or fall, and some species, such as white-crowned sparrow (*Zonotrichia leucophrys*) and cedar waxwing (*Bombycilla cedrorum)*, spend the winter in residential neighborhoods.

A substantial portion of the VWD service area falls within existing urban/developed areas. These areas are characterized by expansive developments that include existing VWD facilities, structures, roads, infrastructure, and ornamental landscaping. The majority of the proposed CIP projects are sited within urban/developed areas associated with existing road rights-of-way (ROW).

b. Disturbed

Disturbed land includes areas in which there is sparse vegetative cover and where there is evidence of soil surface disturbance and compaction from previous human activity and/or the presence of building foundations and debris. Vegetation on disturbed land (if present) may have a high predominance of non-native and ruderal (weedy) annual species that are indicators of disturbance such as Russian thistle (*Salsola tragus*), telegraph weed (*Heterotheca grandiflora*), horehound (*Marrubium vulgare*), and sow-thistle (S*onchus oleraceus*). Disturbed land typically provides little habitat for wildlife species.

Within the service area, disturbed land occurs primarily as vacant lots and disturbed bare earth within road and utility ROWs. Many of the proposed CIP projects are sited within disturbed land. A number of the proposed pump stations and pipelines are proposed within existing dirt access road and utilities ROWs.

c. Agriculture

Agriculture refers to lands subject to routine and ongoing commercial operations associated with orchards and vineyards, intensively developed agriculture, such as dairies, nurseries,

and chicken ranches, and extensive agriculture such as field pastures and row crops. Well-managed, modern agricultural areas used for commercial row crops, orchards, and vineyards can be devoid of wildlife. However, fields and pastures can provide habitat for native small mammals and foraging habitat for raptors such as northern harrier (*Circus cyaneus*) and red-tailed hawk (*Buteo jamaicensis*). White-faced ibise (*Plegadis chihi*), egret, crow (*Corvus* spp.), and killdeer (*Charadrius vociferus*) often use fallow or active fields.

Agricultural areas within the service area include avocado groves, row crops, and nurseries. These areas are sparsely situated within the San Marcos and Merriam Mountains in the northern portions of the service area; the Discovery Hills in the southern portions; and the Twin Oaks Valley in the central portions. Portions of some of the CIP project pipelines traverse agricultural lands within the service area.

d. Grassland

For the purposes of this assessment, grassland can be divided into two general categories: native grassland or non-native grassland. The native grassland type that is known to occur in sparse patches within the service area is valley needlegrass grassland. Valley needlegrass grassland typically occurs on clay soils and is comprised of a vegetative cover of at least 10 percent by needlegrass (*Nassella* spp.), with the remaining 90 percent comprised of other native and non-native annual grasses and forbs (Sawyer et al. 2009). Non-native grassland, or annual grassland, is described as a dense to sparse cover of non-native annual grasses often associated with numerous ruderal species and native annual forbs, especially in years with plentiful rain. Seed germination occurs with the onset of winter rains. Some plant growth occurs in winter, but most growth and flowering occurs in the spring. Plants then die in the summer, and persist as seeds in the uppermost layers of soil until the next rainy season.

Native grasses typically found within valley needlegrass grasslands include purple needles foothill needlegrass (*Nassella lepida*), California brome (*Bromus carinatus* var. *carinatus*), and California blue-eyed grass (*Sisyrinchium bellum*), among others. Native forms may also be present such as fiddleneck (*Amsinckia* spp.), California poppy (*Eschscholzia californica*), popcorn flower (*Plagiobothrys* spp.), phacelia (*Phacelia* spp.), checker-bloom (*Sidalcea malvaeflora* spp. *sparsifolia*), wild hyacinth (*Dichelostemma pulchra*), and golden stars (*Bloomeria crocea* and *Muilla clevelandii*). Non-native species typically found in native and non-native grassland habitats include grasses such as red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), cheat grass (*Bromus tectorum*), oats (*Avena* spp.), barleys (*Hordeum* spp.), rattail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*), and forbs such as black mustard (*Brassica nigra*), shortpod mustard (*Hirschfeldia incana*), tocalote (*Centaurea melitensis*), filaree (*Erodium* spp.), and sweet fennel (*Foeniculum vulgare*).

Both native and non-native grasslands are important for a variety of wildlife known to the area including grasshopper sparrow (*Ammodramus savannarum)*, burrowing owl (*Athene cunicularia*), horned lark (*Eremophila alpestris)*, western meadowlark (*Sturnella neglecta*), and numerous small mammals. They provide refugia for reptiles and important foraging

habitat for raptors. Native and non-native grasslands are often associated with rare plants, such as thread-leaved brodiaea (*Brodiaea filifolia*), and other sensitive microhabitats, such as vernal pools.

Native and non-native grasslands occur in scattered patches throughout the lower elevation valleys that characterize the service area. The largest patches of grasslands within the service area occur in the San Marcos valley, Twin Oaks valley, Rancho Carrillo, and Bressi Ranch. Portions of some of the CIP project pipelines traverse grasslands within the service area.

e. Coastal Sage Scrub

Coastal sage scrub is a native scrub-type community that is widespread throughout the lower elevations of southern California. For the purposes of this assessment, coastal sage scrub has been defined to include elements of Diegan coastal sage scrub (Holland 1986), coastal scrub, coyote brush series, and California buckwheat series (Sawyer et al. 2009) due to the potential variability of stands that exist within the service area. Coastal sage scrub vegetation consists of low-growing, drought-deciduous, perennial and evergreen shrubs adapted to xeric sites supported by steep and gentle sloping topography with severely drained soils or clays that release stored soil moisture slowly. This habitat may occur as a dense scrub-type community of scattered shrubs, sub-shrubs, and herbs generally less than 3 feet tall and often developing considerable cover.

Typical stands of coastal sage scrub are dominated by the native shrub, California sagebrush (*Artemisia californica*), with a sub-dominance of one or more native shrubs, and an herbaceous understory consisting of native and non-native grasses and annual forbs. Diagnostic species generally include California sagebrush, California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), laurel sumac (*Malosma laurina*), brittlebush (*Encelia californica*), sticky monkeyflower (*Mimulus auranticus*), chaparral yucca (*Yucca whipplei*), and California aster (*Corethrogyne filaginifolia*), among others. This community is fire-adapted, with many constituent species being able to sprout new stems from remnant crowns after a burn. In southern California, this community typically intergrades with coastal dunes scrub and foredune habitats along the coast, and with grassland, chaparral, and oak woodland habitats at inland locales.

Diegan coastal sage scrub occurs on lower elevation slopes within the service area. This habitat is associated with a number of special status species known in the region, with the higher quality stands providing important habitat for the coastal California gnatcatcher (*Polioptila californica californica*). Some of the Diegan coastal sage scrub within the service area has been designated as Critical Habitat for the coastal California gnatcatcher by the USFWS. A number of the proposed CIP projects would occur within Diegan coastal sage scrub.

f. Chaparral

Five general chaparral habitat types are known to occur within the service area, including southern mixed chaparral, chamise chaparral, scrub oak chaparral, southern maritime

chaparral, and coastal sage-chaparral scrub. Within the service area, southern mixed chaparral and chamise chaparral are the most prevalent, dominating the higher elevation inland slopes within the city of San Marcos and unincorporated areas of San Diego County.

Southern mixed chaparral is composed of broad-leaved shrubs which are typically deep rooted. Shrubs are generally tall (between 10 and 20 feet) and occur on dry, rocky, often steep slopes with little soil. In drier situations, the understory may be dominated by a limited number of species; in shaded and more mesic conditions, the understory can be varied with species of ferns, subshrubs, herbaceous perennials, bulbs, and annuals. Within the service area, this community is known as two distinct types: granitic southern mixed chaparral, which is more common and associated with granitic substrates; and mafic southern mixed chaparral, which is narrowly distributed and found on mafic (gabbro), metavolcanic, or metasedimentary derived soils (Los Posas and Boomer Soil Series) in the coastal region. Characteristic species of this community include black sage, Cleveland sage (*Salvia clevelandii*), Eastwood manzanita (*Arctostaphylos glandulosa*), woolyleaf ceanothus (*Ceanothus tomentosus*), mountain mahogany (*Cercocarpus minutiflorus*), chamise (*Adenostoma fasciculatum*), spiny redberry (*Rhamnus crocea*), hollyleaf redberry (*Rhamnus ilicifolia*), sugar bush (*Rhus ovata*), and fuchsia flower gooseberry (*Ribes speciosum*). This community provides habitat for a number of non-listed sensitive species known to the region. Southern mixed chaparral occurs throughout the higher elevation mountains and slopes within the service area, the largest stands of which occur within the Discovery Hills and San Elijo Hills in the southern portions of San Marcos. Mafic southern mixed chaparral is known to occur at locations within the San Marcos Mountains.

Chamise chaparral is a low-growing community dominated by chamise with limited shrub diversity and arid understory conditions. Similar to southern mixed chaparral, this community occurs as both granitic and mafic series within the service area, with mafic chamise chaparral found on gabbro and metavolcanic soils (typically very red with high concentrations of iron and/or selenium). In addition to chamise, other species associated with this community may include black sage, hairy yerba santa (*Eriodictyon trichocalyx*), broom snakeweed (*Gutierrezia sarothrae*), hollyleaf buckthorn (*Rhamnus pilosa*), Mojave yucca (*Yucca schidigera*), and mission manzanita (*Xylococcus bicolor*). Chamise chaparral provides habitat for a number of non-listed species. Several rare plants are associated with mafic chamise chaparral. This community occurs at locations within the San Marcos and Merriam Mountains in the northern portions of the service area. Mafic chamise chaparral is known to occur at locations within the San Marcos Mountains.

Scrub oak chaparral is a dense, evergreen chaparral to up to 20 feet tall. In San Diego County, scrub oak (*Quercus berberidifolia*) is often the dominant species (over 50 percent cover) and usually occurs in small patches within a variety of other vegetation communities. Substantial leaf litter generally accumulates in this community. Scrub oak chaparral is somewhat more mesic than many chaparrals, and often occurs at slightly higher elevations. In San Diego County, this community is usually found on north-facing or otherwise mesic slopes and can occur at elevations up to around 5,000 feet above mean sea level. These more favorable sites recover from fire more quickly than other chaparrals. Characteristic species of this habitat include Eastwood manzanita (*Arctostaphylos*

glandulosa), deerbrush (*Ceanothus integerrimus*), chaparral whitethorn (*C. leucodermis*), blue blossom (*C. thrysiflorus*), mountain mahogany (*Cercocarpus betuloides*), California ash (*Fraxinus dipetala*), narrowleaf bedstraw (*Galium angustifolium*), canyon silktassel (*Garrya veatchu*), toyon (*Heteromeles arbutifolia*), honeysuckle (*Lonicera spp.*), chaparral pea (*Pickeringia montana*), hollyleaf cherry (*Prunus ilicifolia*), scrub oak (*Quercus berberidifolia*), Nuttall's scrub oak (*Q. dumosa*), scrub live oak (*Q. wizlizenii frutescens*), California buckthorn (*Rhamnus californica*), hollyleaf redberry (*R. ilicifolia*), and Pacific poison oak (*Toxicodendron diversilobum*). Within the service area, this community generally occurs as smaller stands associated with other chaparral habitat types.

Southern maritime chaparral is similar to southern mixed chaparral, but occurs on sandstone at coastal locales. Dominant species include laurel sumac, lemonade berry (*Rhus integrifolia*), black sage, Mission manzanita, toyon (*Heteromeles arbutifolia*), and scrub oak (*Quercus berberidifolia*). Southern maritime is the most limited type of chaparral within the service area, and is characterized by several rare sensitive endemic shrubs, including Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), wart-stemmed ceanothus (*Ceanothus verrucosus*), Nuttall's scrub oak (*Quercus dumosa*), and summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*). Within the service area, this community is likely limited to upland areas west of El Camino Real that surrounds the Encinas Creek corridor.

Coastal sage-chaparral scrub contains species representative of both sage scrub and chaparral, dominated by California sagebrush, California buckwheat, laurel sumac and sage species (*Salvia* spp.). Canopy height tends to be low to moderate (3 to 5 feet tall), and relatively open, resembling sage scrub. This community provides habitat for several sensitive species, including the coastal California gnatcatcher. Within the service area, this community generally occurs along transition areas between lower slopes occupied by Diegan coastal sage scrub, and higher elevation and north-facing slopes occupied by chaparral type habitat.

g. Woodland

The principal woodland habitat type known to occur within the service area is coast live oak woodland. Coast live oak woodland is dominated by California live oak (*Quercus agrifolia)* with an open understory of perennial grasslands, annuals, and herbaceous species. Within the service area, other oak species may be present, including Engelmann oak (*Quercus engelmannii*), as sensitive species. Species associated with this woodland include creeping snowberry (*Symphoricarpos mollis*), San Diego sedge (*Carex spissa*), California buckthorn (*Rhamnus californica*), California wild rose (*Rosa californica*), nodding needlegrass (*Nassella cernua*), and common chickweed (*Stellaria media*). Coastal live oak woodland is typically associated with shallow dry valleys, gullies, and higher order ephemeral tributaries at inland locations. Within the service area, this community occurs within the lower slopes of the San Marcos and Merriam Mountains, in addition to scattered areas along the Twin Oaks valley, Interstate 15 corridor, and Encinas Creek.

h. Riparian

Two general riparian habitat types are known within the service area: southern riparian forest and southern riparian scrub. Southern willow scrub, a riparian scrub type, is perhaps the most prevalent riparian habitat within the service area, occupying substantial portions of San Marcos and Encinas creeks.

Southern riparian forest is characterized by tall, open, broad-leafed winter-deciduous riparian forests dominated by Fremont cottonwood (*Populus fremontii*), black cottonwood (*P. trichocarpa*), and several tree willows (*Salix spp.*). Understories are usually shrubby willows. This community is located on sub-irrigated and frequently overflowed lands along rivers and streams. The dominant species require moist, bare mineral soil for germination and establishment, which is provided after flood waters recede, leading to uniform-aged stands in this seral type. Characteristic species of this community include Douglas' sagewort (*Artemisia douglasiana*), mule fat (*Baccharis salicifolia*), Cucamonga Manroot (*Marah macrocarpus*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), black cottonwood (*P. trichocarpa*), Goodding's willow (*Salix gooddingii*), sandbar willow (*S. hindsiana*), Pacific willow (*S. lasiandra*), arroyo willow (*S. lasiolepis*), and stinging nettle (*Urtica holosericea*). This community is found along perennially wet stream reaches of the Transverse and Peninsular ranges, from Santa Barbara County south, to Baja California Norte, and east to the edge of the deserts.

Southern riparian scrub is located in riparian zones and is dominated by small trees or shrubs. It lacks taller riparian trees. This community commonly encroaches into some coastal saltmarsh habitats. It is mostly located in major river systems where flood scour occurs. This community has expanded as a result of increased urban and agricultural runoff. Characteristic species of this community include arroyo willow and other willows, as well as mule fat and desert broom (*Baccharis sarothroides*). Southern willow scrub consists of dense, broadleaved, winter-deciduous stands of trees dominated by arroyo willow. This habitat occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows. Mule fat scrub is a riparian scrub community dominated by mule fat and interspersed with shrubby willows. This habitat occurs along intermittent stream channels with a fairly coarse substrate and moderate water table depth. Species associated with this community include arroyo willow, red willow, narrowleaf willow, Hooker's evening primrose (*Oenothera elata*), and hummingbird trumpet (*Epilobium canum*).

i. Wetland

Coastal freshwater marsh occurs along the edges of ponds, creeks, and riverbeds. This vegetation community features saturated soils, standing water, and remains wet throughout most of the year. Species associated with coastal freshwater marsh are broadleaf cattail (*Typha latifolia*), southern cattail (*Typha domingensis*), California bulrush (*Scirpus californicus*), common threesquare (*Scirpus americanus*), tall flatsedge (*Cyperus eragrostis*), and spikerush (*Eleocharis montevidensis*). The major known wetlands within the VWD service area are provided in Table 4.2-1 in Section 4.2.1.3 below.

San Diego Mesa claypan vernal pools have basins sealed by a thick veneer of clay. They occur on marine terraces and have finer textured soils than hardpan pools. They are often associated with chamise chaparral. Characteristic species found near these vernal pools include toothed calicoflower (*Downingia cuspidate*), shortseed waterwort (*Elatine brachysperma*), and Orcutt's quillwort (*Isoetes orcuttii*). Within the VWD service area, known vernal pools occur within the San Marcos valley, all of which occur outside of proposed CIP projects.

j. Open Water

Areas classified as open water in the service area include existing reservoirs, lakes, and ponds. Over the years, small ponds have also been created within the service area for agriculture and recreation. Within the service area, open water includes existing water district reservoirs, Lake San Marcos, and various unnamed open water features.

4.2.1.3 Sensitive Biological Resources

The following section addresses sensitive biological resources which may occur within the service area. For the purposes of this PEIR, "special status" species include plant and animal species that have been recognized by either federal or state resource management agencies, conservation organizations such as the CNPS and Western Bat Working Group, or MHCP and MSCP documents as having special management needs due to limited distribution, limited numbers, or significant population declines associated with natural or manmade causes. Special status species include those designated as endangered, threatened, rare, protected, sensitive, or species of special concern according to the USFWS, CDFW, or applicable regional plans, policies, or regulations.

In general, the principal reason an individual taxon (species, subspecies, or variety) is given special status recognition is the documented or perceived decline or limitation of its population size or geographical extent and/or distribution, resulting in most cases from habitat loss. Special status biological resources also include vegetation types and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, state, and local government conservation programs.

Sensitive biological resources are defined as the following: (1) vegetation communities that are unique, of relatively limited distribution, or of particular values to wildlife; and (2) species that have been given special recognition by federal or state agencies, or are included in the MHCP and MSCP due to limited, declining, or threatened populations.

a. Sensitive Designations

Federal listing of endangered and threatened wildlife and plants is administered by the USFWS. The USFWS also recognizes species of special concern that are candidates for listing. Before a plant or animal species can receive protection under the federal Endangered Species Act (FESA), it must first be placed on the federal list. The program

follows a strict legal process to determine whether to list a species. An "endangered" species is defined as one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of plants and animals native to the United States that are species of special concern for possible addition to the federal list but that are not currently regulated.

The CDFW implements the California Endangered Species Act (CESA), which is a program that is similar in structure to, but different in detail from, the USFWS program implementing the FESA. The CDFW maintains a list of designated endangered, threatened, and rare plant and animal species. Listed species are either designated under the Native Plant Protection Act or designated by the Fish and Game Commission. In addition to recognizing three levels of endangerment, the CDFW affords interim protection to candidate species while they are being reviewed by the Fish and Game Commission. The CDFW also maintains a list of "Species of Special Concern (SSC)," most of which are species whose breeding populations in California are threatened by local extinction and additional data is required. Although these species have no legal status under CESA, the CDFW recommends their consideration in order to protect declining populations and avoid the need to list them as threatened or endangered in the future.

Under the provisions of Section 15380(d) of the CEQA Guidelines, the lead agency, in making a determination of significance, must treat rare non-listed plant and animal species as equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, the CDFW considers species on Lists 1A, 1B, or 2 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994) as qualifying for consideration under this CEQA provision. Species on the CNPS List 3 or 4 may, but generally do not, qualify for protection under this provision. Species on CNPS List 1A are "presumed extinct in California." Species on List 1B are "rare or endangered in California and elsewhere." Species on List 2 are "rare or endangered in California and are more common elsewhere." Species on Lists 3 and 4 are those which require more information to determine status and plants of limited distribution, respectively.

The primary information source on the distribution of special-status species in California is the California Natural Diversity Data Base (CNDDB) inventory, which is maintained by the Wildlife and Habitat Data Analysis Branch of the CDFW. The CNDDB inventory provides the most comprehensive statewide information on the location and distribution of special-status species and sensitive natural communities. Occurrence data are obtained from a variety of scientific, academic, and professional organizations; private consulting firms; and knowledgeable individuals; and is entered into the inventory as expeditiously as possible. The occurrence of a species of concern in a particular region is an indication that an additional population may occur at another location if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question, only that no data has been entered into the CNDDB inventory.

b. Sensitive Natural Communities

Table 4.2-1 provides a summary table of the 16 sensitive natural communities with the potential to occur within the service area, along with their corresponding global and state sensitivity rank, as designated by the CDFW and reported by the CNDDB, as well as their assigned group and tier rankings under the MHCP and MSCP. The sensitive natural communities are listed below:

- Non-native grassland
- Valley needlegrass grassland
- Diegan coastal sage scrub
- Diegan coastal sage – chaparral scrub
- Chamise chaparral (mafic and granitic)
- Scrub oak chaparral
- Southern maritime chaparral
- Southern mixed chaparral (mafic and granitic)
- Coast live oak woodland
- Southern coast live oak riparian forest
- Southern riparian forest
- Southern riparian scrub
- Coastal and valley freshwater marsh
- San Diego mesa claypan vernal pool

Table 4.2-1
Sensitive Natural Communities
Reported or Potentially Occurring within the VWD Service Area

Community	Global Rank[1]	State Rank[2]	MHCP Habitat Group[3]	MSCP Habitat Tier[4]	Mitigation Ratio
Non-native grassland	G4	S4	E	III	0.5:1
Valley needlegrass grassland	G1	S3.1	B	I	3:1
Diegan coastal sage scrub	G3	S3.1	C	II	2:1
Diegan coastal sage – chaparral scrub	G3	S3.2	C	II	2:1
Chamise chaparral (granitic / mafic)	G4	S4	D	III / I	1:1 / 3:1
Scrub oak chaparral	G3	S3.3	D	III	1:1
Southern maritime chaparral	G1	S1.1	B	I	3:1
Southern mixed chaparral (granitic / mafic)	G4	S4	D	III / 1	1:1 / 3:1
Coast live oak woodland	G4	S4	B	1	3:1
Southern coast live oak riparian forest	G3	S4	A	1	3:1 (No Net Loss)
Southern riparian forest	G4	S4	A	1	3:1 (No Net Loss)
Southern riparian scrub	G3	S3.2	A	1	3:1 (No Net Loss)
Coastal and valley freshwater marsh	G3	S2.1	A	1	3:1 (No Net Loss)
San Diego mesa claypan vernal pool	G2	S2.1	A	1	5:1

SOURCE: CDFW 2017a; CNPS 2017; City of Carlsbad 2004; AMEC et al. 2003; Ogden et al. 1998.

[1]**Global Rank**–The global rank is a reflection of the overall status of an element throughout its global range. **G1 = Critically Imperiled**–At very high risk of extinction due to extreme rarity, very steep declines, or other factors. Less than 6 viable element occurrences or less than 1,000 individuals or less than 2,000 acres. **G2 = Imperiled**–At high risk of extinction due to very restricted range, very few populations, steep declines, or other factors. Estimated 6-20 viable occurrences or 1,000-3,000 individuals or 2,000-10,000 acres. **G3 = Vulnerable**–At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors. Estimated 21-80 occurrences or 3,000-10,000 individuals or 10,000-50,000 acres. **G4 = Apparently Secure**–Uncommon but not rare; some cause for long-term concern due to declines or other factors. This rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.

[2]**State Rank**–The state rank refer to the imperilment status only within California's State boundaries. **S1 = Critically Imperiled**–Critically imperiled in the state because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province. Less than 6 occurrences or less than 1,000 individuals or less than 2,000 acres. **S1.1** = very threatened; **S1.2** = threatened; **S1.3** = no current threats known. **S2 = Imperiled**–Imperiled in the state because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. Estimated 6-20 occurrences or 1,000-3,000 individuals or 2,000-10,000 acres. **S2.1** = very threatened; **S2.2** = threatened; **S2.3** = no current threats known. **S3 = Vulnerable**–Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. Estimated 21-80 occurrences or 3,000-10,000 individuals or 10,000 -50,000 acres. **S3.1** = very threatened; **S3.2** = threatened; **S3.3** = no current threats known; **S4 = Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

[3]**MHCP Rank**–Habitat types located within the planning area of the MHCP have been assigned to Groups A – F based on the sensitivity and range of habitat within the planning area boundaries. Generally, Group A habitats are the most sensitive and Group F habitats are the least sensitive.

[4]**MSCP Rank**–Habitat types located within the planning area of the MSCP have been assigned to Tiers I – IV based on the sensitivity and range of habitat within the planning area boundaries. Generally, Tier I habitats are the most sensitive and Tier IV habitats are the least sensitive. (5) Mitigation ratios may increase or decrease depending on the resources present and where the impact and mitigation is proposed within the VWD planning area, as approved by the regulatory agencies and/or local jurisdiction in which the impact and mitigation occurs.

Although these sensitive natural communities have been identified as potentially occurring within the service area, they may not necessarily occur within the locations of CIP projects proposed under the 2018 Master Plan. It is also possible that other sensitive natural community types occur within the service area that has not been identified under this programmatic evaluation. The majority of the CIP projects occur within disturbed and developed land. Based on a programmatic assessment of the relationship of individual CIP project locations and sensitive natural communities presumed to exist within the service area, the proposed Parallel Land Outfall occurs on or in the immediate vicinity of the largest area of potential sensitive natural community types. The Parallel Land Outfall pipeline traverses approximately 8 miles of developed and undeveloped land, of which, a substantial portion is characterized by various upland, riparian, and wetland sensitive natural community types. Figure 4.2-1 depicts the locations of potential sensitive natural communities that occur on or in the immediate vicinity of the Parallel Land Outfall.

Additionally, some of the sensitive natural communities potentially occurring within the service area, such as non-native grassland and certain chaparral-type habitats, may not necessarily be considered sensitive on a global or state level, however, may harbor sensitive species and/or be considered locally rare. Further, certain sensitive chaparral-types (e.g., mafic chamise chaparral, mafic southern mixed chaparral) are considered more sensitive than other, more commonly occurring chaparrals of the same general vegetation types (e.g., granitic chamise chaparral, granitic southern mixed chaparral), due to their narrow range and potential to support sensitive species.

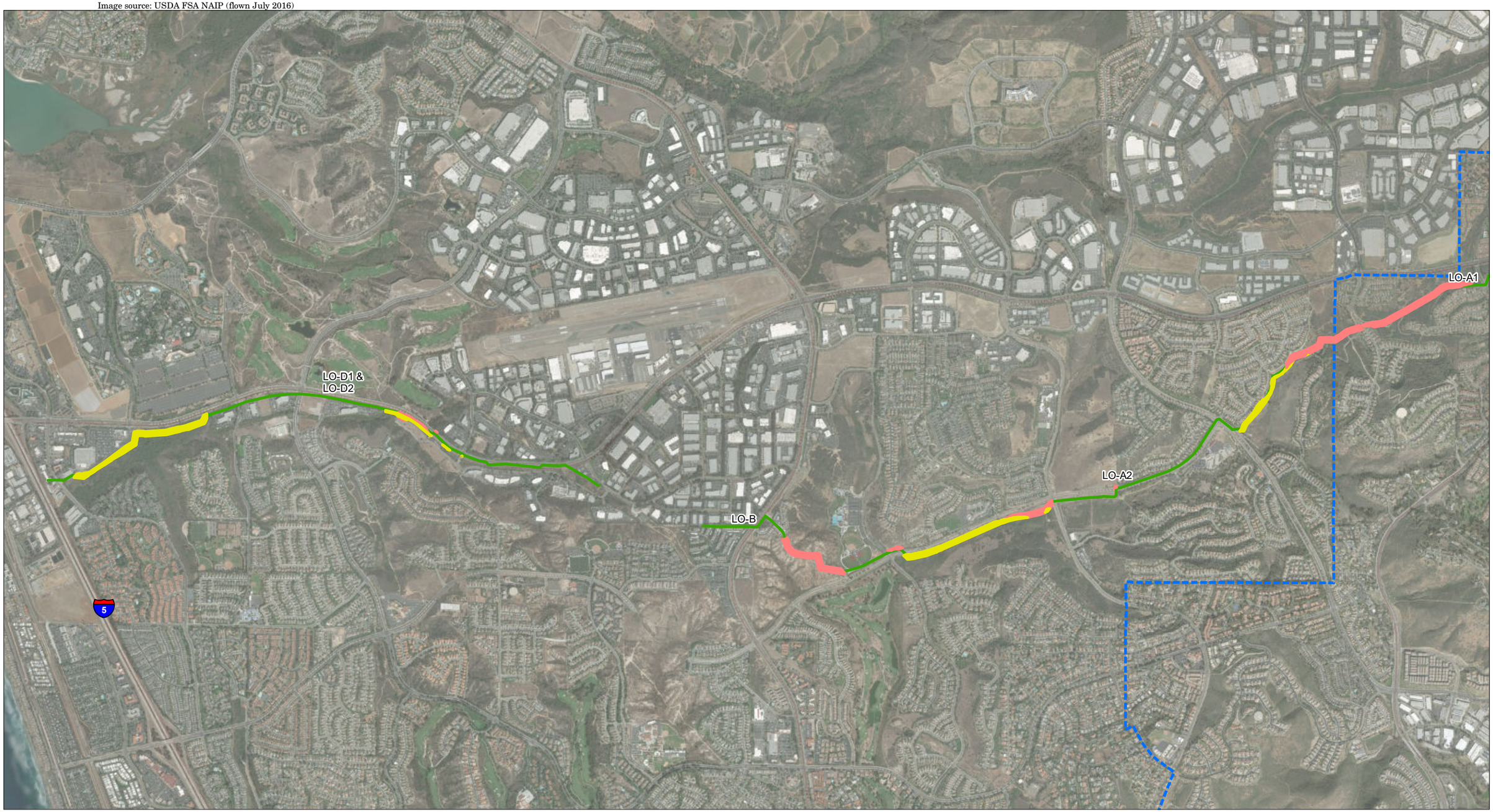
c. Special Status Plant Species

Table 4.2-2 lists the 58 special status plant species with the potential to occur within the service area for the 2018 Master Plan. Species nomenclature conforms to Jepson (Jepson Flora Project 2017) and Munz (1974). Habitat requirements were derived from the CNDDB (CDFW 2017a), CNPS (2017), and Rare Plants of San Diego County (Reiser 2001). Of the 58 special status plant species, seven of the species are recognized under FESA as federally endangered, four are federally threatened, and one is a candidate for federal listing. Eight of the special status plant species are recognized under CESA as state endangered, and one is recognized as state threatened. In total, 57 of the special status plant species are designated as CNPS List species, including 41 CNPS List 1B species, 7 CNPS List 2 species, 1 CNPS List 3 species, and 8 CNPS List 4 species.

d. Special Status Wildlife Species

Table 4.2-3 lists the 65 special status wildlife species with the potential to occur within the service area. In general, species nomenclature follows the American Ornithological Union (AOU 2015) for birds; Crother et al. (2008) for reptiles and amphibians; California Insects (PBS&J 2008) for insects; and The Revised Checklist of North American Mammals North of Mexico (Jones 1992) for mammals. Of these species, five are invertebrates, three are amphibians, twelve are reptiles, thirty are birds, and fifteen are mammals.

Image source: USDA FSA NAIP (flown July 2016)



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Vallecitos Water District
Sewer Line CIP
Potential Riparian/Wetland Sensitive Natural Community
Potential Upland Sensitive Natural Community

FIGURE 4.2-1
Potential Sensitive Natural Communities within the Parallel Land Outfall

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Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
BRYOPHYTES					
MIELICHHOFERIACEAE					
Mielichhoferia shevockii Shevock's copper moss			1B.2		Cismontane woodland
POTTIACEAE					
Tortula californica California screw moss			1B.2		Chenopod scrub, valley and foothill grassland
Triquetrella californica coastal triquetrella			1B.2		Moss; coastal bluff scrub, coastal sage scrub; elevation below 350 feet. Known in California from fewer than 10 coastal occurrences in San Diego, Contra Costa, Del Norte, Mendocino, Marin, San Francisco, San Mateo, and Sonoma counties. Additional populations in Oregon.
SPHAEROCARPACEAE					
Geothallus tuberosus Campbell's liverwort			1B.1		Ephemeral liverwort; mesic coastal sage scrub, vernal pools; elevation below 2,000 feet. California endemic. Known from San Diego and Riverside counties. Recently reported from Camp Pendleton, likely extirpated elsewhere in urbanized San Diego County.
Sphaerocarpos drewei bottle liverwort			1B.1		Ephemeral liverwort; openings in chaparral and coastal sage scrub; elevation 300–2,000 feet. California endemic. Known from San Diego and Riverside counties.
LYCOPODS					
SELAGINELLACEAE SPIKE-MOSS FAMILY					
Selaginella cinerascens ashy spike-moss			4.1		Perennial rhizomatous herb; chaparral, coastal scrub; elevation 65–2,100 feet.
FERNS					
OPHIOGLOSSACEAE ADDER'S TONGUE FAMILY					
Ophioglossum californicum California adder's-tongue			4.2		Perennial herb; chaparral, vernal pools, valley and foothill grasslands; blooms December–May; elevation 200–1,000 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
ANGIOSPERMS: DICOTS					
APIACEAE CARROT FAMILY					
Eryngium aristulatum var. *parishii* San Diego button-celery	Endangered	Endangered	1B.1	MHCP Covered, MSCP Covered	Biennial/perennial herb; vernal pools, mesic areas of coastal sage scrub and grasslands, blooms April–June; elevation less than 2,000 feet. Known from San Diego and Riverside counties. Additional populations occur in Baja California, Mexico.
ASTERACEAE SUNFLOWER FAMILY					
Ambrosia chenopodiifolia San Diego bur-sage			2B.1	MSCP Covered	Perennial shrub; coastal sage scrub; cobbly loam soils; blooms April–June; elevation 150–500 feet. Known in California from fewer than 15 occurrences all of which are in San Diego County. Additional populations in Baja California, Mexico.
Ambrosia pumila San Diego ambrosia		Endangered	1B.1	MHCP Covered	Perennial herb (rhizomatous); chaparral, coastal sage scrub, valley and foothill grasslands, creek beds, vernal pools, often in disturbed areas; blooms May–September; elevation less than 1,400 feet. Many occurrences extirpated in San Diego County.
Artemisia palmeri San Diego sagewort			4.2		Perennial deciduous shrub; coastal sage scrub, chaparral, riparian, mesic, sandy areas; blooms May–September; elevation less than 3,000 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
Baccharis vanessae Encinitas baccharis [=Encinitas coyote brush]	Endangered	Threatened	1B.1	MHCP Covered, MSCP Covered	Perennial deciduous shrub; chaparral; maritime; sandstone; blooms August–November; elevation less than 2,500 feet. San Diego County endemic. Known from fewer than 20 occurrences. Extirpated from Encinitas area.
Centromadia [=*Hemizonia*] *parryi* ssp. *Australis* southern tarplant			1B.1		Annual herb; margins of marshes and swamps, valley and foothill grasslands, vernal pools; blooms May–November; elevation less than 1,600 feet.
Centromadia [=*Hemizonia*] *pungens* ssp. *Laevis* smooth tarplant			1B.1		Annual herb; chenopod scrub, meadow and seeps, playas, riparian woodland, valley and foothill grasslands; alkaline soils; blooms April–September; elevation less than 2,100 feet. California endemic. Known from San Diego, Riverside, and San Bernardino counties.
Corethrogyne [=*Lessingia*] *filaginifolia* var. *linifolia* Del Mar Mesa sand aster			1B.1	MHCP Covered, MSCP Covered	Perennial herb; coastal bluff scrub, openings in southern maritime chaparral and coastal sage scrub; sandy soil; blooms May–September; elevation less than 500 feet. San Diego County endemic.
Ericameria palmeri var. *palmeri* [=*E. palmeri* ssp. *Palmeri*] Palmer's goldenbush [=Palmer's 17ricameria]			1B.1	MSCP Covered	Perennial evergreen shrub; chaparral coastal sage scrub, typically in mesic areas; blooms July–November; elevation less than 2,000 feet. Known in California from sixteen occurrences all of which are in San Diego County. Additional populations in Baja California, Mexico.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
Hazardia orcuttii Orcutt's hazardia	Threatened	Candidate	1B.1	MHCP Covered	Perennial evergreen shrub; chaparral, coastal sage scrub; blooms August–October; elevation 280 feet. Known in California from only five occurrences all of which are in San Diego County. Additional populations occur in Baja California, Mexico.
Isocoma menziesii var. *decumbens* decumbent goldenbush			1B.2		Perennial shrub; chaparral, coastal sage scrub; sandy soils, often in disturbed areas; blooms April–November; elevation less than 500 feet.
Iva hayesiana San Diego marsh-elder			2B.2		Perennial herb; marshes and swamps, playas, riparian areas; blooms April–September; elevation below 1,700 feet.
Lasthenia glabrata ssp. *Coulteri* Coulter's goldfields			1B.1		Annual herb; coastal salt marsh, vernal pools, playas; blooms February–June; elevation less than 4,000 feet.
BORAGINACEAE BORAGE FAMILY					
Cryptantha wigginsii Wiggins' cryptantha			1B.2		Coastal sage scrub, often with clay soils.
Harpagonella palmeri Palmer's grapplinghook			4.2		Annual herb; chaparral, coastal sage scrub, valley and foothill grasslands; clay soils; blooms March–May; elevation less than 3,200 feet. Inconspicuous and easily overlooked.
Nama stenocarpum mud nama			2B.2		Annual/perennial herb; marshes and swamps, lake margins, riverbanks; blooms January–July; elevation less than 1,700 feet.
BRASSICACEAE MUSTARD FAMILY					
Lepidium virginicum var. *robinsonii* Robinson's peppergrass			4.3		Annual herb; coastal sage scrub, chaparral; blooms January–July; elevation less than 2,900 feet.
Nasturtium gambellii [=Rorippa gambellii] Gambel's water cress	Endangered	Endangered	1B.1		Perennial herb; marshes and swamps; blooms April–Sept.; elevation less than 1,100 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
CACTACEAE CACTUS FAMILY					
Cylindropuntia californica var. *californica* [=*Opuntia parryi* var. *serpentina*] snake cholla			1B.1	MSCP Covered	Perennial stem succulent; chaparral, coastal sage scrub; blooms April–May; elevation 100–500 feet.
Ferocactus viridescens San Diego barrel cactus			2B.1	MSCP Covered	Perennial stem succulent; chaparral, coastal sage scrub, valley and foothill grasslands, vernal pools; blooms May–June; elevation less than 1,500 feet.
CONVOLVULACEAE MORNING-GLORY FAMILY					
Dichondra occidentalis western dichondra			4.2		Perennial herb (rhizomatous); chaparral, cismontane woodland, coastal sage scrub, valley and foothill grasslands; blooms March–July; elevation less than 200–1,650 feet.
CRASSULACEAE STONECROP FAMILY					
Dudleya blochmaniae ssp. *blochmaniae* Blochman's dudleya			1B.2	MHCP Covered	Perennial herb; coastal sage scrub, coastal bluff scrub, chaparral, grasslands; blooms April–June; elevation less than 1,500 feet.
Dudleya multicaulis *Many-stemmed dudleya*			1B.2		Perennial herb; chaparral, coastal sage scurb, grassland, mostly clay soils; blooms April-July; elevation 2,600 feet
Dudleya variegata variegated dudleya			1B.2	MHCP Covered, MSCP Covered	Perennial herb; openings in chaparral, coastal sage scrub, grasslands, vernal pools; blooms May–June; elevation less than 1,900 feet.
Dudleya viscida sticky dudleya			1B.2	MSCP Covered	Coastal sage scrub, mesic, north-facing slopes in shade; gabbroic rock; blooms May–June; elevation less than 1,800 feet. California endemic. Known from San Diego, Riverside, and Orange counties.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
ERICACEAE HEATH FAMILY					
Arctostaphylos glandulosa ssp. *crassifolia* Del Mar manzanita		Endangered	1B.1	MHCP Covered, MSCP Covered	Perennial evergreen shrub; southern maritime chaparral; sandy soil; blooms December–April; elevation less than 1,200 feet.
Arctostaphylos rainbowensis rainbow manzanita			1B.1		Evergreen shrub; chaparral; granitic outcrops, rocky Cieneba, Las Posas soil, Pala; blooms January–February; elevation 700–2,200 feet. California endemic. Known from San Diego and Riverside counties.
Comarostaphylis diversifolia ssp. *diversifolia* summer holly			1B.2		Perennial evergreen shrub; chaparral; blooms April–June; elevation 100–2,600 feet.
EUPHORBIACEAE SPURGE FAMILY					
Euphorbia misera cliff spurge			2B.2		Shrub; coastal sage scrub, maritime succulent scrub, coastal bluff scrub; blooms December–August; elevation less than 2,000 feet.
FABACEAE LEGUME FAMILY					
Astragalus deanei Dean's milkvetch			1B.1		Perennial herb; chaparral, coastal sage scrub, riparian, blooms February–May, elevation 250–2,300 feet. San Diego County endemic. Known from fewer than 15 occurrences within tributaries to Otay and Sweetwater rivers.
FAGACEAE OAK FAMILY					
Quercus dumosa Nuttall's scrub oak			1B.1		Perennial evergreen shrub; closed-cone coniferous forest, coastal chaparral, coastal sage scrub; sandy and clay loam soils; blooms February–March; elevation less than 1,300 feet.
Quercus engelmannii Engelmann oak			4.2		Perennial deciduous tree; cismontane and riparian woodland, valley and foothill grasslands, chaparral; blooms March–May; elevation 150–4,300 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
GERANIACEAE GERANIUM FAMILY					
California macrophylla round-leaved filaree			1B.2		Annual herb; cismontane woodland, grassland; clay soils; blooms March–May; elevation less than 4,000 feet.
LAMIACEAE MINT FAMILY					
Acanthomintha ilicifolia San Diego thornmint	Endangered	Threatened	1B.1	MHCP Covered, MSCP Covered	Annual herb; chaparral, coastal sage scrub, and grasslands; friable or broken clay soils; blooms April–June; elevation less than 3,200 feet.
Monardella viminea [=*Monardella linoides* ssp. *viminea*] willowy monardella	Endangered	Endangered	1B.1	MSCP Covered	Perennial herb; closed-cone coniferous forest, chaparral, coastal sage scrub, riparian scrub, riparian woodlands, sandy seasonal dry washes; blooms June–August; elevation 160–740 feet. San Diego County endemic.
NYCTAGINACEAE FOUR O'CLOCK FAMILY					
Abronia villosa var. *aurita* chaparral sand verbena			1B.1		Annual herb; sandy floodplains in inland, arid areas of coastal sage scrub and open chaparral; blooms January–August; elevation 300–5,300 feet.
PICRODENDRACEAE BITTER-TREE FAMILY					
Tetracoccus dioicus Parry's tetracoccus			1B.2	MSCP Covered	Perennial deciduous shrub; chaparral, coastal sage scrub; blooms April–May; elevation 500–3,500 feet.
POLEMONIACEAE PHLOX FAMILY					
Linanthus orcuttii Orcutt's linanthus			1B.3		Annual herb; openings in chaparral, lower montane coniferous forest, pinyon and juniper woodland; blooms May–June; elevation 3,000–7,000 feet.
Navarretia fossalis spreading navarretia [=prostrate navarretia]		Threatened	1B.1	MHCP Covered, MSCP Covered	Annual herb; vernal pools, marshes and swamps, chenopod scrub; blooms April–June; elevation 100–4,300 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
Navarretia prostrata prostrate vernal pool navarretia			1B.1		Annual herb; coastal sage scrub, perennial alkaline grasslands, vernal pools; blooms April–July; elevation 50–4,000 feet. California endemic. Known from San Diego, Riverside, Los Angeles, Orange, San Bernardino (presumed extirpated), San Benito, Santa Clara, San Luis Obispo, Alameda, Fresno, Merced, and Monterey counties.
POLYGONACEAE **BUCKWHEAT FAMILY**					
Chorizanthe orcuttiana Orcutt's spineflower	Endangered	Endangered	1B.1	MHCP Covered	Annual herb; maritime chaparral, closed-cone coniferous forest, coastal sage scrub; sandy openings; blooms March–May; elevation less than 400 feet. San Diego County endemic. Known from fewer than 20 occurrences.
RANUNCULACEAE **BUTTERCUP FAMILY**					
Myosurus minimus little mousetail			3.1	MHCP Covered	Annual herb; vernal pools, perennial grasslands; blooms March–June; elevation 70–2,100 feet.
RHAMNACEAE **BUCKTHORN FAMILY**					
Adolphia californica California adolphia			2B.1		Perennial deciduous shrub; Diegan coastal sage scrub and chaparral; clay soils; blooms December–May; elevation 100–2,500 feet.
Ceanothus verrucosus wart-stemmed ceanothus			2B.2	MSCP Covered	Perennial evergreen shrub; chaparral; blooms December–April; elevation less than 1,300 feet.
ROSACEAE **ROSE FAMILY**					
Horkelia truncata Ramona horkelia			1B.3		Perennial herb; cismontane woodland, chaparral; clay soils; blooms May–June; elevation 1,300–4,300 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	
ANGIOSPERMS: MONOCOTS					
AGAVACEAE AGAVE FAMILY					
Agave shawii var. *shawii* Shaw's agave			2B.1	MSCP Covered	Perennial leaf succulent; coastal bluff scrub, coastal sage scrub, maritime succulent scrub; blooms September–May; elevation less than 400 feet.
JUNCACEAE RUSH FAMILY					
Juncus acutus ssp. *leopoldii* southwestern spiny rush			4.2		Perennial herb (rhizomatous); coastal dunes, meadows and seeps, coastal salt marsh, riparian; blooms May–June; elevation less than 3,000 feet.
POACEAE GRASS FAMILY					
Orcuttia californica California Orcutt grass	Endangered	Endangered	1B.1	MHCP Covered, MSCP Covered	Annual herb; vernal pools; blooms April–August; elevation 50–2,200 feet.
THEMIDACEAE BRODIAEA FAMILY					
Bloomeria [=*Muilla*] *clevelandii* San Diego goldenstar			1B.1	MHCP Covered, MSCP Covered	Perennial herb (bulbiferous); chaparral, coastal sage scrub, valley and foothill grassland, vernal pools; clay soils; blooms May; elevation 170–1,500 feet.
Brodiaea filifolia thread-leaved brodiaea [=thread-leaf brodiaea]	Endangered	Threatened	1B.1	MHCP Covered, MSCP Covered	Perennial herb (bulbiferous); cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools; often clay soils; blooms March–June; elevation less than 43,800 feet. California endemic. Known from San Diego, Riverside, Orange, Los Angeles, and San Bernardino counties.
Brodiaea orcuttii Orcutt's brodiaea			1B.1		Perennial herb (bulbiferous); closed cone coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay soil; blooms May–July; elevation less than 5,600 feet.

Table 4.2-2
Sensitive Plant Species
Reported or Potentially Occurring within the VWD Service Area

Scientific Name Common Name	Sensitivity Code and Status				Habitat Preference/ Requirements
	State	Federal	CNPS Rank	MSCP/MHCP Covered	

CALIFORNIA NATIVE PLANT SOCIETY (CNPS): CALIFORNIA RARE PLANT RANKS (CRPR)

1A = Species presumed extinct.
1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2A = Plants presumed extirpated in California, but more common elsewhere.
2B = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).
.2 = Species fairly threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat).
.3 = Species not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known).

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
BRANCHINECTIDAE FAIRY SHRIMP				
San Diego fairy shrimp *Branchinecta sandiegonensis*		Endangered	MSCP Covered, Narrow Endemic	Vernal pools.
STREPTOCEPHALIDAE FAIRY SHRIMP				
Riverside fairy shrimp *Streptocephalus woottoni*		Endangered	MSCP Covered, MHCP Covered, Narrow Endemic	Vernal pools.
HESPERIIDAE SKIPPERS				
Harbison dun skipper *Euphyes vestris harbisoni*			MHCP Covered, Narrow Endemic	Woodland meadows, bogs, grasslands. Host plant *Carex spissa.* Adult emergence late May–early July.
LYCAENIDAE BLUES, COPPERS, & HAIRSTREAKS				
Hermes copper *Lycaena hermes*		Candidate		Chaparral and coastal sage scrub where host plant *Rhamnus crocea* occurs. Adult emergence late May to July.
NYMPHALIDAE BRUSH-FOOTED BUTTERFLIES				
Monarch *Danaus plexippus*			*	Roosts located in wind-protected tree groves, such as eucalyptus, Monterey pine, and cypress trees where nectar and water sources are available.
SALAMANDRIDAE NEWTS				
Coast range newt *Taricha torosa torosa*	Species of Concern			Under rocks, in or under logs, in rodent burrows. In or near streams, ponds, and reservoirs.
PELOBATIDAE SPADEFOOT TOADS				
Western spadefoot *Spea hammondii*	Species of Concern		MHCP Covered	Vernal pools, floodplains, and alkali flats within areas of open vegetation.
BUFONIDAE TRUE TOADS				
Arroyo toad *Anaxyrus californicus*	Species of Concern	Endangered	MSCP Covered	Open streamside sand/gravel flats. Quiet, shallow pools along stream edges are breeding habitat. Nocturnal except during breeding season (March–July).
EMYDIDAE BOX & WATER TURTLES				
Western pond turtle *Actinemys* [=*Clemmys*] *marmorata pallida*	Species of Concern		MSCP Covered, MHCP Covered	Ponds, small lakes, marshes, slow-moving, sometimes brackish water.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
GEKKONIDAE GECKOS				
San Diego banded gecko *Coleonyx variegatus abbotti*			*	Granite and rocky outcrops in coastal sage scrub and chaparral.
IGUANIDAE IGUANID LIZARDS				
Coast horned lizard *Phrynosoma blainvillii* [= *P. coronatum* coastal population]	Species of Concern		MSCP Covered	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.
SCINCIDAE SKINKS				
Coronado skink *Eumeces skiltonianus interparietalis*	Species of Concern			Grasslands, open woodlands and forest, broken chaparral. Rocky habitats near streams.
TEIIDAE WHIPTAIL LIZARDS				
Belding's orange-throated whiptail *Aspidoscelis hyperythra beldingi*	Species of Concern		MSCP Covered, MHCP Covered	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.
Coastal whiptail *Aspidoscelis tigris stejnegeri*	Species of Concern			Coastal sage scrub, chaparral, woodlands, and streamsides where plants are sparsely distributed.
ANNIELLIDAE LEGLESS LIZARDS				
Silvery legless lizard *Anniella pulchra pulchra*	Species of Concern			Herbaceous layers with loose soil in coastal scrub, chaparral, and open riparian. Prefers dunes and sandy washes near moist soil.
BOIDAE BOAS				
Rosy boa *Lichanura trivirgata roseofusca*			*	Coastal sage scrub, chaparral in inland and desert locales with rocky soils.
COLUBRIDAE COLUBRID SNAKES				
San Diego ring-necked snake *Diadophis punctatus similis*			*	Rocky areas in wet locales, such as swamps, damp forests, or riparian woodlands.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	Species of Concern			Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.
Two-striped gartersnake *Thamnophis hammondii*	Species of Concern			Permanent freshwater streams with rocky bottoms. Mesic areas.
CROTALIDAE RATTLESNAKES				
Red diamond rattlesnake *Crotalus ruber*	Species of Concern			Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
BIRDS (Nomenclature from American Ornithologists' Union 2015 and Unitt 2004)				
ARDEIDAE HERONS & BITTERNS				
Great blue heron (rookery site) *Ardea herodias*				Bays, lagoons, ponds, lakes. Non-breeding year-round visitor, some localized breeding.
Western least bittern *Ixobrychus exilis hesperis*	Species of Concern			Brackish and freshwater marshes in the coastal lowland. Rare summer resident, rare in winter.
THRESKIORNITHIDAE IBISES				
White-faced ibis (rookery site) *Plegadis chihi*	Watch List		MSCP Covered MHCP Covered	Freshwater ponds, irrigated fields, brackish lagoons. Migrant and winter visitor, rare in summer. Very localized breeding.
ACCIPITRIDAE HAWKS, KITES, & EAGLES				
Cooper's hawk (nesting) *Accipiter cooperii*	Watch List		MSCP Covered MHCP Covered	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.
Golden eagle (nesting and wintering) *Aquila chrysaetos canadensis*	Watch List, Fully Protected	BEPA	MSCP Covered	Require vast foraging areas in grassland, broken chaparral, or sage scrub. Nest in cliffs and boulders. Uncommon resident.
Ferruginous hawk (wintering) *Buteo regalis*	Watch Lis			Require large foraging areas. Grasslands, agricultural fields. Uncommon winter resident.
Northern harrier (nesting) *Circus cyaneus hudsonius*	Species of Concern		MSCP Covered	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.
White-tailed kite (nesting) *Elanus leucurus*	Fully Protected			Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.
Osprey (nesting) *Pandion haliaetus*	Watch List		MHCP Covered	Coast, lowland lakes, rarely foothills and mountain lakes. Uncommon fall/winter resident, rare in spring and summer. Fish are the primary prey item.
FALCONIDAE FALCONS & CARACARAS				
Merlin *Falco columbarius*	Watch List			Rare winter visitor. Grasslands, agricultural fields, occasionally mud flats.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
Prairie falcon (nesting) *Falco mexicanus*	Watch List			Grassland, agricultural fields, desert scrub. Uncommon winter resident. Rare breeding resident.
Peregrine falcon *Falco peregrinus anatum*	Delisted, Fully Protected		MHCP Covered, MSCP Covered	Open coastal areas, mud flats. Rare inland. Rare fall and winter resident, casual in late spring and early summer. Local breeding populations extirpated.
RALLIDAE **RAILS, GALLINULES, & COOTS**				
Light-footed Ridgway's rail *Rallus obsoletus* [=*longirostris*] *levipes*	Endangered, Fully Protected	Endangered	MHCP Covered	Salt marshes supporting *Spartina foliosa.* Localized resident.
CHARADRIIDAE **LAPWINGS & PLOVERS**				
Western snowy plover (coastal population) *Charadrius alexandrinus nivosus*	Species of Concern	Threatened	MHCP Covered, MSCP Covered	Sandy beaches, lagoon margins, tidal mud flats. Migrant and winter resident. Localized breeding.
STRIGIDAE **TYPICAL OWLS**				
Long-eared owl (nesting) *Asio otus wilsonianus*	Species of Concern			Riparian woodland, oak woodland, tamarisk woodland. Rare resident and winter visitor. Localized breeding.
Western burrowing owl (burrow sites) *Athene cunicularia hypugaea*	Species of Concern		MSCP Covered	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.
TYRANNIDAE **TYRANT FLYCATCHERS**				
Southwestern willow flycatcher *Empidonax traillii extimus*	Endangered	Endangered	MHCP Covered, MSCP Covered	Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant, rare summer resident. Extremely localized breeding.
LANIIDAE **SHRIKES**				
Loggerhead shrike *Lanius ludovicianus*	Species of Concern			Open foraging areas near scattered bushes and low trees.
VIREONIDAE **VIREOS**				
Least Bell's vireo (nesting) *Vireo bellii pusillus*	Endangered	Endangered	MHCP Covered	Willow riparian woodlands. Summer resident.
ALAUDIDAE **LARKS**				
California horned lark *Eremophila alpestris actia*	Watch List			Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
HIRUNDINIDAE SWALLOWS				
Bank swallow *Riparia riparia*	Threatened			Steep riverbanks, gravel pits. Nest in colonies.
TROGLODYTIDAE WRENS				
Coastal cactus wren *Campylorhynchus brunneicapillus sandiegensis*	Species of Concern		MHCP Covered, MSCP Covered, Narrow Endemic	Maritime succulent scrub, coastal sage scrub with *Opuntia* thickets. Rare localized resident.
SYLVIIDAE GNATCATCHERS				
Coastal California gnatcatcher *Polioptila californica californica*	Species of Concern	Threatened	MHCP Covered, MSCP Covered	Coastal sage scrub, maritime succulent scrub. Resident.
PARULIDAE WOOD WARBLERS				
Yellow warbler (nesting) *Setophaga* [=*Dendroica*] *petechia*	Species of Concern			Breeding restricted to riparian woodland. Spring and fall migrant, localized summer resident, rare winter visitor.
Yellow-breasted chat (nesting) *Icteria virens auricollis*	Species of Concern		MHCP Covered	Dense riparian woodland. Localized summer resident.
EMBERIZIDAE EMBERIZIDS				
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Fully Protected		MHCP Covered, MSCP Covered	Coastal sage scrub, chaparral, grassland. Resident.
Grasshopper sparrow (nesting) *Ammodramus savannarum perpallidus*	Species of Concern		MSCP Covered	Tall grass areas. Localized summer resident, rare in winter.
Bell's sage sparrow *Artemisiospiza* [=*Amphispiza*] *belli belli*	Watch List		MHCP Covered	Chaparral, coastal sage scrub. Localized resident.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	Endangered		MHCP Covered	Salt marshes, lagoons dominated by *Salicornia*. Resident.
ICTERIDAE				
Tricolored blackbird *Agelaius tricolor*	Species of Concern		MSCP Covered	Freshwater marshes, agricultural areas, lakeshores, parks. Localized resident.
VESPERTILIONIDAE VESPER BATS				
Pallid bat *Antrozous pallidus*	Species of Concern			Arid deserts and grasslands. Shallow caves, crevices, rock outcrops, buildings, tree cavities. Especially near water. Colonial. Audible echolocation signal.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
Pale big-eared bat *Corynorhinus townsendii pallescens*	Species of Concern			Caves, mines, buildings. Found in a variety of habitats, arid and mesic. Individual or colonial. Extremely sensitive to disturbance
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	Species of Concern			Caves, mines, buildings. Found in a variety of habitats, arid and mesic. Individual or colonial. Extremely sensitive to disturbance.
Western red bat *Lasiurus blossevillii*	Species of Concern			Prefers riparian areas dominated by cottonwoods, oaks, sycamores, and walnuts.
Western yellow bat *Lasiurus xanthinus*			*	Found in valley foothill riparian, desert riparian, desert washes, and palm oasis habitats.
Western small-footed bat *Myotis ciliolabrum*			*	Found in a wide range of habitats near water, including arid wooded, brushy uplands, and open stands in forests and woodlands. Seeks cover in caves, buildings, mines and crevices
Yuma bat *Myotis yumanensis*	Species of Concern			Optimal habitats are open forests and woodlands with sources of water over which to feed.
MOLOSSIDAE FREE-TAILED BATS				
Western mastiff bat *Eumops perotis californicus*	Species of Concern			Woodlands, rocky habitat, arid and semiarid lowlands, cliffs, crevices, buildings, tree hollows. Audible echolocation signal.
LEPORIDAE RABBITS & HARES				
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	Species of Concern		MHCP Covered	Open areas of scrub, grasslands, agricultural fields.

Table 4.2-3
Sensitive Wildlife Species
Reported or Potentially Occurring within the VWD Service Area

Species' Common Name/ Scientific Name	State Status	Federal Status	MSCP/MHCP Status	Habitat Preference/ Requirements
HETEROMYIDAE POCKET MICE & KANGAROO RATS				
Dulzura pocket mouse *Chaetodipus californicus femoralis*	Species of Concern			Brushy areas of coastal sage scrub, chamise-redshank & montane chaparral, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood–conifer & montane hardwood. Probably most attracted to interface of grassland and brush.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	Species of Concern		MHCP Covered	San Diego County west of mountains in sparse, disturbed coastal sage scrub or grasslands with sandy soils.
MURIDAE OLD WORLD MICE & RATS (I)				
San Diego desert woodrat *Neotoma lepida intermedia*	Species of Concern			Coastal sage scrub and chaparral.
MUSTELIDAE WEASELS, OTTERS, & BADGERS				
American badger *Taxidea taxus*	Species of Concern		MSCP Covered	Grasslands, Sonoran desert scrub.
FELIDAE CATS				
Mountain lion *Puma concolor*	Fully Protected		MHCP Covered, MSCP Covered	Many habitats.
CERVIDAE DEER				
Southern mule deer *Odocoileus hemionus fuliginata*			MHCP Covered, MSCP Covered	Many habitats.

STATUS CODES
BEPA = Bald and Golden Eagle Protection Act
* = Taxa listed with an asterisk fall into one or more of the following categories:
- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon's range but which are threatened with extirpation within California
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

Under FESA, seven of the special status wildlife species are federally endangered, two are federally threatened, and one is a candidate for listing. Under CESA, four of the special status wildlife species are recognized as state endangered and one is listed as state threatened. Six of the species are state fully protected, thirty-five are designated as state species of special concern, and nine are designated as watch list species by the CDFW. In addition, nearly all of the special status wildlife species with the potential to occur within the service area are considered locally sensitive, and are designated as covered species, proposed covered species, or sensitive species analyzed for coverage under the MHCP and/or MSCP.

e. Critical Habitat

The USFWS has designated Critical Habitat for two federally listed plant species and two federally listed wildlife species within portions of the service area. USFWS-designated Critical Habitat occurs for thread-leaved brodiaea, spreading navarretia (*Navarretia fossalis*), San Diego fairy shrimp (*Branchinecta sandiegoensis*), and coastal California gnatcatcher. Table 4.2-4 lists the USFWS Critical Habitat known to occur within the service area in relation to proposed CIP projects potentially located within and/or in the immediate vicinity (approximately 100 feet). These are also depicted on Figure 4.2-2.

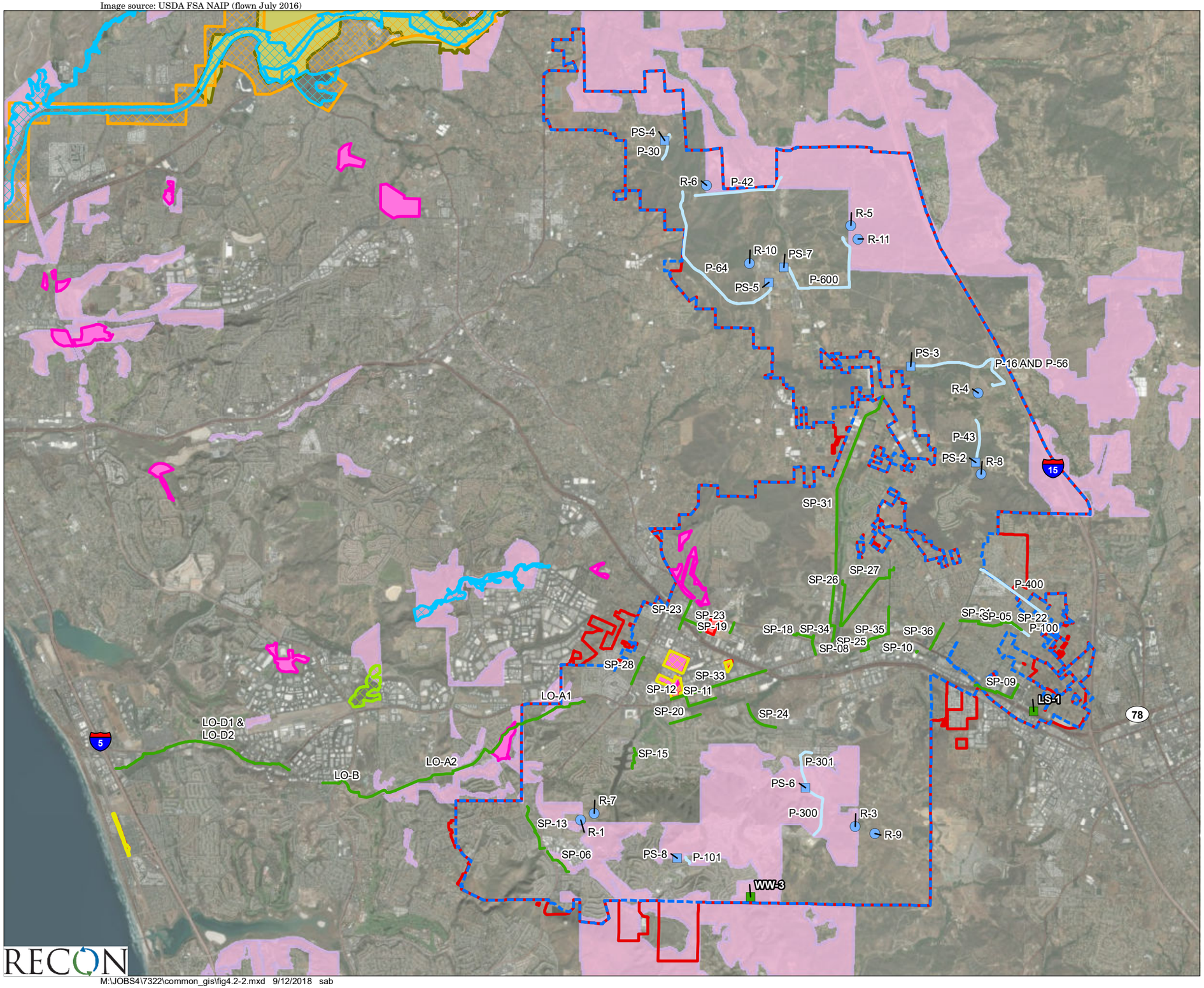
Table 4.2-4
U.S. Fish and Wildlife Service Critical Habitat within the Vallecitos Water District Service Area

U.S. Fish and Wildlife Service Critical Habitat	Master Plan CIP Projects Potentially Located within and/or in the Immediate Vicinity
thread-leaved brodiaea	SP-12
spreading navarretia	SP-12
San Diego fairy shrimp	SP-12, SP-23
coastal California gnatcatcher	R-1, R-3, R-5, R-7, R-11, P-42, PS-6, PS-8, SP-12, SP-13, LO-D1, LO-D2, LO-A1, LO-A2
SOURCE: U.S. Fish and Wildlife Service 2017.	

f. Coastal Zone Resources

The western portions of the sewer outfall for the 2018 Master Plan fall within the coastal zone, as defined by the California Coastal Act (CCA) and the City of Carlsbad's Local Coastal Program (LCP) and General Plan (Figure 4.2-3). Specifically, the western portions of LO-D1 and LO-D2 would occur within and/or in the immediate vicinity of coastal stream, riparian, and wetland habitat associated with Encinas Creek. These habitats would qualify as Environmentally Sensitive Habitat Area (ESHA), as defined within the Carlsbad LCP and General Plan. The City of Carlsbad and California Coastal Commission (CCC) require that development projects, including pipelines, which are proposed within the coastal zone, comply with the coastal zone management requirements and development standards incorporated into the Carlsbad LCP and General Plan, as enforced through the City of Carlsbad's Municipal Code. The Carlsbad Coastal Resource Protection Overlay Zone (CRPOZ) Ordinance requires development projects that meet the minimum criteria to obtain a Coastal Development Permit (CDP).

Image source: USDA FSA NAIP (flown July 2016)



Vallecitos Water District Service Area
Vallecitos Water District Boundary
Sewer Pump Station CIP
Sewer Line CIP
Water Reservoir CIP
Water Pump Station CIP
Water Line CIP

Critical Habitat

Arroyo Toad
Coastal California Gnatcatcher
Least Bell's Vireo
San Diego Thornmint
San Diego Fairy Shrimp
Southwestern Willow Flycatcher
Spreading Navarretia
Thread-leaved Brodiaea

0 Miles 1.2

RECON

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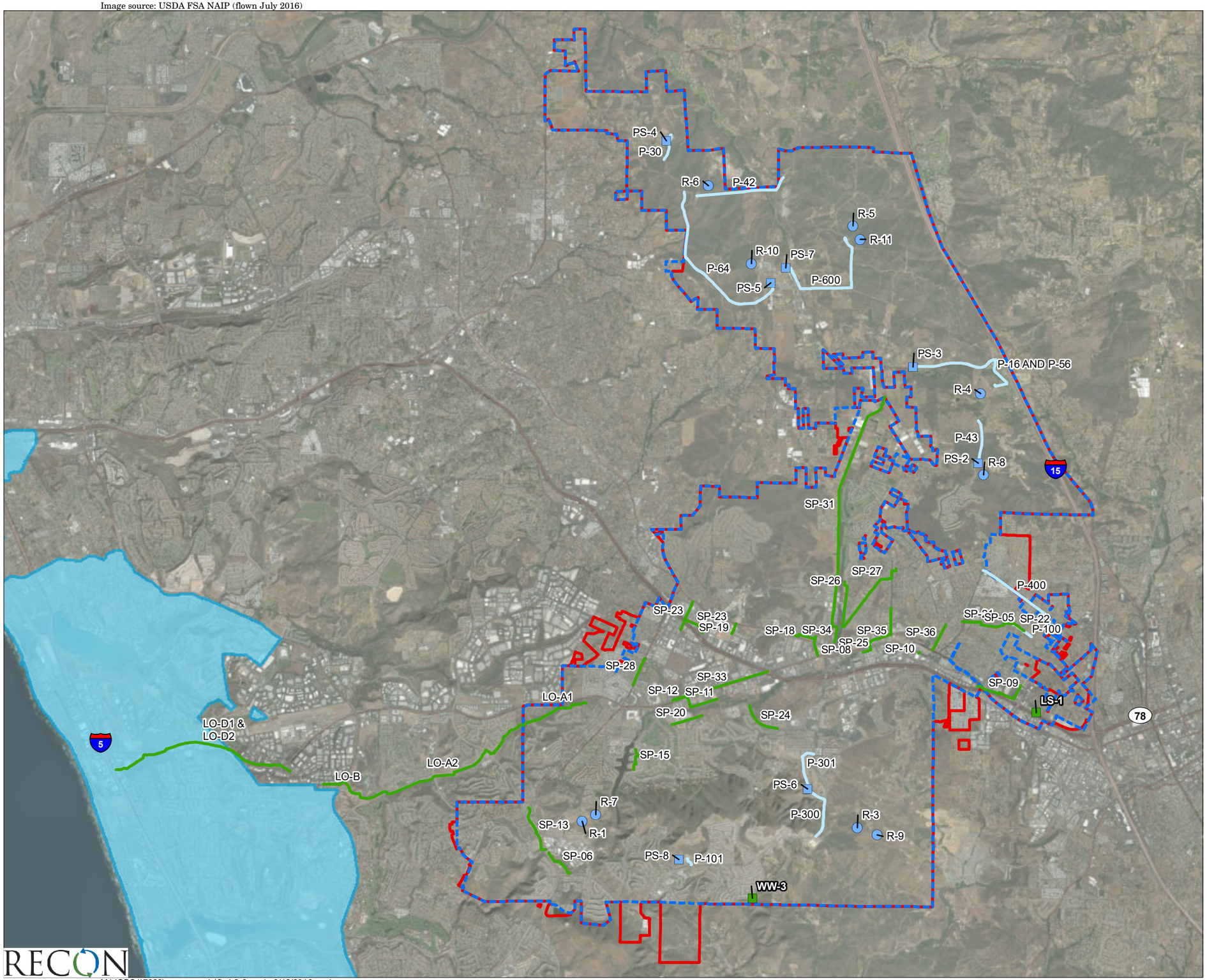
FIGURE 4.2-2
USFWS Critical Habitat

Image source: USDA FSA NAIP (flown July 2016)



Vallecitos Water District Service Area

Vallecitos Water District Boundary

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

Coastal Zone

0 Miles 1.2

RECON

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FIGURE 4.2-3

Coastal Zone

g. MHCP and MSCP Conservation Areas

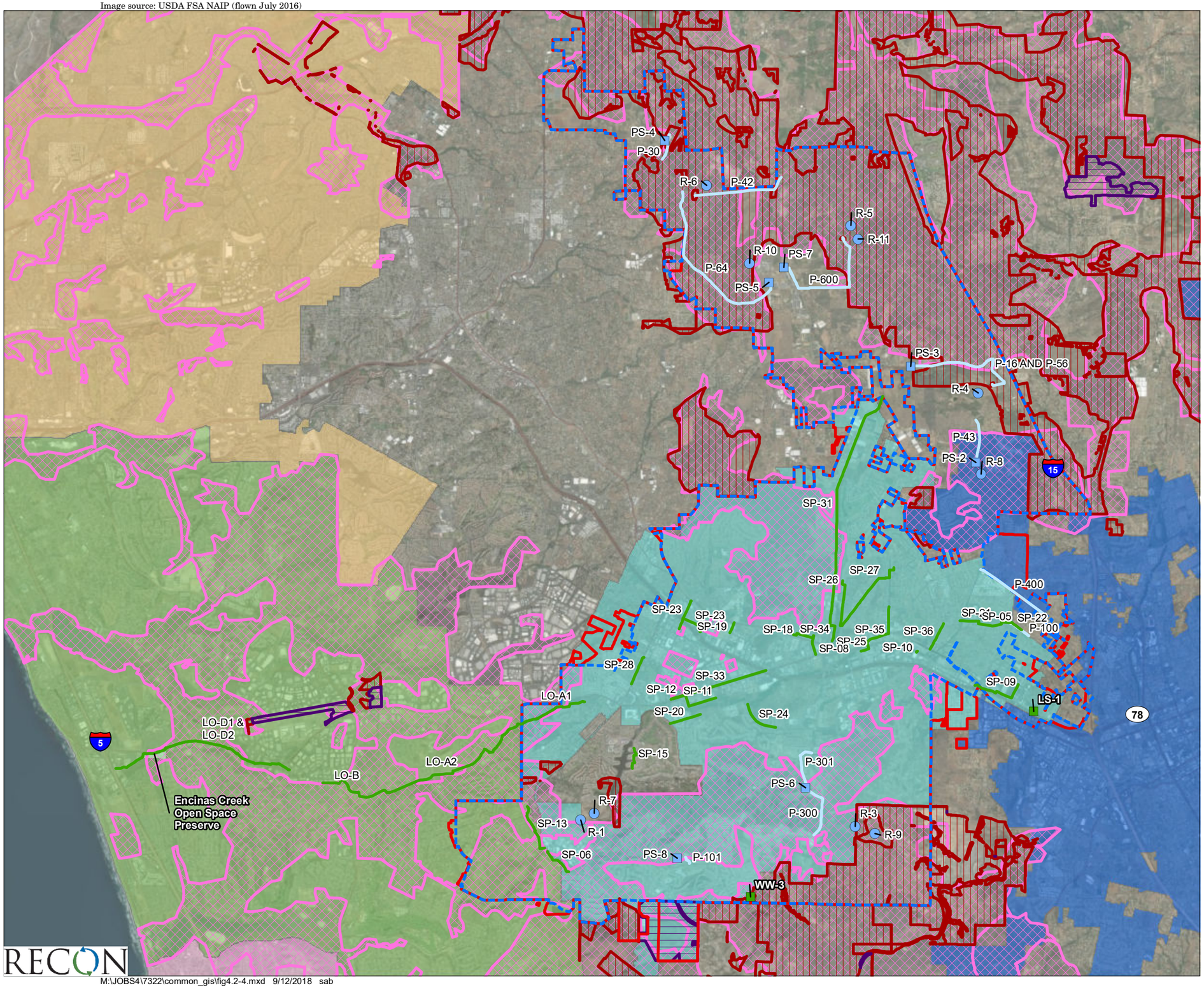
As depicted on Figure 4.2-4, a portion of the VWD service area falls within the boundaries of two regional conservation plans established within San Diego County: the MHCP and the MSCP. The MHCP and MSCP are large-scale, multi-species habitat-based, multi-jurisdictional plans with long-term conservation goals and objectives for protecting sensitive plant and wildlife species and their habitats through the establishment of large, interconnected preserve areas. In general, the MHCP and MSCP would serve as regional multiple species habitat conservation plans prepared in consultation with and approved by the USFWS and CDFW under the terms and conditions of implementation agreements pursuant to the FESA, the CESA, and the California Natural Community Conservation Planning (NCCP) Act of 1991, by which "take" of certain covered sensitive species and loss of habitat would be permitted with provisions. Subarea Plans for both the MHCP and MSCP have been prepared by local jurisdictions within San Diego County. Subarea Plans are implemented by the local jurisdiction. Subarea Plans that have not been approved are still in draft form and are not applicable to projects requiring NEPA, CEQA, FESA, and CESA compliance.

Within the larger MHCP and MSCP areas, the service area falls within the following MHCP and MSCP Subarea Plans:

- Final City of Carlsbad MHCP Subarea Plan (also known as the Carlsbad Habitat Management Plan or Carlsbad HMP);
- Draft City of Escondido MHCP Subarea Plan;
- Draft City of San Marcos MHCP Subarea Plan; and the
- Draft County of San Diego MSCP North County Segment (also referred to as the North County Plan)

The only approved MHCP and MSCP Subarea Plan that occurs within the service area for the 2018 Master Plan is the Carlsbad MHCP Subarea Plan. This approved MHCP Subarea Plan requires that development projects proposed within Carlsbad comply with specific species and habitat management requirements incorporated into the Carlsbad General Plan and enforced through the City's Municipal Code.

Image source: USDA FSA NAIP (flown July 2016)



Vallecitos Water District Service Area

Vallecitos Water District Boundary

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

MHCP and MSCP Core and Linkage Areas

MSCP North County Draft

Pre-Approved Mitigation Area

Pre-negotiated (Hardlined) Take Authorized

MHPA Subarea Jurisdiction

Carlsbad

Encinitas

Escondido

Oceanside

San Marcos

0 Miles 1.2

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FIGURE 4.2-4

MHCP and MSCP Conservation Areas

Several of the CIP projects proposed under the 2018 Master Plan occur within the city of Carlsbad, and within habitats that are suitable for sensitive species and/or have been identified as having high biological value to the Carlsbad MHCP Subarea Plan and regional area. These projects include SP-12, SP-13, LO-D1, LO-D2, LO-B, and LO-A2. Project-level evaluations would determine whether or not these CIP projects would occur within and/or in the immediate vicinity of areas identified as existing hardline preserve areas (existing dedicated open space), proposed hardline preserve areas (proposed open space), and standards areas (planned open space), core habitat, and corridor/linkage areas for the Subarea Plan. VWD would be required to coordinate the review of CIP projects with the City of Carlsbad. If determined necessary for CIP projects potentially affecting resources or lands targeted for conservation and preservation under the Carlsbad Subarea Plan, LCP, or other planning documents, VWD may be required to further coordinate with the USFWS, CDFW, and/or the California Coastal Commission, in addition to the City of Carlsbad.

h. Other Conservation Areas and Preserves

Encinas Creek Open Space Preserve

As depicted on Figure 4.2-4, CIP projects LO-D1 and LO-2 would likely occur within portions of the Encinas Creek Open Space Preserve. The Encinas Creek Open Space Preserve, also referred to as the Encinas Creek Biological Open Space, is an 8.0-acre preserve located immediately north of Laurel Tree Lane, south of Palomar Airport Road, and east of Aviara Parkway along Encinas Creek in Carlsbad. The Preserve connects with both wetland and upland habitat located upstream and downstream within Encinas Creek, and is identified for conservation as part of the Carlsbad MHCP Subarea Plan. Resources within the Preserve include Diegan coastal sage scrub, southern mixed chaparral, and several types of wetlands including southern cottonwood-willow riparian forest, floodplain riparian scrub, southern willow scrub, and freshwater marsh. The state and federally listed endangered least Bell's vireo has been detected downstream and is anticipated to occur within the Preserve. This Preserve is managed by the San Diego Habitat Conservancy (2010).

Encinas Creek Habitat Conservation Area

LO-D1 and LO-D2 would also likely occur within portions of the Encinas Creek Habitat Conservation Area (see Figure 4.2-4). The Encinas Creek Habitat Conservation Area, also referred to as the North County Habitat Bank, is a 19.0-acre preserve located approximately 0.5 mile east of Interstate 5, immediately south of Palomar Airport Road, east of Costco, and west of Hidden Valley Road along Encinas Creek in Carlsbad. The area primarily supports southern willow scrub, but also has small patches of coastal sage scrub along its northern, western, and southern perimeters. The state and federally listed endangered least Bell's vireo and federally listed threatened coastal California gnatcatcher occur within the area. The Encinas Creek Habitat Conservation Area is currently being managed by the Center for Natural Lands Management (CNLM; 2010) and used by Westmark Development Corporation (Westmark) as a wetlands mitigation bank.

Wildlife Movement Corridors and Linkages

Development within San Diego County has reduced the total available open space for wildlife populations, and in some instances, created isolated "islands" of habitat. In general, corridors and linkages are smaller constrained areas of habitat that connect larger areas of habitat which are otherwise separated by rugged terrain, changes in vegetation, or urban development. This allows for an exchange of gene pool between wildlife populations, which increases the genetic viability of otherwise isolated populations. Wildlife corridors are especially important for species with large habitat ranges or seasonal migrations. A corridor is a specific route that is used for the movement and migration of species, and may be different from a linkage in that it represents a smaller or narrower avenue for movement. A linkage is an area of land that supports or contributes to the long-term movement of wildlife and genetic exchange by providing live-in habitat that connects to other habitat areas. Many linkages occur as stepping-stone linkages that are comprised of fragmented archipelago arrangement of habitat over a linear distance. In either case, corridors and linkages would be comprised of land features which accommodate the movement of all sizes of wildlife, including large animals on a regional scale. Their contributing areas would support adequate vegetation cover, providing visual continuity and long lines of sight, so as to encourage the use of the corridor by all types of wildlife. In coastal San Diego County, important corridors/linkages have been identified on the local and regional scale in establishing a connection between the northern and southern regional populations of the coastal California gnatcatcher.

As depicted within Figure 4.2-4, several MHCP and MSCP regional corridors/linkages occur within the service area and in the vicinity of some of the proposed CIP projects. The adopted Carlsbad MHCP Subarea Plan and draft San Marcos and Escondido MHCP Subarea Plans identify habitat linkage areas that connect large blocks of core habitat within the MHCP's Focused Planning Area (FPA). These habitat linkage and core areas are referred to as the Biological Core and Linkage Area (BCLA) and serve as the preserve design concept for the MHCP. The most substantial MHCP corridors/linkages within the service area include those in the approved Carlsbad MHCP Subarea Plan and draft San Marcos MHCP Subarea Plan. Within the Carlsbad MHCP Subarea Plan, the proposed sewer outfall CIP projects would potentially occur within and/or in the immediate vicinity of the general boundaries for Linkage D, Linkage F, and Core #6. These areas provide a connection between large blocks of coastal sage scrub and other habitat in the southern, central, and eastern portions of Carlsbad. Linkage D further provides a connection to habitat located in the western portions of San Marcos. Within the draft San Marcos MHCP Subarea Plan, several proposed reservoir and potable water pipeline CIP projects would potentially occur within and/or in the immediate vicinity of unnamed habitat linkages and corridors for the MHCP's BCLA and southern FPA, and specifically, portions of the southern FPA that encompass the Discovery Hills, San Elijo Hills, and areas surrounding Lake San Marcos. These areas provide a linkage between coastal sage scrub and other habitats in the southern portions of San Marcos, the western portions of Carlsbad, and lands within the unincorporated areas of San Diego County.

The draft North County MSCP Subarea Plan identifies an additional linkage, Linkage 18 (Escondido – Temecula), located within the northeastern portions of the service area. The general boundaries of Linkage 18 encompass land within which several reservoir and potable water pipeline CIP projects are proposed in the vicinity of Interstate 15 and Deer Springs Road. Linkage 18 provides a linkage between coastal sage scrub and other habitats in the San Marcos and Merriam Mountains, Emerald Heights, Moosa Canyon, Daley Ranch, and Lake Wolford in Escondido and central north San Diego County.

Jurisdictional Waters and Wetlands

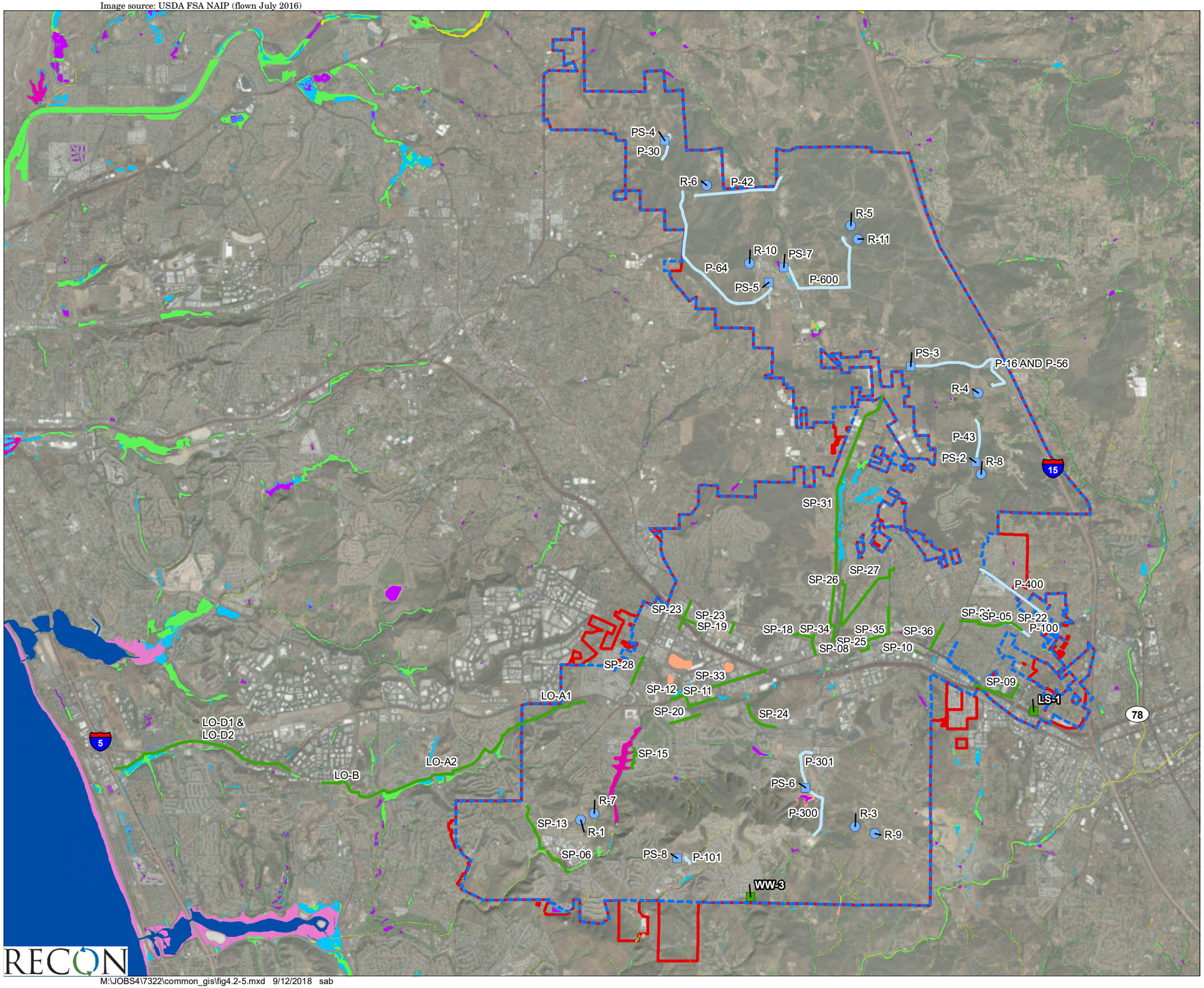
Several of the CIP projects proposed under the 2018 Master Plan would potentially occur within and/or in the immediate vicinity of waters and wetlands potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or CDFW. Table 4.2-5 below lists some of the major wetland resources known to occur within the service area, in addition to the proposed CIP projects potentially located within and/or in the immediate vicinity (approximately 100 feet). These are also depicted on Figure 4.2-5.

Table 4.2-5
Major Wetland Resources within the Service Area

Wetland	Capital Improvement Program Projects Potentially Located within and/or in the Immediate Vicinity
Agua Hedionda Creek	None
Buena Vista Creek	None
Encinas Creek	LO-D1, LO-D2
Gopher Canyon Creek	P-42
San Marcos Creek (including Lake San Marcos)	SP-13, SP-15, SP-25
SOURCE: U.S. Fish and Wildlife Service 2012; U.S. Geological Survey 1996.	

Due to the programmatic level of analysis contained in this PEIR, a formal study to identify and delineate the extent of jurisdictional waters and wetlands within the service area was not conducted. Additional jurisdictional wetland resources likely occur throughout the service area that are tributaries to the major known wetlands listed above or as stand-alone resources.

Image source: USDA FSA NAIP (flown July 2016)



Vallecitos Water District Service Area

Vallecitos Water District Boundary

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

USFWS National Wetland Inventory

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Pond

Freshwater Forested/Shrub Wetland

Lake

Riverine

Other

0 Miles 1.2

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FIGURE 4.2-5

USFWS National Wetland Inventory

4.2.2 Regulatory Framework

4.2.2.1 Federal

a. Section 404 of the Clean Water Act

Section 404 of the Clean Water Act (CWA) requires that a permit be obtained from the USACE prior to the discharge of dredged or fill materials into any "waters of the United States," including wetlands. Waters of the United States are broadly defined in the USACE's regulations (33 Code of Federal Regulations [CFR] 328) to include navigable waterways, their tributaries, lakes, ponds, and wetlands. Wetlands are defined as: "Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Such permits often require mitigation to offset losses of these habitat types so there is no net loss. Wetlands that are not specifically exempt from Section 404 regulations (such as drainage channels excavated on dry land and isolated wetlands) are considered to be "jurisdictional wetlands." Under certain circumstances where multiple resources are impacted and interagency consultation is required, the USACE may consult with the U.S. Environmental Protection Agency, USFWS, CDFW, State Water Resources Control Board (SWRCB), and the various RWQCBs throughout the state in carrying out its discretionary authority under Section 404.

b. Section 401 of the CWA

A Section 401 Water Quality Certification, or waiver thereof, is required from the SWRCB or RWQCB before a Section 404 permit becomes valid. The RWQCB would review the project for consistency with the achievement of water quality objectives and the reasonable protection of beneficial uses designated in the Water Quality Control Plan for the San Diego Basin 9 (Basin Plan). In reviewing the project, the RWQCB would consider impacts to waters of the United States, in addition to filling of isolated wetlands, riparian areas, and headwaters (i.e., areas of high resource value), hydromodification, applicable water quality objectives and designated beneficial uses, special status species, among other things. Collectively, wetland and water resources regulated by the SWRCB and RWQCB are referred to as waters of the state, and these resources may or may not include waters of the United States. Usually, mitigation is required (if not already a condition of the 404 permit) in the form of replacement or restoration of adversely impacted waters of the United States.

c. Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code 703-711) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. It is enforced in the United States by the USFWS, and makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21).

Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered a "take" and is potentially punishable by fines and/or imprisonment. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many other species.

d. Bald and Golden Eagle Protection Act

Enacted in 1940, this act prohibits the take, transport, sale, barter, trade, import, export, and possession of bald eagles, making it illegal for anyone to collect bald eagles and eagle parts, nests, or eggs without authorization from the Secretary of the Interior. The act was amended in 1962 to extend the prohibitions to the golden eagle.

e. Federal ESA of 1973

The United States Congress passed the FESA in 1973 to provide a means for conserving endangered and threatened species in order to prevent species extinction, extirpation, etc. The FESA has four major components: the Section 4 provisions for listing species and designating critical habitat; the Section 7 requirement for federal agencies to consult with the USFWS to ensure that their actions are not likely to jeopardize the continued existence of species or result in the modification or destruction of critical habitat; the Section 9 prohibition against "taking" listed species; and the Section 10 provisions for permitting the incidental take of listed species. The term "take" is defined by the FESA to include the concept of "harm," which agency regulations define to include death or injury that results from modification or destruction of a species habitat (50 CFR 17.3).

f. Section 9 of the FESA

Section 9 of the FESA prohibits any person from "taking" an endangered animal species. Regulations promulgated by USFWS and National Oceanic and Atmospheric Administration make the "take" prohibition generally applicable to threatened animal species as well (50 CFR 17.71). Section 9 thus prohibits the clearing of habitat that results in death or injury to members of a protected species.

An authorization or permit to incidentally take listed species can be obtained either through the Section 7 consultation process or through the Section 10 incidental take permit process. In the context of Section 7, incidental take is authorized through an Incidental Take Statement (ITS) that is issued consistent with a Biological Opinion. Measures required to conform to the ITS are contained in "reasonable and prudent measures," as are the terms and conditions necessary to implement those measures. In the context of Section 10, incidental take is authorized through an "incidental take permit" (ITP) issued pursuant to Section 10(a)(1)(B). Measures contained in the ITP reflect the measures set out in a habitat conservation plan developed by the applicant in conjunction with the USFWS.

g. Section 7 of the FESA

Section 7 of the FESA provides that each federal agency undertaking a federal action which could significantly affect FESA species shall consult with the Secretary of Interior or

Commerce, that any actions authorized, funded, or carried out by the agency are "not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of lands determined to be critical habitat" (16 USC Section 1536(a)(2)). The term "agency action" is broadly defined in a manner that includes nearly all actions taken by federal agencies such as permitting or carrying out a project, as well as actions by private parties which require federal agency permits or approval (50 CFR Section 402.02). The consultation requirement of Section 7 is triggered upon a determination that a proposed action "may affect" a listed species or designated Critical Habitat (50 CFR Section 402.14(a)). If the proposed action is a "major construction" activity, the federal agency proposing the action must prepare a biological assessment to include with its request for the initiation of Section 7 consultation.

Included in the USFWS Biological Opinion is an ITS that authorizes a specified level of take anticipated to result from the proposed action. The ITS contains "reasonable and prudent measures" that are designed to minimize the level of incidental take, adverse modification, or destruction to critical habitat, and that must be implemented as a condition of the take authorization (50 CFR Section 402.14(i)(5)).

The issuance of a Biological Opinion concludes formal consultation, but consultation can be reinitiated if the amount or extent of incidental take authorized is exceeded, the action changes, new information reveals effects of the action not previously considered, or a new species is listed or Critical Habitat is designated (50 CFR Section 402.16). Once the Biological Opinion is issued, the project applicant must implement the terms and conditions, and conservation measures, mandated by the USFWS. Monitoring and reporting is required to be coordinated with the USFWS during the implementation of conservation measures.

h. Section 10 of the FESA

Under Section 10(a)(1)(B) of the FESA, the USFWS may permit the incidental take of listed species that may occur as a result of an otherwise lawful activity. To obtain a Section 10(a)(1)(B) permit, an applicant must prepare a habitat conservation plan that meets the following five criteria: (1) the taking will be incidental to an otherwise lawful activity; (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (3) the applicant will ensure that adequate funding for the plan will be provided; (4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and (5) other measures, if any, that the USFWS requires as being necessary or appropriate for purposes of the plan will be met (16 USC Section 1539(a)(2)(A)).

i. Coastal Zone Management Act of 1972

The Coastal Zone Management Act (CZMA) creates a broad program for the management of coastal lands based on land development control. It was enacted to encourage the participation and cooperation of state, local, regional, and federal agencies and governments having programs affecting the coastal zone. The CZMA allows state

involvement through the development of coastal zone management plans for comprehensive management at the state level. The coastal zone management plans define permissible land and water use within the state coastal zone. This coastal zone extends 3 miles seaward and inland as far as necessary to protect the coast. The CZMA also requires federal agencies or licensees to carry out their activities in such a way that they conform to the maximum extent practicable with a state's coastal zone management program. The CCA is California's coastal zone management program under the CZMA. This program is discussed below.

4.2.2.2 State

a. California Endangered Species Act

The CESA declares that deserving plant or animal species would be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. CESA establishes that it is state policy to conserve, protect, restore, and enhance endangered species and their habitats. Under state law, plant and animal species may be formally designated as rare, threatened, or endangered through official listing by the California Fish and Game Commission. Listed species are given greater attention during the land use planning process by local governments, public agencies, and landowners than are species that have not been listed.

CESA authorizes that "[p]rivate entities may take plant or wildlife species listed as endangered or threatened under FESA and CESA, pursuant to a federal incidental take permit issued in accordance with Section 10 of the FESA, if the CDFW certifies that the incidental take statement or incidental take permit is consistent with CESA (Fish and Game Code Section 2080.1(a)).

Section 2081(b) and (c) of the CESA allows CDFW to issue an incidental take permit for a state-listed threatened and endangered species only if specific criteria are met. These criteria can be found in Title 14 California Code of Regulations (CCR), Sections 783.4(a) and (b). No Section 2081(b) permit may authorize the take of "fully protected" species and "specified birds." If a project is planned in an area where a fully protected species or specified bird occurs, an applicant must design the project to avoid all take; the CDFW cannot provide take authorization under CESA. On private property, endangered plants may also be protected by the Native Plant Protection Act (NPPA) of 1977. Threatened plants are protected by CESA, and rare plants are protected by the NPPA; however, CESA authorizes that "Private entities may take plant species listed as endangered or threatened under the FESA and CESA through a federal Incidental Take Permit (ITP) issued pursuant to Section 10 of the FESA, if the CDFW certifies that the ITS or ITP is consistent with CESA." In addition, CEQA requires disclosure of any potential impacts on listed species and alternatives or mitigation that would reduce those impacts.

b. CEQA: Treatment of Listed Plant and Animal Species

FESA and CESA protect only those species formally listed as threatened or endangered (or rare in the case of the state list). Section 15380 of the CEQA Guidelines independently defines "endangered" species of plants or animals as those whose survival and reproduction in the wild are in immediate jeopardy and "rare" species as those who are in such low numbers that they could become endangered if their environment worsens. Therefore, a project normally would have a significant effect on the environment if it would substantially affect a rare or endangered species of animal or plant or the habitat of the species. The significance of impacts to a species under CEQA must be based on analyzing actual rarity and threat of extinction despite legal status or lack thereof.

c. California Coastal Act of 1976

The CCA provides for the protection of environmentally sensitive habitat identified by the CDFW from adjacent developments in the coastal zone. The CCA is California's coastal zone management program under the CZMA, discussed above. The CCA establishes the CCC as having jurisdiction over California's coastal zone. The CCA identifies environmentally sensitive habitat areas as any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. The following Public Resources Code section of the CCA provides protection for environmentally sensitive habitat areas:

> Section 30240. Environmentally sensitive habitat areas; adjacent developments
>
> Environmentally sensitive habitat areas will be protected against any significant disruption of habitat values, and only uses dependent on those resources will be allowed within those areas.
>
> Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas will be sited and designed to prevent impacts which would significantly degrade those areas, and will be compatible with the continuance of those habitat and recreation areas.

Compliance with these and other requirements in the CCA is ensured for specific development projects in the coastal zone through issuance of Coastal Development Permits (CDPs). In most incorporated areas within the coastal zone, compliance with the Coastal Act is regulated by local government through the implementation of a certified LCP. The local government typically issues CDPs which are appealable to the CCC.

d. Sections 1601 to 1603 of the California Fish and Game Code

Streambeds and other drainages that occur within the VWD service area and proposed CIP project sites are subject to regulation by the CDFW. The CDFW considers most drainages to be "streambeds" unless it can be demonstrated otherwise. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel with

banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports, or has supported, riparian vegetation. CDFW jurisdiction typically extends to the edge of the blue-line streams, and therefore, usually encompasses a larger area than USACE jurisdiction.

e. Sections 3503, 3503.5, and 3800 of the California Fish and Game Code

These sections of the Fish and Game Code prohibit the take or possession of birds, their nests, or eggs. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a take. Such a take would also violate federal law protecting migratory birds. ITPs are required from the CDFW for projects that may result in the incidental take of species listed by the state as endangered, threatened, or candidate species. The wildlife agencies require that impacts to protected species be minimized to the extent possible and mitigated to a level of insignificance.

f. Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for statewide coordination of water quality regulations. The act established the SWRCB as the statewide authority and nine separate RWQCBs to oversee smaller regional areas within the state. The act authorizes the SWRCB to adopt, review, and revise water quality control policies for all waters of the state (including both surface and ground waters); and directs the RWQCBs to develop regional basin plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The Water Quality Control Plan for the San Diego Basin 9 (Basin Plan) is designed to preserve and enhance the quality of water resources in the San Diego region for the benefit of present and future generations. The purpose of the plan is to designate beneficial uses of the region's surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

g. California Natural Community Conservation Planning Act of 1991

The NCCP Act is designed to conserve habitat-based natural communities at the ecosystem scale while accommodating compatible land uses in coordination with CESA. CDFW is the principal state agency implementing the NCCP program. The act established a process to allow for comprehensive, long-term, regional, multi-species, and habitat-based planning in a manner that satisfies the requirements of the state and FESAs (through a companion regional habitat conservation plan). The NCCP program has provided the framework for innovative efforts by the state, local governments, and private interests, to plan for the protection of regional biodiversity and the ecosystems upon which they depend. NCCPs seek to ensure the long-term conservation of multiple species, while allowing for compatible and appropriate economic activity to proceed.

4.2.2.3 Local

a. Multiple Habitat Conservation Program

The MHCP is a comprehensive, multiple jurisdictional planning program designed to develop an ecosystem preserve in northwestern San Diego County. Implementation of the regional preserve system is intended to protect viable populations of key sensitive plant and animal species and their habitats, while accommodating continued economic development and quality of life for residents of the North County region. The MHCP is one of several large multiple jurisdictional habitat planning efforts in San Diego County, each of which constitutes a subregional plan under the California NCCP Act of 1991. The MHCP includes seven incorporated cities in northwestern San Diego County: Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista. These jurisdictions would implement their respective portions of the MHCP through citywide "subarea" plans, which describe the specific implementing mechanisms each city would institute for the MHCP. The goal of the MHCP is to conserve approximately 19,000 acres of habitat, of which roughly 8,800 acres (46 percent) are already in public ownership and contribute toward the habitat preserve system for the protection of more than 80 rare, threatened or endangered species.

b. Carlsbad MHCP Subarea Plan

The Carlsbad MHCP Subarea Plan, also referred to as the "Habitat Management Plan for Natural Communities in the City of Carlsbad" or "Carlsbad Habitat Management Plan (HMP)," is the only approved Subarea Plan under the MHCP. The Carlsbad MHCP Subarea Plan has been successful in contributing toward the conservation of local habitats and recovery of regionally sensitive plant and animal species within the city of Carlsbad since its approval. The Carlsbad MHCP Subarea Plan designates approximately 6,500 acres of the open space lands in the city for preservation based on its value as habitat for endangered animals and rare, unique, or sensitive plant species. The plan identifies how the City of Carlsbad can protect and maintain these lands while still allowing additional public and private development consistent with the General Plan and the Growth Management Plan.

c. Draft San Marcos and Escondido MHCP Subarea Plans

The Draft San Marcos and Escondido MHCP Subarea Plans address how the City of San Marcos and City of Escondido would conserve natural biotic communities and sensitive plant and wildlife species under the MHCP framework. The Draft Subarea Plans would provide regulatory certainty to the landowners within the cities and aid in conserving the region's biodiversity and enhancing the quality of life. The Draft Subarea Plans address the potential impacts to natural habitats and rare, threatened, or endangered species caused by projects within the cities. The Draft Subarea Plans would also form the basis for Implementing Agreements, which would be the legally binding agreements between the Cities and the Wildlife Agencies that ensure implementation of the plan and provides the Cities with State and federal "Take Authority." As of September 2017, none of the Draft

MHCP Subarea Plans have been adopted and finalized. Therefore, although projects within the cities are encouraged to demonstrate consistency, they are not subject to the provisions of the Draft Plans and instead, must comply with existing local, state, and federal requirements with respect to CEQA, NEPA, CESA, and FESA.

d. Multiple Species Conservation Plan

The County of San Diego MSCP is a long-term regional conservation plan designed to establish connected preserve systems to ensure the long-term survival of sensitive plant and animal species and to protect the native vegetation found throughout portions of San Diego County. The MSCP addresses the potential impacts of urban growth, natural habitat loss, and species endangerment and creates a plan to mitigate for the potential loss of sensitive species and their habitats. The MSCP covers 582,243 acres over 12 jurisdictions. Each jurisdiction has its own Subarea Plan, which describes specific implementing mechanisms for the MSCP. Any habitat set aside for the protection of biological resources in accordance with the MSCP is considered sensitive. The MSCP divides habitats into tiers based on sensitivity, with habitat rankings from Tier 1 (most sensitive) to Tier IV (least sensitive, includes disturbed land). The combination of the MSCP Subregional Plan and Subarea Plans serve as a multiple species habitat conservation plan (pursuant to Section 10(a)(1)(B) of the FESA and the California NCCP Act of 1991 and CESA). The conservation measures specified in the MSCP provide for "coverage" of 85 species of plants and animals (called covered species) under these state and federal endangered species laws.

The 2018 Master Plan service area falls within portions of the County of San Diego's MSCP subregion area, and specifically, the North County Segment MSCP Subarea, for which a Draft Subarea Plan has been prepared. However, the only approved Subarea Plan within the County MSCP Subregion is the South County Segment MSCP Subarea Plan.

e. Draft North County Segment MSCP Subarea Plan

The Draft County of San Diego MSCP North County Segment, also referred to as the "North County Plan," addresses how the County would conserve natural biotic communities and sensitive plant and wildlife species in the northwestern unincorporated County lands under the MSCP framework. The area included in the plan encompasses approximately 294,849 acres in and around the unincorporated communities of Bonsall, De Luz, Fallbrook, Harmony Grove, Lilac, Pala, Pauma Valley, Rainbow, Ramona, Rincon Springs, Twin Oaks Valley, and Valley Center. The plan provides economic benefits by reducing constraints on future development outside of proposed preserve areas and decreasing the costs of compliance with federal and state laws protecting biological resources. The plan is intended to be compatible with the County's General Plan and ordinances. As such, it compliments existing policies in achieving economic goals by providing a regional conservation plan to streamline the permitting process. Implementation of this plan would also protect biodiversity and enhance the quality of life in the San Diego region. This plan would help conserve habitat that benefits numerous species, including the 63 species covered under the plan. Biological goals for the plan follow standard principles of conservation biology and a science based approach to conservation planning. Goals,

objectives, and conservation strategies for the plan were established based on the needs of 63 target species and their habitats in the plan area. The proposed North County preserve system incorporates existing preserves and ensures connections between these preserves through soft-line conservation areas. The goal for this plan is to preserve 106,780 acres of natural lands in a network of preserves. Another 7,022 acres of surrounding agricultural and disturbed habitats are estimated to be needed to maintain natural processes within the preserve system. The most recent version of the Draft MSCP Subarea Plan for the North County Segment was released in February 2009. Although projects within this portion of the unincorporated County are encouraged to demonstrate consistency, they are not subject to the provisions of the Draft Plan and instead, must comply with existing local, state, and federal requirements with respect to CEQA, NEPA, CESA, and FESA.

4.2.2.4 County of San Diego

a. Code of Regulatory Ordinances Sections 86.601-86.608, Resource Protection Ordinance

The Resource Protection Ordinance (RPO) was adopted in 1989 and later amended in 1991 and 2011. The RPO restricts, to varying degrees, impacts to natural resources including environmentally sensitive lands such as wetlands, wetland buffers, floodplains, steep slopes, sensitive habitat lands, and historical sites. Certain discretionary permit types are subject to the requirement to prepare Resource Protection Studies under the RPO. Such discretionary permits include Tentative Maps (TM), Tentative Parcel Maps (TPM), Revised TMs, Revised TPMs, Rezones, Major Use Permits (MUP), MUP modifications, and Site Plans. The RPO requires that wetlands and their adjacent wetland buffers be protected on sites where these permits are granted. It also sets forth certain allowable uses within these lands. The RPO also requires that applicable discretionary projects protect sensitive habitat lands. Sensitive habitat lands include unique vegetation communities and/or the habitat that is either necessary to support a viable population of sensitive species, is critical to the proper functioning of a balanced natural ecosystem, or which serves as a functioning wildlife corridor.

b. County of San Diego Habitat Loss Permit Ordinance

The San Diego County Habitat Loss Permit (HLP) Ordinance was adopted in March 1994 in response to both the listing of the coastal California gnatcatcher as a federally threatened species and the adoption of the NCCP Act by the State of California. Pursuant to the Special 4(d) Rule under the CESA, signatories to the County of San Diego MSCP may be authorized to issue ITPs for the coastal California gnatcatcher (in the form of HLPs) in lieu of Section 7 or 10(a) permits, which are typically required from the USFWS. Although issued by individual jurisdictions, such as the County of San Diego, the wildlife agencies must concur with the issuance of a HLP for it to become valid as take authorization under the FESA. The HLP Ordinance states that projects within the unincorporated County must obtain an HLP prior to the issuance of a grading permit, clearing permit, or improvement plan if the project would directly or indirectly impact any coastal sage scrub habitat types. the ordinance requires an HLP if coastal sage scrub or related habitat would be impacted,

regardless of whether or not the site is occupied by coastal California gnatcatcher. HLPs are not required for projects within the boundaries of the MSCP since take authorization is conveyed to those areas through compliance with the MSCP.

4.2.2.5 City of Carlsbad

a. Chapter 21.203 – Coastal Resource Protection Overlay Zone Ordinance

Each of the 15 counties and 53 municipalities along the California coastline, including the City of Carlsbad, is required by the California Coastal Act to prepare a LCP. Portions of the 2008 Master Plan would occur within the boundaries of the coastal zone within the City of Carlsbad, as identified within the approved Carlsbad LCP. The City of Carlsbad uses its LCP as a planning tool to guide development in the coastal zone, in partnership with the CCC. The LCP contains the ground rules for future development and the protection of coastal resources. The Carlsbad LCP includes two main components: (1) a land use plan and (2) related implementing measures, including a zoning map, and zoning ordinance. In particular, the local coastal land use plans include measures specifically intended to protect natural open space resources, scenic resources, agricultural lands, and public access rights.

Carlsbad's LCP is consistent with the City's General Plan, but it is a separate document containing separate land use policies and implementation measures which must also be complied with in addition to the General Plan. Approximately one-third of the City of Carlsbad is located within the coastal zone. The City of Carlsbad's coastal zone has been divided into six segments and each segment is regulated by separate LCPs. The boundaries of the City of Carlsbad's coastal zone which were established by the state are depicted on the Land Use Map of the City's General Plan. Nearly all development proposals within the coastal zone, from removal of natural vegetation, to the construction of master planned communities, require the approval of a CDP in addition to any other permits or entitlements. The land use policies, programs and regulations of the relevant LCP would be referred to in addition to the General Plan, the Municipal Code and other pertinent regulations for guiding land use and development within the coastal zone. Although the City has adopted LCP segments for all of its coastal zone, it only has authority to issue CDPs within the redevelopment segment. In the remaining five segments, the CCC currently retains CDP authority. Carlsbad is actively pursuing the lengthy task of effectively implementing the five LCP segments in order to transfer permit authority to the City. In those circumstances where an issue is not addressed by the LCP Land Use Plan, but is addressed by the Carlsbad General Plan, no CDP, or exemption may be granted unless the project considered is found by the appropriate authority to be consistent with the Carlsbad General Plan. In those circumstances where an issue is addressed by both the LCP Land Use Plan and the Carlsbad General Plan, the terms of the LCP Land Use Plan would prevail.

In conformance with the LCP, the City of Carlsbad regulates developments within the coastal zone, including pipelines, according to the CRPOZ Ordinance. The CRPOZ Ordinance requires that project applicants obtain a CDP.

As defined in the City of Carlsbad's Municipal Code, "development (within the coastal zone)" means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid or thermal waste; grading, removing, dredging, mining or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition or alteration of the size of any structure, including any facility of any private, public or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511). As used in this definition, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line. Therefore, the land outfall CIP projects would be subject to the Development Standards in Section 21.203.040 of the CRPOZ. Standards include the protection of steep slopes, drainage and erosion control, and habitat protection such as buffers.

b. Chapter 21.210 – Habitat Preservation and Management Requirements

The purposes and intent of the Habitat Preservation and Management Requirements Ordinance are to:

- Implement the goals and objectives of the land use and the open space/conservation elements of the Carlsbad General Plan;
- Implement the City's Habitat Management Plan, the implementing agreement and conditions, the North County MHCP, the state's NCCP and 10(a)(1)(B) permit conditions;
- Preserve the diversity of natural habitats in the city and protect the rare and unique biological resources located within those habitats;
- Assure that all development projects comply with the habitat preservation and conservation standards contained in the City's Habitat Management Plan;
- Provide a process for permitting limited, incidental impacts to occur to natural habitat areas and the species located therein; and
- Provide a process for allowing minor amendment from the habitat preservation and conservation standards under limited, specified circumstances.

This chapter of the Municipal Code requires all development to comply with the City of Carlsbad's HMP as well as the implementing agreement, permit conditions, the MHCP, the NCCP and 10(a)(1)(B) permit conditions, and the requirements contained in Habitat

Preservation and Management Requirements Ordinance. No grading is allowed to occur in the city until all the processing and permitting requirements of this chapter are fulfilled.

c. Community Forest Management Plan

The Carlsbad Community Forest Management Plan is a document that describes guidelines and procedures for planting, maintaining, removing, replacing, and preserving trees in the City of Carlsbad's rights-of-way and other public places. The Community Forest Management Plan was recommended by a citizen committee and approved by City Council in 2000.

d. City of Escondido, Chapter 33, Article 33 – Open Space Zone

Chapter 33, Article 33 of the City of Escondido Municipal Code establishes the requirements for the open space zone to implement the open space/conservation element of the general plan and the public lands/parks land use designation. To provide for permanent open space within the community, the open space zone designates land for public and private uses related to open space, recreation, education and public facilities, land with unique scenic or geologic value, land requiring protection of unique or rare plant and/or animal habitat, and land whose unrestricted use might endanger the public health, safety or welfare. This zone also permits the reasonable use of such land while conserving and protecting open space as a limited and valuable resource, or protecting the public health, safety, and welfare.

e. City of San Marcos, Chapter 24.46 – Open Space Zone

The purpose of this chapter of the City of San Marcos Municipal Code is to implement the requirements in the General Plan Conservation/Open Space Element for land designed open space in the Land Use Element. These lands are designated to be reserved for natural open space areas, for outdoor recreation, for preservation of natural resources, and for public health and safety purposes. Utility easements are a permitted use in the open space zone. This ordinance requires that all buildings and structures would be screened, from adjacent streets and adjacent land uses, by a combination of mounding and landscaping.

f. City of Vista, Chapter 18.12 – Open Space Zoning Districts

The purpose of this chapter of the City of Vista Municipal Code is to preserve in its natural state land in the vicinity of the unchannelized portion of Buena Vista Creek other bodies of water, undeveloped floodplains, areas of seismic activity, areas of unstable soil, areas of unique geologic formation, areas of geologic hazard, areas of agricultural use, historic sites, and other areas of interest in order to protect the health safety and aesthetic sense of the public and to preserve these areas undisturbed for future generations. This ordinance established design standards such as height limits and setback requirements.

4.2.3 Master Plan Impacts and Mitigation

This section provides a programmatic assessment of the anticipated impacts to biological resources resulting from the 2018 Master Plan, and identifies mitigation measures that would be implemented by VWD to reduce potential impacts to less than significant levels. The analysis of significant impacts is based on the database and literature review, as outlined in the introduction of this chapter; field visits to selected CIP project site; aerial imagery and other mapping sources; photographs; and all other sources provided by reference in Section 4.2.4. The criteria for determining significant impacts on biological resources were developed in accordance with CEQA Guidelines Section 15065(a).

Project-level studies, including biological resources technical studies and CEQA documentation, and for certain CIP projects, resource agency consultation and permitting, have already been completed separately for CIP projects R-1, SP-11, and SP-12 (as listed in Chapter 3, Project Description, of this PEIR). Therefore, potential impacts pertaining to these projects need only be summarized below. Complete project-level findings, impact analyses, and mitigation measures pertaining to these CIP projects can be found within their respective document sources on file at VWD.

4.2.3.1 Issue 1 – Candidate, Sensitive, or Special Status Species

Biological Resources Issue 1 Summary	
Would implementation of the 2018 Master Plan result in a substantial adverse effect, either directly or through habitat modifications, on any plant or wildlife species identified as a candidate, sensitive, or special status species?	
Impact: Implementation of the 2018 Master Plan may result in direct and indirect impacts to sensitive plant and wildlife species.	**Mitigation**: Project-Level Biological Resource Surveys (Bio-1A); Coastal California Gnatcatcher and Least Bell's Vireo Avoidance Measures (Bio-1B and Bio-1C); Avoidance of Nesting Birds and Raptors (Bio-1D and Bio-1E); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Construction-Related Night Lighting (Bio-1I); Avoidance of Special Status Habitat Areas (Bio-1J); and Geotechnical Investigation and Construction-Related Erosion Control Plan (Geo-1 and Geo-2).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it would result in a substantial adverse effect, either directly or through habitat modifications, on any sensitive or special status species.

b. Impact Analysis

Potential direct and indirect impacts to special status species and their habitat resulting from implementation of the 2018 Master Plan would vary by CIP project type (i.e., water storage reservoirs, water pump stations, wastewater lift station, and pipelines), and whether proposed CIP projects propose new or upgraded facilities (e.g., whether new undeveloped land areas may be affected), as discussed below. An enumeration of special status plant and wildlife species with the potential to occur within the service area is provided in Appendix C. For the purposes of this impact analysis, listed species include federally and state endangered and threatened plant and wildlife species. Non-listed species include those that are not federally and state endangered and threatened.

This impact analysis is based on a programmatic assessment of CIP projects proposed under the 2018 Master Plan. For CIP projects that have been identified as potentially occurring within USFWS-designated Critical Habitat and/or habitat that may support federally- and state-listed plant and wildlife species, project-level studies, including, but not limited to, general biological surveys, species habitat assessments, rare plant surveys, and focused protocol-level surveys would be performed by VWD as part of subsequent project-level CEQA documents prepared for these projects.

As stated in Section 3.3.5.4 of this PEIR, prior to construction activities for CIP projects where it has been demonstrated through project-level studies that USFWS-designated Critical Habitat and/or a federally listed species could be affected by the CIP project, VWD would comply with Section 7 and/or Section 10 of FESA, as administered by the USFWS. As a requirement for FESA compliance, VWD would complete formal consultations with, and/or obtain permits from, the USFWS pursuant to Section 7 or 10 of the FESA. Formal consultation with the USFWS pursuant to Section 7 of the FESA would apply to CIP projects requiring federal funding or authorization. The special terms and conditions outlined in the Biological Opinion resulting from Section 7 consultations would be implemented by VWD and/or other responsible parties according to the timing required in the Biological Opinion. In the absence of federal funding or authorizations, VWD would apply for a Section 10(a)(1)(B) permit from the USFWS pursuant to Section 10 of the FESA. VWD would prepare a habitat conservation plan or low-effect habitat conservation plan for approval by the USFWS.

Further, and as stated in Section 3.3.5.4 of this PEIR, prior to construction activities for CIP projects where it has been demonstrated through project-level studies that a state-listed species could be affected by the project, VWD would comply with Section 2080.1 and/or Section 2081 of CESA, as administered by the CDFW. As a requirement for CESA compliance, VWD would complete consultations with, and obtain approvals or permits from, the CDFW pursuant to Section 2081 or 2080.1 of the CESA. For CIP projects determined to potentially affect state and federally listed species and, requiring a Biological Opinion from the USFWS or the preparation of a habitat conservation plan for USFWS approval, VWD would consult with the CDFW to determine whether a 2080.1 Consistency Determination could be issued for the project. If a 2080.1 cannot be issued, VWD would apply for a Section 2081 ITP from the CDFW. The avoidance, mitigation, and conservation measures resulting

from the Section 2081 ITP would be implemented by VWD and/or other responsible parties according to the timing required in the ITP.

Direct Impacts

Direct impacts include the direct destruction or displacement of special status species and their habitat through activities such as clearing, grubbing, grading, and other initial land disturbance activities. As evaluated below, implementation of the 2018 Master Plan through construction of certain CIP projects would have the potential to result in direct impacts to special status plant and wildlife species, including USFWS-designated Critical Habitat.

Potable Water Projects

Potable Water Storage (Reservoir) CIP Projects

Ten potable water storage CIP projects are proposed in the 2018 Master Plan. As evaluated below, six of the eleven proposed potable water storage projects could result in direct impacts to special status species due to their proposed location within undeveloped native habitat. Direct impacts to special status species would be considered significant.

R-1 & R-7. CIP projects R-1 and R-7 are collectively referred to as VWD's Meadowlark Reservoir Project. CIP R-1 would construct a new 2.47 million gallon (MG) Meadowlark #3 Reservoir. CIP R-7 would demolish the existing 1.30 MG Meadowlark #1 reservoir and construct a new 3.5 MG Meadowlark #4 Reservoir. The proposed location of CIP R-1 and CIP R-7 would occur primarily within the disturbed and developed footprint of the existing Meadowlark #1 and Meadowlark #2 reservoir facility. However, portions may occur within undeveloped areas outside of the existing reservoir footprint that are characterized by coastal sage scrub habitat. This habitat is suitable for the federally threatened coastal California gnatcatcher, which is known to occur in the immediate vicinity. This habitat is also suitable for a number of other non-listed special status plant and wildlife species. Project-level studies, including CEQA documentation and resource agency coordination, have already been completed for this CIP project (USFWS 2009; RECON 2007). CIP projects R-1 and R-7 are collectively referred to as VWD's Meadowlark Reservoir Project. Combined, R-1 and R-7 were determined to result in temporary and permanent loss of 1.24 acres of disturbed coastal sage scrub, including habitat potentially used for gnatcatcher foraging and dispersal. An application for FESA Section 10(a)(1)(B) ITP and Low-Effect Habitat Conservation Plan was submitted to the USFWS by VWD. The USFWS subsequently determined that the project is not likely to injure or kill any gnatcatchers, and that a FESA Section 10(a)(1)(B) ITP is not warranted for the project. VWD is required to compensate the temporary and permanent loss of coastal sage scrub and implement all conservation measures required by the USFWS. With the implementation of the specified mitigation and conservation measures, the project would avoid direct impacts to gnatcatchers, and impacts to coastal sage scrub would be reduced to a less than significant level. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP R-1 and the Meadowlark Reservoir Project can be found within its respective document sources on file at VWD.

R-3. CIP R-3 would construct a new Coronado Hills #2 Reservoir with 2.60 MG of capacity. CIP R-3 is proposed within an existing, disturbed graded pad characterized by bare earth and scattered non-native ruderal (weedy) plant species. No suitable habitat for any special status species occurs on or in the immediate vicinity of CIP R-3. Therefore, no impacts are anticipated to occur to special status species.

R-4. CIP R-4 would demolish the existing 0.57 MG Deer Springs #1 Reservoir and construct a new 1235 Deer Springs Reservoir #2 with a volume of 1.00 MG. CIP R-4 would occur primarily within existing disturbed and developed land associated with the existing reservoir. Limited portions would occur within existing agricultural land (avocado grove) and undeveloped land that may contain individual coast live oak trees. Coast live oak trees are protected by local ordinance within this portion of the service area and are discussed below within Section 4.2.3.4, Issue 4 – Local Policies and Ordinances. Therefore, CIP R-4 may result in significant direct impacts to special status species.

R-5. CIP R-5 would demolish the existing 1.30 MG Coggan #1 Reservoir and the 1.30 MG North Reservoir and construct a new Coggan Reservoir #2 with a storage volume of 1.70 MG. The majority of CIP R-5 is expected to be contained within the disturbed and developed footprint of the existing 1.30 MG reservoir. However, limited portions would occur within undeveloped land characterized by chaparral habitat. This habitat may be suitable for the federally threatened coastal California gnatcatcher and occurs within USFWS-designated Critical Habitat for this species. It is also suitable for a number of non-listed special status plant and wildlife species. Therefore, CIP R-5 may result in significant direct impacts to special status species.

R-6. CIP R-6 would demolish the existing 0.57 MG North Twin Oaks #1 Reservoir and construct a new 1330 North Twin Oaks #3 Reservoir with a capacity of 3.6 MG. The proposed location of CIP R-6 would occur entirely within the disturbed and developed footprint that was created during construction of the North Twin Oaks #2 Reservoir facility. No suitable habitat for any special status species occurs on or in the immediate vicinity of CIP R-6. Therefore, no impacts are anticipated to occur to special status species.

R 7. See CIP R-1.**R-8.** CIP R-8 would rehabilitate the existing 3.96 MG Palos Vista Reservoir and expand its capacity to 4.53 MG. The proposed location of CIP R-8 would occur entirely within the disturbed and developed footprint of the existing reservoir facility. No suitable habitat for any special status species occurs on or in the immediate vicinity of CIP R-8. Therefore, no impacts are anticipated to occur to special status species.

R-9. CIP R-9 would construct a new 1530 Coronado Hills #3 Reservoir with a volume of 7.50 MG. CIP R-9 is proposed within existing disturbed land characterized by bare earth and scattered non-native ruderal (weedy) plant species. No suitable habitat for any special status species occurs on or in the immediate vicinity of CIP R-9. Therefore, no impacts are anticipated to occur to special status species.

R-10. CIP R-10 would construct a new 1028 Twin Oaks #3 Reservoir with a capacity of 7.50 MG. The proposed location of CIP R-10 would occur primarily within the disturbed and developed footprint of the existing reservoir facility. However, limited portions may

occur within undeveloped areas outside of the existing reservoir footprint that are characterized by coastal sage scrub and chaparral. This habitat may be suitable for the federally threatened coastal California gnatcatcher, in addition to a number of other non-listed special status plant and wildlife species. Therefore, CIP R-10 may result in significant direct impacts to special status species.

R-11. CIP R-11 would construct a new Coggan Reservoir #3 with a minimum volume of 8 MG. CIP R-11 would occur within undeveloped land characterized by chaparral habitat. This habitat may be suitable for the federally threatened coastal California gnatcatcher and occurs within USFWS-designated Critical Habitat for this species. It is also suitable for a number of non-listed special status plant and wildlife species. Therefore, CIP R-11 may result in significant direct impacts to special status species.

Potable Water Pump Station CIP Projects

Seven potable water pump station CIP projects are identified in the 2018 Master Plan. As evaluated below, one of the seven proposed potable water pump station projects could result in direct impacts to special status species.

PS-2. CIP PS-2 would construct the new 1625 High Point Hydro pump station with an operational capacity of 1,800 gallons per minute (gpm). CIP PS-2 is proposed within existing disturbed and developed land associated with the Woodland Heights Glen ROW. Active construction for residential development at this CIP project site location is currently underway; therefore, it is anticipated that this pump station would be constructed within developed land. No suitable habitat for any special status plant or wildlife species occurs on or in the immediate vicinity of this proposed pump station location. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP PS-2.

PS-3. CIP PS-3 would replace three 775 gpm pumps with three new 1,350 gpm pumps at the 1235 Deer Springs pump station. This pump station is proposed within existing disturbed and developed land associated with the Deer Springs Road ROW. No suitable habitat for any other special status plant or wildlife species occurs on or in the immediate vicinity of this proposed pump station location. However, a number of coast live oak trees occur in the immediate vicinity and within the southern portions of the ROW. Coast live oak trees are protected by local ordinance within this portion of the service area and are discussed below within Section 4.2.3.4 (Issue 4 – Local Policies and Ordinances). Direct impacts, including removal or disturbance of oak trees, or any part thereof, could result if the construction footprint for CIP PS-3 would extend into areas supporting oak tree canopies or root zones. No indirect impacts would be expected to occur to oak trees. Therefore, direct impacts to special status species may occur as a result of CIP PS-3.

PS-4. CIP PS-4 would construct the new 1330 Mountain Belle pump station with a capacity of 4,500 gpm. CIP PS-4 is proposed within developed land associated with an existing private access road. The road is paved and the proposed pump station would be constructed within an existing paved platform. Chaparral habitat occurs immediately adjacent to the existing dirt road. No special status plant species are expected to occur within the location of the proposed pump station. Therefore, no direct impacts to any

special status species are anticipated to occur as a result of CIP PS-4. However, suitable habitat for non-listed species occurs in the immediate vicinity of CIP PS-4, and potential indirect impacts may occur as a result of construction noise and nighttime lighting, as discussed below.

PS-5. CIP PS-5 would replace three existing 1,000 gpm pumps with three new 2,800 gpm pumps at the 1330 North Twin Oaks pump station. This pump station is proposed within disturbed and developed land associated with existing water district facilities. No suitable habitat for any special status plant or wildlife species occurs on or in the immediate vicinity of this proposed pump station location. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP PS-5.

PS-6. CIP PS-6 would replace three 1,100 gpm pumps with three 2,500 gpm pumps at the 1530 Southlake pump station. This pump station is proposed within disturbed and developed land associated with existing water district facilities. No suitable habitat for any special status plant or wildlife species occurs at the proposed location for CIP PS-6. No direct impacts to any special status species are anticipated to occur as a result of CIP PS-6. However, suitable habitat and USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher occurs in the immediate vicinity of CIP PS-6, and potential indirect impacts to this species and its habitat may occur as a result of construction noise and nighttime lighting, as discussed below.

PS-7. CIP PS-7 would replace three 2,000 gpm pumps with three 2,200 gpm pumps at the 1608 Coggan pump station. CIP PS-7 is proposed within disturbed and developed land associated with existing water district facilities. No suitable habitat for any special status plant or wildlife species occurs on or in the immediate vicinity of this proposed pump station location. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP PS-7.

PS-8. CIP PS-8 would replace three 1,050 gpm pumps with three 1,450 gpm pumps at the 1115 Schoolhouse pump station. This pump station is proposed within disturbed and developed land associated with existing water district facilities. No suitable habitat for any special status plant or wildlife species occurs at the proposed location for CIP PS-8. No direct impacts to any special status species are anticipated to occur as a result of CIP PS-8. However, USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher occurs in the immediate vicinity of CIP PS-8, and potential indirect impacts may occur to this species and its habitat as a result of construction noise and nighttime lighting, as discussed below.

Potable Water Pipeline CIP Projects

Ten potable water pipeline CIP projects are proposed in the 2018 Master Plan. Six of the proposed potable water pipeline projects could result in direct impacts to special status species, as evaluated below.

P-16 and P-56. CIP P-16 and P-56 would replace existing 10-inch pipelines with approximately 8,700 linear feet of 16- and 18-inch pipeline from the 1235 Deer Springs

pump station to the 1235 Deer Springs reservoir. The proposed replacement activities for CIP P-16 would be primarily restricted to disturbed and developed areas associated with an existing private driveway south of the intersection of Deer Springs Road and Mesa Rock Road, as well as the Windsong Lane ROW. In addition, a limited segment of CIP P-16 that runs west of Windsong Road would occur within existing agricultural land (avocado grove). The proposed replacement activities for CIP P-56 would be entirely restricted to existing disturbed and developed areas associated with the Deer Springs Road ROW. A number of coast live oak trees occur in the immediate vicinity of P-16 and P-56. Coast live oak trees are protected by local ordinance within this portion of the service area and are discussed below within Section 4.2.3.4 (Issue 4 – Local Policies and Ordinances). Direct impacts, including removal or disturbance of oak trees, or any part thereof, could result if trenching for the pipeline would occur within areas supporting oak tree canopies or root zones. No indirect impacts would be expected to occur to oak trees. Therefore, significant direct impacts to special status species related to the County of San Diego Resource Protection Ordinance may occur as a result of CIP P-16 and P-56, as discussed in Section 4.2.3.4.

P-30. CIP P-30 would construct approximately 1,800 linear feet of new 16-inch pipeline from the existing Mountain Belle Reservoir site to the connection with the existing 1330 Zone. The proposed construction of CIP P-30 would occur within undeveloped land characterized by chaparral habitat south of the Mountain Belle Reservoir site. This habitat is suitable for a number of non-listed special status plant and wildlife species. Therefore, CIP P-30 may result in significant direct impacts to special status species.

P-42. CIP P-42 would construct approximately 6,400 linear feet of new 12-inch pipeline from the existing 1330 North Twin Oaks #2 Reservoir to the intersection of El Farra Street and Huckleberry Lane. The proposed construction of CIP P-42 would occur within existing disturbed and developed areas, agricultural land, and undeveloped land containing native habitat. The segment of the proposed alignment that runs east of the existing 1330 North Twin Oaks #2 Reservoir and west of Twin Oaks Valley Road occurs within chaparral, agricultural land, and riparian habitat. The chaparral and riparian habitat is suitable for a number of non-listed special status plant and wildlife species. The segment that runs east of Twin Oaks Valley Road and north to its terminus at El Farra Street occurs within coastal sage scrub, disturbed land, and agricultural land. The coastal sage scrub habitat is suitable for a number of special status plant and wildlife species, including the federally threatened coastal California gnatcatcher. This habitat also occurs within USFWS-designated Critical Habitat for the coastal California gnatcatcher. Therefore, CIP P-42 may result in significant direct impacts to special status species.

P-43. CIP P-43 would construct 3,000 linear feet of 12-inch pipeline from the High Point Hydropneumatic pump station along Woodland Heights Glen north to the proposed Wulff #2 reservoir on Rancho Luiseno Road. Portions of this pipeline may occur within coastal sage scrub, chaparral, and/or riparian habitat that could support special status plant and wildlife species, including the federally threatened coastal California gnatcatcher and other non-listed species. CIP P-43 may result in significant direct impacts to special status species.

P-64. CIP P-64 would replace existing 12-inch pipelines with approximately 12,600 linear feet of 20-inch pipeline, from the North Twin Oaks Reservoir #2 to the 1330 North Twin Oaks pump station. The proposed replacement of CIP P-64 would occur within disturbed areas that currently occupy the existing pipeline alignment. The entirety of the existing alignment, from its confluence with 2008 Master Plan CIP P-53, south and east to its terminus at El Paso Alto Road, follows an existing dirt access road characterized by compacted bare earth. Chaparral habitat occurs immediately adjacent to the existing alignment. No special status plant species are expected to occur within the disturbed dirt access road that follows the existing alignment. Although a number of non-listed special status wildlife may use the dirt road as temporary habitat (e.g., foraging, basking, travel route, etc.), none are expected to nest or seek permanent refuge. Construction activities during the pipeline replacement would be restricted to disturbed and developed areas along the existing alignment. Therefore, no direct impacts to any special status species are anticipated to occur as a result of CIP P-64. However, suitable habitat for non-listed species occurs in the immediate vicinity of CIP PS-4, and potential indirect impacts may occur as a result of construction noise and nighttime lighting, as discussed below.

P-100. CIP P-100 would replace existing 8-inch pipelines with approximately 1,600 linear feet of 10-inch pipeline in Rock Springs Road between Bennett Avenue and Rees Road. The proposed replacement of CIP P-100 would occur entirely within developed portions of the Rock Springs Road ROW. No suitable habitat for any special status species occurs within the existing alignment. Therefore, no direct impacts to any special status species are anticipated to occur as a result of CIP P-100.

P-101. P-101 would replace the existing 16-inch lines located downstream of the Schoolhouse pump station with approximately 600 linear feet of 20-inch pipeline.

P-300. P-300 would replace the existing 16-inch lines located downstream of the South Lake pump station with approximately 3,900 linear feet of 20-inch pipeline.

P-301. P-301 would replace the existing 14-inch pipelines located upstream of the South Lake pump station with approximately 3,100 linear feet of 20-inch pipeline.

P-400. P-400 would construct approximately 5,300 linear feet of 20-inch pipeline along El Norte Parkway from Rees Road to Woodland Parkway in the 920 Richland Zone.

P-600. P-600 would replace the existing 16- and 18-inch pipelines with approximately 8,900 linear feet of 20-inch pipeline.

Wastewater (Sewer) Projects

Wastewater Lift Station Projects

LS-1. CIP LS-1 would upgrade the existing 100 gpm Montiel Lift Station pump with two new 200 gpm pumps. Alternatively, approximately 1,300 feet of sewer line would be constructed (1,000 feet of open trench construction and 300 feet of tunneling beneath State Route 78 [SR-78]). The proposed replacement activities would occur within existing

disturbed land. No suitable habitat for any special status species occurs; therefore, no impacts to special status species are anticipated.

Sewer Pipeline Projects

Thirty wastewater pipeline projects are identified in the 2018 Master Plan. Two of the proposed wastewater pipeline projects have the potential to result in direct impacts to special status species, as evaluated below.

SP-5. CIP SP-5 would replace 2,500 feet of existing 8- and 12-inch pipeline with 2,600 feet of 15-inch pipeline (thereby adding 100 feet) along Rock Springs Road, from Lancers Park Avenue east to Bennett Avenue. The proposed replacement for CIP SP-5 would occur primarily within developed portions of the Rock Springs Road ROW. Limited portions of the alignment would transverse a community greenbelt area south of Rock Springs Road that supports a concrete-lined, unnamed tributary to San Marcos Creek. No suitable habitat for any special status species occurs within the alignment. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP SP-5.

SP-6. CIP SP-6 would replace 1,400 feet of existing 21-inch pipeline with 36-inch diameter pipeline, and add an additional 700 feet of 36-inch diameter pipeline, for a total of 2,100 linear feet of 36-inch diameter pipeline. SP-6 would be constructed within the abandoned Questhaven ROW, north and east of Paseo Plomo Road, near the intersection of Rancho Santa Fe Road and San Elijo Road. The proposed replacement for CIP SP-6 would occur entirely within disturbed land associated with the abandoned Questhaven ROW. No suitable habitat for any special status species occurs within the existing alignment. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP SP-6.

SP-8. CIP SP-8 would replace 1,200 feet of existing 8-inch pipeline with 12-inch pipeline, and add an additional 200 feet of 12-inch pipeline, for a total of 1,400 linear feet of 12-inch pipeline. SP-8 would be constructed in Pico Avenue from San Marcos Boulevard to the alleyway north of West Mission Road. The proposed replacement for CIP SP-8 would occur entirely within disturbed and developed land associated with the Pico Avenue ROW. No suitable habitat for any special status species occurs within the existing alignment. Therefore, no impacts to any special status species are anticipated to occur as a result of CIP SP-8.

SP-9. CIP SP-9 would replace 100 feet of existing 8-inch pipeline with 700 feet of 15-inch pipeline and 3,100 feet of 12-inch pipeline (3,800 linear feet in total) along the north side of SR-78 in the Nordahl Marketplace. The proposed replacement for CIP SP-9 would occur entirely within disturbed land associated with the shopping center parking lot. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-9.

SP-10. As described in detail by the Biological Resources Report for the Diamond Siphon Replacement Project (Appendix C to this PEIR), CIP SP-10 would replace 200 feet of existing 10-inch pipeline. Two construction options are being considered:

Option 1. Replacement in place of two pipelines beneath San Marcos Creek with double barrel 12-inch-diameter siphons. The option would involve a partially trenchless approach and would include tunneling beneath San Marcos Creek. This option would result in temporary impacts to less than 0.01 acre (54 square feet) of a potentially jurisdictional drainage.

Option 2. Rerouting and replacement of the sewer line with 15-inch-diameter gravity pipeline. This option would involve cutting, plugging, and abandoning the portion of the existing pipeline that makes a 90-degree bend in front of Diamond Environmental Services on Mission Road. The proposed alignment would continue west on Mission Road for approximately 1,320 feet, make a 90-degree turn into 753 East Mission Road, continue south for approximately 450 feet, and connect to the existing sewer system that runs along San Marcos Creek.

The Option 1 survey area contains one sensitive vegetation community: southern arroyo willow riparian forest, a MHCP Group A habitat. The southern arroyo willow riparian forest is also a potential wetland under the jurisdiction of the USACE, CDFW, and RWQCB. No sensitive or narrow endemic plant species were identified during the biological survey. Although not detected, there is a moderate potential for least Bell's vireo (*Vireo bellii pusillus*) and Cooper's hawk (*Accipiter cooperii*) to occur.

Implementation of Option 1 would impact 0.03 acre of southern arroyo willow riparian forest. Following construction, all the existing soil in the natural habitat areas would be replaced and the areas would be revegetated. Thus, all direct impacts would be considered temporary. This revegetation would be designed to result in no net loss of wetlands of the impacted area following construction. With the recommended revegetation, the impact would be reduced to below a level of significance.

The Option 2 survey area contains one sensitive vegetation community: southern willow scrub, a MHCP Group A habitat. The southern willow scrub and a 3-foot-wide drainage crossing the survey area are potential USACE, CDFW, and/or RWQCB jurisdictional features. No sensitive or narrow endemic plant species were identified during the general survey. Although not detected, there is a moderate potential for least Bell's vireo and Cooper's hawk to occur.

Implementation of Option 2 would impact less than 0.01 acre (18 linear feet, 54 square feet) of the potential jurisdictional drainage. Following construction, the drainage would be replaced and exposed areas would be revegetated. Thus, the impact to the drainage would be considered temporary and there would be no net loss of jurisdictional wetlands or waters. With the recommended revegetation, the impact would be reduced to below a level of significance.

SP-11. CIP SP-11 (San Marcos Interceptor Phase 2) would replace 1,900 feet of existing 21-inch pipeline with 42-inch pipeline along San Marcos Creek from South Bent Avenue to McMahr Road. SP-11 also includes the construction of 800 feet of new 8-inch diversion pipelines in Cribbage Lane to alleviate capacity of an existing 8-inch pipeline by diverting flows to the new interceptor sewer. The proposed replacement and construction for CIP SP-11 would occur primarily within disturbed and developed land associated with Cribbage

Lane and uplands north of San Marcos Creek. No suitable habitat for special status wildlife species occurs. However, portions of the alignment that occur north of San Marcos Creek may contain suitable habitat for special status plant species. CIP projects SP-2 (San Marcos Interceptor Phase 1), SP-11 (Phase 2), and SP-12 (Phase 3) are collectively referred to as VWD's San Marcos Interceptor Sewer Replacement Project; project-level studies have already been completed for this CIP project by a 2001 MND and a 2011 Addendum to the MND (VWD 2001 and 2011), SP-2 has already been completed, and portions of SP-11 east of Via Vera Cruz have already been installed. Combined, SP-2 and SP-11 are determined to result in temporary impacts to 2.31 acres of wetland habitat types, and permanent impacts to 1.83 acres of wetland habitat types, including habitat occupied by non-listed special status species. VWD was required to obtain permits from the USACE, RWQCB, and CDFW, and compensate the temporary and permanent loss of wetland habitat and non-listed special status species. With the implementation of mitigation measures, the project impacts to wetland habitat and non-listed special status species would be reduced to less than significant levels. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP SP-11 and the San Marcos Interceptor Sewer Replacement Project can be found within its respective document sources on file at VWD.

SP-12. CIP SP-12 (San Marcos Interceptor Phase 3) would replace 1,800 feet of existing 21-inch pipeline with 36-inch pipeline from the westerly terminus of CIP SP-11 in McMahr Road north to San Marcos Boulevard, and then west in San Marcos Boulevard to Pacific Street. The proposed replacement for CIP SP-12 would occur entirely within disturbed and developed land associated with the McMahr Road and San Marcos Boulevard ROWs. The western reach of CIP SP-12 that runs within the San Marcos Boulevard ROW occurs adjacent to undeveloped land that has been designated by the USFWS as Critical Habitat for San Diego fairy shrimp, spreading navarretia, and thread-leaved brodiaea. The proposed replacement activities would be restricted to existing developed land and would not encroach onto USFWS-designated Critical Habitat or result in any indirect impacts. Project-level studies have already been completed for this CIP project as part of the San Marcos Interceptor Sewer Replacement Project, which considers CIP projects SP-11 and SP-12 (see Section 3.3.2 of this PEIR; VWD 2001). Although SP-2 and SP-11 are determined to result in temporary impacts to 2.31 acres of wetland habitat types, and permanent impacts to 1.83 acres of wetland habitat types, including habitat occupied by non-listed special status species, SP-12 would occur entirely within existing developed ROW and would not result in any impacts to sensitive habitat types or special status species. Therefore, no impacts to any special status species would result from CIP SP-12. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP SP-12 and the San Marcos Interceptor Sewer Replacement Project can be found within its respective document sources on file at VWD. VWD was required to obtain permits from the USACE, RWQCB, and CDFW, and compensate the temporary and permanent loss of wetland habitat and non-listed special status species. With the implementation of mitigation measures, the project impacts to wetland habitat and non-listed special status species would be reduced to less than significant levels. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP SP-12 and the San Marcos Interceptor Sewer Replacement Project can be found within its respective document sources on file at VWD.

SP-13. CIP SP-13 would replace 3,200 feet of existing 8-inch pipeline in Camino de Amigos with 3,500 feet of 12-inch pipeline from Alga Road south to La Costa Meadows Drive. The proposed replacement for CIP SP-13 would occur primarily within existing disturbed and developed land associated with existing roadway ROWs. Portions of the existing alignment that run north of Redwing Way and east of Melrose Drive occur within undeveloped land characterized by disturbed land and non-native grassland habitat. Coastal sage scrub occurs in the immediate vicinity. Construction activities would be restricted to the disturbed land and non-native grassland habitat along the existing alignment, and no direct impacts to any special status wildlife species are anticipated to occur due to lack of suitable habitat. However, the non-native grassland could provide suitable habitat for special status plant species. Therefore, implementation of CIP SP-13 could result in significant direct impacts to special status species. Additionally, suitable habitat and USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher occurs in the immediate vicinity, and potential indirect impacts may occur to this species and its habitat as a result of construction noise and nighttime lighting, as discussed below.

SP-15. CIP SP-15 would replace 1,800 feet of existing 8-inch pipeline with 12-inch pipeline in San Pablo Walkway. The proposed replacement for CIP SP-15 would occur entirely within developed land associated with the San Pablo Walkway in the Lake San Marcos residential community. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-15.

SP-18. CIP SP-18 would replace 1,500 feet of existing 8-inch pipeline with 12-inch pipeline in Mission Alley, between Pico Avenue and Marcos Street. The proposed replacement for CIP SP-18 would occur entirely within developed land associated with Mission Alley. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-18.

SP-19. CIP SP-19 would replace approximately 700 feet of existing 8-inch pipeline with 12-inch pipeline in Bingham Drive. The proposed replacement for CIP SP-19 would occur within developed land associated with the Bingham Drive ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-19.

SP-20. CIP SP-20 would replace 2,100 feet of existing 8-inch pipeline with 12-inch pipeline in Discovery Street from La Sombra east to McMahr Drive. The proposed replacement for CIP SP-20 would occur entirely within developed land associated with the Discovery Street ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-20.

SP-21. CIP SP-21 would replace 1,300 feet of existing 12-inch pipeline with 15-inch pipeline in Rock Springs Road from Woodland Parkway east to Lancer Park Avenue. The proposed replacement for CIP SP-21 would occur entirely within developed land associated with the Rock Springs Road ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-21.

SP-22. CIP SP-22 would replace 800 feet of existing 8-inch pipeline with 12-inch pipeline in Rock Springs Road from Bennett Avenue east to Rock Springs Hollow. The proposed replacement for CIP SP-22 would occur entirely within developed land associated with the Rock Springs Road ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-22.

SP-23. CIP SP-23 would replace 2,100 feet of existing 8-inch pipeline with 12-inch pipeline and 1,800 feet of existing 8-inch pipeline with 12-inch pipeline in Pacific Street and Descanso Avenue. The proposed replacement for CIP SP-23 would occur entirely within developed land associated with the Pacific Street and Descanso Avenue ROWs. The eastern reach of CIP SP-23 that runs within the Descanso Avenue ROW occurs adjacent to undeveloped land that has been designated by the USFWS as Critical Habitat for San Diego fairy shrimp. The proposed replacement activities would be restricted to existing developed land and would not encroach onto USFWS-designated Critical Habitat or result in any indirect impacts. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-23.

SP-24. CIP SP-24 would replace 2,700 feet of existing 8-inch pipeline with 12-inch pipeline in Craven Road south of San Marcos Creek to Barbara Drive. The proposed replacement for CIP SP-24 would occur entirely within developed land associated with the Craven Road ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-24.

SP-25. CIP SP-25 would replace 800 feet of existing 18-inch pipeline with 24-inch pipeline at the San Marcos Interceptor east. The proposed replacement for CIP SP-25 would occur primarily within developed land associated with the Twin Oaks Valley Park residential community. The northernmost portions of the existing alignment cross an existing railroad easement and a reach of San Marcos Creek that supports riparian habitat. The strand of riparian habitat that occurs within the alignment is relatively disturbed and sparse; however, suitable habitat for special status species may occur. This evaluation assumes that micro tunneling and/or jack-and-bore construction methodologies would be implemented for pipeline replacement activities that require the crossing of the railroad easement and San Marcos Creek. Excavation and construction staging for this CIP project may impact riparian habitat and/or other resources potentially occurring within or in the immediate vicinity of San Marcos Creek. The riparian habitat and underlying wetlands may support non-listed special status plant species known to occur within San Marcos Creek, such as southwestern spiny rush (*Juncus acutus* var. *leopoldii*). Although generally unsuitable for these species, the federally endangered least Bell's vireo and the California state species of special concern yellow warbler (*Dendroica petechia*) and yellow-breasted chat (*Icteria virens auricollis*) could occur. Therefore, implementation of CIP SP-25 may result in significant direct impacts to special status species.

SP-26. CIP SP-26 would replace 3,200 feet of existing 8-inch pipeline with 12-inch pipeline in Woodward Street north from Vineyard Road. The proposed replacement for CIP SP-26 would occur entirely within developed land associated with the Woodward Street ROW. No

suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-26.

SP-27. CIP SP-27 would replace approximately 2,800 feet of existing 8-inch gravity main in Vineyard Road with 12-inch diameter and 2,000 feet of existing 8-inch with 15-inch diameter pipe. The proposed replacement for CIP SP-27 would occur entirely within developed land associated with the Vineyard Road ROW. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-27.

SP-28. CIP SP-28 would replace approximately 2,000 feet of existing 8-inch with 12-inch diameter pipe at the Linda Vista Drive and Rancho Santa Fe Road intersection. The proposed replacement for CIP SP-28 would occur entirely within developed land associated with the Linda Vista Road and Rancho Santa Fe Road ROWs. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-28.

SP-31. CIP SP-31 would replace approximately 16,700 feet of existing 8-inch with 18-inch diameter pipe from Deer Springs Road south to North Twin Oaks Valley Road and in North Twin Oaks Valley Road. The proposed replacements for CIP SP-31 would occur entirely within developed land associated with the Deer Springs Road and North Twin Oaks Valley Road ROWs. No suitable habitat for any special status species occurs; therefore, no impacts to any special status species would result from CIP SP-31.

SP-33. CIP SP-33 would replace 6,600 feet of 8-inch gravity main with 12-inch diameter pipe along San Marcos Boulevard between State Route 78 and S. Las Posas Road.

SP-34. CIP SP-34 would replace 1,000 feet of existing 18-inch with 24-inch diameter pipe along San Marcos Creek north of Mission Road.

SP-35. CIP SP-35 would replace approximately 13,600 feet of existing 8-inch with 12-inch diameter pipeline near and along Mission Road and Mulberry Road.

SP-36. CIP SP-36 would replace 2,000 feet of existing 15-inch gravity main with 18-inch diameter pipe on Richland Road.

Parallel Land Outfall

As described in Chapter 3.0, the 2008 Master Plan included the proposed construction of an approximately 8-mile wastewater land outfall pipeline that would run parallel to the existing VWD land outfall pipeline. Due to the total length of the outfall project and the anticipated timing of needed improvements, the parallel land outfall was divided into six distinct parallel land outfall subprojects. The 2011 PEIR for the 2008 Master Plan described the existing land outfall and the six parallel land outfall pipeline subprojects that were planned.

In the 2018 Master Plan, the six previously proposed outfall projects were reorganized into four new proposed outfall projects in order to consolidate the various improvement needs by

outfall segment and timing of need. A parallel land outfall is recommended in some sections and replacement of the existing line is recommended in other sections due to easement space restrictions. In the future, these improvements could be broken into smaller packages based on contractor capabilities, preferred project sizes, timing, length of construction, or other factors. Such a phasing plan is recommended to be developed as part of a more detailed condition assessment and hydraulic evaluation of the outfall.

As evaluated below, portions of two outfall subprojects could result in direct impacts to special status species.

Outfall Subprojects LO-D1 and LO-D2 (Gravity Section D). These subprojects would include replacing approximately 12,800 feet of existing sewer pipeline (7,900 feet for LO-D1, and 4,900 feet or LO-D2) that would convey wastewater flows from Palomar Oaks Way westerly along Palomar Airport Road to Armada Road, where the pipeline would head south-westerly in the canyon to Interstate 5, as shown on Figure 3-2. The size of the replacement pipeline would range from 36 to 48 inches in diameter depending on the final vertical alignment chosen. Subproject LO-D1 would be constructed in Phase 1 and subproject LO-D2 would be constructed in Phase 5.

The majority of the alignments for LO-D1 and LO-D2 occur within disturbed and developed land associated with existing commercial and industrial developments, the Palomar Airport Road ROW, and other roadway developments. However, as shown on Figure 4.2-1, limited portions of the proposed alignments would occur within Encinas Creek and adjacent areas that contain sensitive upland, riparian, and wetland habitats that are suitable for several special status species. Special status plant species such as the federally endangered Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*) and non-listed San Diego sagewort (*Artemisia palmeri*), among others, and are known to occupy the coastal sage scrub, chaparral, and riparian habitats that occur within and immediately adjacent to Encinas Creek. Additionally, both listed and non-listed special status wildlife species have the potential to occur within the coastal sage scrub, chaparral, and riparian habitats that occur within and immediately adjacent to Encinas Creek, including the federally threatened coastal California gnatcatcher, federally and state endangered least Bell's vireo, and California state species of special concern yellow-breasted chat and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), among others.

Furthermore, portions of the alignments would occur within USFWS-designated Critical Habitat for the coastal California gnatcatcher, as well as existing preserve areas associated with the Encinas Creek Open Space Preserve adjacent to 24-Hour Fitness, and the Encinas Creek Habitat Conservation Area adjacent to Costco. The extreme western end of the alignments of LO-D1 and LO-D2 also fall within the coastal zone and coastal stream, riparian, and wetland ESHA associated with Encinas Creek. Therefore, LO-D1 and LO-D2 have the potential to result in significant direct impacts to special status species.

Outfall Subproject LO-B (Gravity Section B). This subproject would include replacing approximately 1,500 feet of existing sewer pipeline that would convey wastewater flows from Siphon A through the Peroxide Metering Station, south along El Camino Real where it joins flows from Carlsbad, and then westerly across El Camino Real to Siphon Section B

south of Camino Vida Roble. The size of the parallel pipeline would be 36 inches in diameter. This subproject would be constructed in Phase 1.

The alignment for LO-B occurs within disturbed and developed land associated with existing water district facility developments (Peroxide Metering Station), the El Camino Real ROW, and a disturbed utility easement access road. No suitable habitat for any special status species occurs; therefore, LO-B is not anticipated to result in any impacts to special status species.

Outfall Subprojects LO-A1 and LO-A2. These subprojects involve the replacement of 1,500 feet of gravity sewer sections with 42-inch diameter pipe (LO-A1), and the installation of 18,200 feet of a new parallel with 30-inch diameter pipe (LO-A2). LO-A1 would be constructed during Phase 2, and LO-A2 would be constructed during Phase 3.

The proposed alignment for the parallel within the western portion of LO-A2 occurs within disturbed and developed land associated with an existing dirt access road and non-native ornamental landscaping to the immediate east and west of Acacia Drive. The dirt access road to the immediate west of Acacia Drive traverses an unnamed canyon that contains coastal sage scrub. Construction activities would be restricted to the disturbed dirt access road and non-native ornamental landscaping within these portions of the alignment; therefore, no direct impacts to any special status species or habitat are anticipated to occur as a result of LO-A2. However, the adjacent coastal sage scrub provides suitable habitat for the federally threatened coastal California gnatcatcher and falls within this species' USFWS-designated Critical Habitat. Therefore, the western portion of LO-A2 may result in potential indirect impacts to this species and its habitat as a result of construction noise and nighttime lighting, as discussed below.

The proposed alignment for the pipeline within the central portion of LO-A2 occurs within both developed and undeveloped land, including coastal sage scrub, chaparral, riparian, and wetland habitats that are suitable for several special status species. In comparison with other subprojects within the Parallel Land Outfall, only the central portion of LO-A2 features an impact area that could occur directly within coastal sage scrub identified as USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher. Coastal sage scrub and USFWS-designated Critical Habitat for the gnatcatcher occurs within the undeveloped canyon between Acacia Drive and White Sands Drive in the eastern portions of the subproject alignment. Coastal sage scrub and USFWS-designated Critical Habitat for the gnatcatcher also occurs further to the west along the alignment within the canyon between White Sands Drive and Melrose Drive, as well as the slope adjacent and south of Poinsettia Lane between El Fuerte Street and Alicante Road. The alignment also traverses a short section of riparian and wetland habitat south and east of the intersection of Poinsettia Lane and Alicante Road. Additional coastal sage scrub and chaparral habitats occur further to the west along the section of the alignment between Alicante Road and the eastern terminus of LO-B. Installation of pipeline for this subproject may require temporary disturbance and removal of habitat that could support special status species and/or is designated by the USFWS as Critical Habitat for the federally threatened coastal California gnatcatcher. Therefore, direct impacts to special status

species and their habitat, including USFWS-designated Critical Habitat for gnatcatcher, may occur as a result of LO-A2. Additional suitable habitat and USFWS-designated Critical Habitat for gnatcatcher occurs in the immediate vicinity of portions of this subproject, and potential indirect impacts may occur to this and other special status species and their habitat as a result of construction noise and nighttime lighting, as discussed below.

The alignment for the 1,500 feet of replacement pipeline of LO-A1 occurs within existing developed land associated with the Acorn Road and Sequoia Street rights-of-way, south of San Marcos Boulevard near its intersection with Acacia Drive. Ground disturbance activities associated with the proposed replacement pipeline would be limited to within the existing road right-of-way. Therefore, no impacts to any special status species or habitat are anticipated to occur as a result of LO-A1.

CIP Pipeline Project Access Roads

CIP pipeline projects that would require the construction of permanent access roads include P-43, P-30, P-64, P-42, P-301, SP-5, SP-11, and SP-25. In addition, although existing access roads occur throughout the majority of the Parallel Land Outfall, additional access roads and/or extensions and improvements to existing access roads may be required. Permanent access roads for these pipelines would be approximately 10 to 12 feet wide and may have either a concrete or decomposed granite road surface. The proposed access road alignments would run parallel and immediately adjacent to the proposed pipeline alignments. The placement of permanent impervious surfaces from the development of access roads could result in the permanent removal of habitat that supports special status species, and could increase runoff and potentially result in new erosion problems or the worsening of existing erosion problems further affecting adjacent habitat values.

No direct impacts to special status species would be expected to occur as a result of access roads for proposed CIP projects SP-5, or LO-B due to the unlikelihood of special status species to occur and lack of suitable habitat on or in the immediate vicinity of the proposed CIP sites. However, portions of access roads for proposed CIP projects P-43, P-30, P-64, P-42, SP-11, SP-25, LO-D1, LO-D2, and LO-A2 may occur within coastal sage scrub, chaparral, and/or riparian habitats that are suitable for special status species. Further, access roads for proposed CIP project P-42 could occur within USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher. Therefore, access roads for proposed CIP projects P-43, P-30, P-64, P-42, SP-11, SP-25, LO-D1, LO-D2, and LO-A2 have the potential to result in direct impacts to special status species and their habitat.

Indirect Impacts

Potential indirect impacts to special status species and their habitat from construction of proposed CIP projects under the 2018 Master Plan could include those resulting from storm water runoff from construction sites, fugitive dust, noise, night lighting, and staging areas. Special status species could be present within habitat adjacent to proposed CIP project sites during construction for CIP projects R-4, R-5, R-9, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-30, P-64, P-42, SP-13, SP-25, LO-D1, LO-D2, LO-A2, and access roads for CIP projects P-43,

P-30, P-64, P-42, SP-11, SP-25, LO-D1, LO-D2, and LO-A2. Further, CIP projects R-5, R-10, R-11, PS-6, PS-8, P-64, P-42, SP-13, SP-25, LO-D1, LO-D2, LO-A2, and access roads for CIP projects P-64, P-42, SP-25, LO-D1, LO-D2, and LO-A2 would occur immediately adjacent to suitable habitat and USFWS-designated Critical Habitat for the federally threatened coastal California gnatcatcher.

As described in Section 3.3.6, Section 4.5, and Section 4.7 of this PEIR, construction activities for CIP projects would comply with the federal CWA, California's Porter-Cologne Water Quality Control Act, the implementing regulations of the SWRCB and RWQCB, and the NPDES Program, including preparation of Erosion Control Plans Storm Water Pollution Prevention Plan (SWPPP) and implementing prescribed best management practices (BMPs), thereby avoiding potential construction-related impacts to special status species and their habitat resulting from erosion/sedimentation from graded areas, storm water runoff, and oil leaks. In addition, and as described in Section 4.1 of this PEIR, construction activities for CIP projects would comply with San Diego Air Pollution Control District (SDAPCD) Rule 55 for Fugitive Dust Control, thereby reducing potential construction-related impacts to special status species and their habitat resulting from fugitive dust to less than significant levels.

The remaining potential indirect impacts to biological resources resulting from the proposed CIP projects are discussed below.

Noise

Proposed CIP construction activities would result in temporary increases in noise levels that could adversely affect special status birds and raptors, including listed species, which use adjacent habitats for nesting and foraging. Therefore, construction of CIP projects could have significant indirect construction noise impacts to special status wildlife species.

Night Lighting

Night lighting required during potential nighttime construction of CIP projects may adversely affect nocturnal behavior patterns of wildlife, including listed species, which use adjacent habitats for nesting and foraging. Night lighting could also attract nocturnal predators to the area, which could potentially result in adverse effects to special status wildlife species. Therefore, construction of CIP projects could have significant indirect night lighting impacts to special status wildlife species.

Other Construction-Related Impacts

CIP construction activities could result in inadvertent intrusions of construction equipment and personnel into sensitive habitats adjacent to construction zones that may support special status species.

c. Mitigation Measures

Implementation of the following mitigation measures would reduce direct and indirect impacts to special status species and their habitats to less than significant levels. CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-11, and SP-12 (see Section 3.3.2 of this PEIR); therefore, these projects are not subject to the mitigation measures identified below.

Bio-1A **Project-Level Biological Resource Surveys.** During the design phase and prior to the construction of individual CIP projects, VWD will retain a qualified biologist to conduct project-level biological resources surveys and prepare biological resources technical reports for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2.

Surveys and reports will be conducted and prepared as part of the project-level CEQA documentation for these projects. VWD will map and quantify project-level impacts to special status species and habitats in a biological resources technical report as part of the CEQA documentation. Detailed project-specific avoidance and mitigation measures for significant impacts to biological resources will be finalized as part of the approval and certification process for the subsequent project-level CEQA documentation. Project-specific avoidance and mitigation measures will be determined during project review, consultations, permitting, and/or negotiations between the VWD and the responsible local, state, and federal agencies from which approvals and permits would be required.

If the project-level surveys and reporting determine that suitable habitat for special status species occurs, and that special status species could be present within the CIP project sites and/or could be adversely affected as a result of project implementation, including direct and/or indirect impacts to the species and occupied habitat, then the appropriate presence/absence and protocol-level surveys will be conducted, as necessary for required approvals. VWD will retain a qualified biologist to conduct rare plant surveys for CIP projects determined to have the potential to affect special status plant species. Further, VWD will retain a qualified biologist to conduct focused protocol-level surveys for CIP projects determined to have the potential to affect special status wildlife species. Surveys will follow protocols and guidelines approved by the USFWS, CDFW, and CNPS, and will be conducted by qualified biologists permitted by the USFWS and/or CDFW, where applicable.

If the rare plant surveys or focused protocol-level surveys identified above determine the presence of federally or state-listed endangered or threatened species and occupied habitat on-site, then, in compliance with FESA and CESA, and as stated in Section 3.3.5.4 of the 2011 PEIR, VWD will consult and obtain all applicable regulatory permits and authorizations from the USFWS and CDFW, and the conditions of the regulatory permits and authorizations will be

implemented accordingly and/or the underlying CIP project would be modified to avoid direct "take" of the species and/or minimize adverse effects to the species and occupied habitat.

In accordance with consultation and/or permitting requirements, mitigation measures Bio-1B and Bio-1C below would prevent direct "take" of listed species that are most likely to be affected by individual CIP projects (e.g., coastal California gnatcatcher and least Bell's vireo) and minimize potential impacts to individuals and occupied habitat in the vicinity of the CIP project sites that may be displaced from habitat or otherwise adversely affected. VWD will further mitigate the loss of habitat according to mitigation measures Bio-2A through Bio-2C.

Bio-1B Coastal **California Gnatcatcher Avoidance Measures**. In addition to those mitigation measures described above within Bio-1A above, and any avoidance, minimization, and conservation measures prescribed by the USFWS during consultation and/or permitting, the following mitigation measures will be implemented for proposed CIP projects potentially affecting the federally threatened coastal California gnatcatcher, including suitable and/or occupied habitat, as applicable:

1. Within one year prior to CIP project construction, VWD will retain a qualified biologist to commence focused surveys in accordance with USFWS protocols to determine the presence or absence of the coastal California gnatcatcher. Documentation of the survey results will be provided to VWD and USFWS within 45 days of completing the final survey. If surveyed habitat is determined to be occupied by coastal California gnatcatcher, then the following measures will be implemented in addition to those described above within Bio-1A:

    a. Habitat occupied by gnatcatcher will not be removed during the gnatcatcher breeding season (February 15 through August 30).

        Vegetation clearing, grading, and/or construction activities that have commenced within unoccupied habitat prior to the breeding season will be allowed to continue without interruption. The contractor(s) will maintain continuous construction activities on or in the immediate vicinity (500 feet) of suitable habitat for gnatcatcher, until the work is completed, in order to minimize potential indirect impacts. If gnatcatchers move into an area within 500 feet of ongoing construction and attempt to nest, then it can be deduced that the noise and other indirect impacts are not great enough to discourage gnatcatcher nesting activities.

        In addition, if these activities are initiated prior to, and extend into, the breeding season, but they cease for any period of time and the contractor wishes to restart work within the gnatcatcher breeding season window (February 15 through August 30), then the VWD will retain a qualified

biologist to conduct updated surveys, as described above. If updated surveys indicate no breeding gnatcatchers occur on or within 500 feet of the proposed work, then construction activities will be allowed to commence. However, if breeding gnatcatchers are confirmed, then construction activities will be postponed until all nesting activities have ceased, as determined by a qualified biological monitor.

2. Prior to vegetation clearing, grading and/or construction activities that will occur on or in the immediate vicinity (within 500 feet) of coastal sage scrub and/or USFWS-designated Critical Habitat during the gnatcatcher breeding season (February 15 through August 30), VWD will retain a qualified biologist to monitor construction activities. The biologist will be knowledgeable of gnatcatcher biology and ecology. VWD will submit the biologist's name, address, and telephone number, and proposed work schedule, to the USFWS at least seven days prior to construction activities.

3. Noise monitoring will be conducted if construction activities would occur during the gnatcatcher breeding season (February 15 through August 30), if the construction-related noise levels exceed 60 decibels equivalent noise level (dB L_{eq}) (i.e., the noise threshold suggested by the USFWS for indirect impacts to gnatcatcher), and if gnatcatchers are found within 500 feet of the noise source. Noise monitoring will be conducted by a biologist experienced in both the vocalization and appearance of coastal California gnatcatcher, and in the use of noise meters. Construction activities that generate noise levels over 60 dB L_{eq} may be permitted within 300 feet of occupied habitat if methods are employed that reduce the noise levels to below 60 dB L_{eq} at the boundary of occupied habitat (e.g., temporary noise attenuation barriers or use of alternative equipment). During construction activities, daily testing of noise levels will be conducted by a noise monitor with the help of the biologist to ensure that a noise level of 60 dB L_{eq} at the boundary of occupied habitat is not exceeded. Documentation of the noise monitoring results will be provided to VWD and USFWS within 45 days of completing the final noise monitoring event.

Bio-1C Least Bell's Vireo Avoidance Measures. In addition to those mitigation measures described within Bio-1A above, and any avoidance, minimization, and conservation measures prescribed by the USFWS and CDFW during consultation and/or permitting, the following mitigation measures will be implemented for CIP projects potentially affecting the federally and state endangered least Bell's vireo, including suitable and/or occupied riparian habitat, as applicable:

1. Within one year prior to CIP project construction, VWD will retain a qualified biologist to perform focused surveys in accordance with USFWS guidelines to determine the presence or absence of the least Bell's vireo on and within 500 feet of the CIP project site. Documentation of the survey results will be provided to the USFWS and CDFW within 45 days of completing the final

survey. If surveyed habitat is determined to be occupied by vireo, then the following measures will be implemented in addition to those described above within Bio-1A:

a. CIP projects will not remove riparian habitat that is occupied by least Bell's vireo during the species' breeding season (March 15 through July 15).

b. A minimum 100-foot-wide biological buffer will be maintained between all construction activities and occupied vireo habitat at all times.

c. VWD will retain a qualified biologist to monitor all construction activities that would occur within 300 feet of occupied vireo habitat during the species' breeding season (March 15 through July 15). The biologist will be knowledgeable of vireo biology and ecology. VWD or its designated representative will submit the biologist's name, address, and telephone number, and proposed work schedule, to the USFWS and CDFW at least seven days prior to construction activities.

d. VWD will retain a qualified biologist to perform noise monitoring of all construction activities that would occur within 300 feet of occupied vireo habitat. Noise levels at the riparian canopy edge will be kept below 60 dB(A) L_{eq} from 5:00 a.m. to 11:00 a.m. between March 15 and July 15. For the remainder of the season, the noise levels will not exceed 60 decibels, averaged over a one-hour period on an A-weighted decibel [dB(A); i.e., 1-hour L_{eq}/dB(A)]. Documentation of the noise monitoring results will be provided to the USFWS and CDFW within 45 days of completing the final noise monitoring event.

2. Permanent and temporary impacts to riparian habitat will be mitigated in full, as proposed within mitigation measures Bio-2A through Bio-2C, to ensure no net loss of the habitat and enhancement of functions and values.

Bio-1D **Avoidance of Nesting Birds**. To prevent impacts to nesting passerines (song birds) and other non-raptors protected under the federal MBTA and California Fish and Game Code, VWD will enforce the following:

1. If construction occurs during the general nesting season (February 1 through August 31), and where any mature tree, shrub, or structure capable of supporting a bird nest occurs within 300 feet of proposed CIP project construction activities, VWD will retain a qualified biologist to conduct a pre-construction survey for nesting birds prior to clearing, grading and/or construction activities. The survey will be conducted within 72 hours prior to the start of construction.

2. If any nesting birds are present on or within 300 feet of the proposed project construction area, the following will be required, as approved by the USFWS and/or CDFW:

    a. VWD will retain a qualified biologist to flag and demarcate the location of all nesting birds and monitor construction activities. Temporary avoidance of active bird nests, including the enforcement of an avoidance buffer of 300 feet, as determined by the qualified biological monitor, will be required until the qualified biological monitor has verified that the young have fledged or the nest has otherwise become inactive. Requests for buffer reductions of less than 300 feet will be provided to the Wildlife Agencies. Documentation of the nesting bird surveys and any follow-up monitoring will be provided to USFWS and CDFW within 10 days of completing the final survey or monitoring event.

Bio-1E **Avoidance of Raptor Nests**. To prevent impacts to nesting raptors protected under the federal MBTA and California Fish and Game Code, VWD will enforce the following:

1. If construction occurs during the raptor nesting season (January 15 through July 31), and where any mature tree or structure capable of supporting a raptor nest occurs within 500 feet of proposed CIP project construction activities, VWD will retain a qualified biologist to conduct a pre-construction survey for nesting raptors prior to clearing, grading, and/or construction activities. The survey will be conducted within 72 hours prior to the start of construction.

2. If any nesting raptors are present on or within 500 feet of the proposed project construction area, the following will be required, as approved by the USFWS and/or CDFW:

    a. VWD will retain a qualified biologist to flag and demarcate the location of all nesting raptors and monitor construction activities. Temporary avoidance of active raptor nests, including the enforcement of an avoidance buffer of 500 feet will be required until the qualified biological monitor has verified that the young have fledged or the nest has otherwise become inactive. Documentation of the raptor surveys and any follow-up monitoring, as necessary, will be provided to USFWS and CDFW within 10 days of completing the final survey or monitoring event.

3. In the event that a California state fully protected species (e.g., white tailed kite) is found to be nesting on the project site, all work in the area will stop and VWD will notify the CDFW and/or USFWS. No impacts will be permitted to occur to fully protected species.

Bio-1F **Construction Fencing**. Prior to vegetation clearing, grading, and/or construction activities, VWD will retain a qualified biologist to oversee

installation of appropriate fencing and/or flagging to delineate the limits of construction and the approved construction staging areas for protection of identified sensitive resources for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2.

Temporary fencing (with silt barriers) will be installed at the limits of project impacts (including construction staging areas and access routes) to prevent additional sensitive habitat impacts and to prevent the spread of silt from the construction zone into adjacent habitats to be avoided. Fencing will be installed in a manner that does not impact habitats to be avoided. For projects potentially affecting special-status species and sensitive resources, and for which permits or approvals from the USFWS or CDFW require confirmation of project impacts and submittal of as-built plans, VWD will submit to the USFWS and CDFW for approval, at least 30 days prior to initiating project impacts, the final plans for initial clearing and grubbing of sensitive habitat and project construction. These plans will also be submitted to the USACE, RWQCB, or other local agency, from which, approval or permitting is required, as applicable. The final plans will include photographs that show the fenced limits of impact and all sensitive areas to be impacted or avoided. If work occurs beyond the fenced or demarcated limits of impact, all work will cease until the problem has been remedied to the satisfaction of VWD and the USFWS, CDFW, USACE, and/or other agency. Temporary construction fencing will be removed by VWD upon project completion.

Bio-1G **Construction Staging Areas**. Prior to construction activities for CIP projects where it has been demonstrated through project-level studies that drainages, wetlands, and areas supporting sensitive habitats or species could be affected by project construction, VWD will design CIP project construction staging areas to avoid and setback from drainages, wetlands, and areas supporting sensitive habitats or species, where feasible. Fueling of equipment will occur in designated off-site fueling zones. All equipment used within the approved construction limits will be maintained to minimize and control fluid and grease leaks. Provisions to contain and clean up unintentional fuel, oil, fluid and grease leaks/spills will be in place prior to construction.

Bio-1H **Pre-Construction Meeting**. Prior to vegetation clearing, grading, and/or construction activities, VWD will retain a qualified biologist to attend a pre-construction meeting to inform construction crews of the sensitive species and habitats for the following CIP projects: R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16, P-56, P-30, P-64, P-42, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2.

Bio-1I **Construction-Related Night Lighting**. All construction-related night lighting adjacent to sensitive habitat areas will be of low illumination; shielded and directed downwards and away from adjacent native habitat areas.

Bio-1J **Avoidance of Special Status Habitat Areas**. Prior to construction activities for CIP projects where it has been demonstrated through project-level studies that special status plant and wildlife species, as well as USFWS-designated Critical Habitat and coastal ESHA, could be affected by project construction and/or operation, VWD will design and/or modify CIP projects to avoid and setback from special status plant and wildlife species, USFWS-designated Critical Habitat, and coastal ESHA, where feasible. Specific setback requirements for CIP project avoidance would be determined in consultation with the USFWS, CDFW, City of Carlsbad, and/or the CCC.

4.2.3.2 Issue 2 – Riparian Habitat and Other Sensitive Natural Communities

Biological Resource Issue 2 Summary	
Would implementation of the 2018 Master Plan have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?	
Impact: Implementation of the 2018 Master Plan has the potential to result in impacts to upland, riparian, and wetland habitats that are considered sensitive natural communities.	**Mitigation:** Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Project-Level Biological Resource Surveys (Bio-1A); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and Geotechnical Investigation and Construction-Related Erosion Control Plan (Geo-1 and Geo-2).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

b. Impact Analysis

Potential direct and indirect impacts to sensitive natural communities resulting from implementation of the 2018 Master Plan would vary by project type (i.e., reservoirs, pump stations, and pipelines), as discussed below. The sensitive natural communities with the potential to occur within the service area include upland (e.g., Diegan coastal sage scrub), riparian (southern riparian scrub), and wetland (e.g., freshwater marsh). Due to the programmatic level of analysis associated with this PEIR, the identified sensitive natural

communities may not represent all communities present or potentially present within the service area, as these details would be included in the results of project-level analyses. Impacts to jurisdictional waters and wetlands subject to the regulatory jurisdiction of the USACE, RWQCB, and CDFW are discussed within Section 4.2.3.3 (Issue 3 – Wetlands). Impacts to coastal stream, riparian, and wetland ESHA subject to the regulatory jurisdiction of the California Coastal Commission and City of Carlsbad are discussed within Section 4.2.3.4 (Issue 4 – Local Policies or Ordinance).

Of the CIP projects proposed under the 2018 Master Plan, the majority would only result in temporary impacts to sensitive natural communities associated with proposed construction staging and pipeline installation activities. Depending upon the location, presence or absence of sensitive species, and magnitude of loss, impacts to some habitats, such as disturbed land and non-native grassland, may or may not be considered significant. Compensatory mitigation may be required depending upon approvals required at the local-level. In addition, a local jurisdiction (e.g., City of Carlsbad) may also require mitigation or levy of an in-lieu mitigation fee for any impact, significant or not, to non-sensitive habitats (e.g., disturbed, agriculture, eucalyptus woodland) if it finds that such actions are necessary to meet the goals of the MHCP, MSCP, or the Subarea Plan. Potential conflicts within the MHCP, MSCP, and Subarea Plans are discussed within Section 4.2.3.5 (Issue 5 – Habitat Conservation Plans).

Direct Impacts

Direct impacts include the direct permanent or temporary removal of sensitive natural communities from clearing, grubbing, grading, and other initial land disturbance activities. Implementation of the 2018 Master Plan would have the potential to result in direct impacts to sensitive natural communities. The projects resulting in direct impacts to sensitive natural communities are discussed below.

Potable Water Projects

Potable Water Storage (Reservoir) CIP Projects

As evaluated below, five of the eleven proposed potable water storage CIP projects identified in the 2018 Master Plan have the potential to result in direct impacts to sensitive natural communities. Direct impacts to sensitive natural communities would be considered significant.

R-1. Portions of CIP R-1 would occur within undeveloped areas outside of the existing reservoir footprint that are characterized by Diegan coastal sage scrub, an upland sensitive natural community. Project-level studies, including CEQA documentation and resource agency permitting, have already been completed for this CIP project (see Section 3.3.2 of this PEIR; USFWS 2009; RECON 2007). As discussed above in Section 4.2.3.1 (Issue 1 – Candidate, Sensitive, or Special Status Species), CIP projects R-1 and R-7, collectively referred to as VWD's Meadowlark Reservoir Project, were determined to result in the temporary and permanent loss of 1.24 acres of disturbed (Diegan) coastal sage scrub. VWD is required to fully compensate the loss of coastal sage scrub through a combination of on-

and off-site habitat-based compensation mitigation measures. With the implementation of mitigation measures, impacts to coastal sage scrub would be reduced to a less than significant level. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP R-1 can be found within its respective document sources on file at VWD.

R-5. Portions of CIP R-5 would occur within undeveloped land characterized by chaparral habitat. This evaluation assumes that the chaparral habitat type present is (granitic) southern mixed chaparral and/or (granitic) chamise chaparral. These chaparral habitat types are considered upland sensitive natural communities. Therefore, CIP R-5 may result in significant direct impacts to sensitive natural communities.

R-7. CIP R-7 would occur within undeveloped areas that are characterized by coastal sage scrub habitat. Project-level studies, including CEQA documentation and resource agency permitting, have already been completed for this CIP project (see Section 3.3.2 of this PEIR; USFWS 2009; RECON 2007). As discussed above in Section 4.2.3.1 (Issue 1 – Candidate, Sensitive, or Special Status Species), CIP projects R-1 and R-7 were determined to result in the temporary and permanent loss of 1.24 acres of disturbed (Diegan) coastal sage scrub. VWD is required to fully compensate the loss of coastal sage scrub through a combination of on- and off-site habitat-based compensation mitigation measures. With the implementation of mitigation measures, impacts to coastal sage scrub would be reduced to a less than significant level. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP R-7 can be found within its respective document sources on file at VWD.

R-10. Portions of CIP R-10 would occur within undeveloped areas outside of the existing reservoir footprint that are characterized by Diegan coastal sage scrub and chaparral. This evaluation assumes that the chaparral habitat type present is (mafic) chamise chaparral. Therefore, CIP R-10 may result in significant direct impacts to these upland sensitive natural communities.

R-11. CIP R-11 would occur within undeveloped land characterized by chaparral habitat. This evaluation assumes that the chaparral habitat type present is (granitic) southern mixed chaparral and/or (granitic) chamise chaparral. Therefore, CIP R-11 may result in significant direct impacts to sensitive natural communities.

Potable Water Pipeline CIP Projects

As evaluated below, three of the twelve potable water pipeline CIP projects identified in the 2018 Master Plan may result in direct impacts to sensitive natural communities. Direct impacts to sensitive natural communities would be considered significant.

P-43. Portions of CIP P-43 may occur within Diegan coastal sage scrub and/or mixed chaparral, both upland sensitive natural communities, in addition to riparian sensitive natural communities. Therefore, CIP P-43 may result in significant direct impacts to sensitive natural communities.

P-30. The proposed construction of CIP P-30 would occur within undeveloped land characterized by chaparral habitat south of the Mountain Belle Reservoir site. This evaluation assumes that this habitat is mafic southern mixed chaparral or mafic chamise chaparral, both of which are considered sensitive natural communities. Therefore, CIP P-30 may result in significant direct impacts to sensitive natural communities.

P-42. The proposed construction of CIP P-42 would occur within existing disturbed and developed areas, agricultural land, and undeveloped land containing native habitat. The segment of the proposed alignment that runs east of the existing 1330 North Twin Oaks #2 Reservoir and west of Twin Oaks Valley Road occurs within chaparral and riparian habitat. This evaluation assumes that the chaparral habitat type present is (mafic) southern mixed chaparral and/or (mafic) chamise chaparral, and the riparian habitat present is southern coast live oak riparian forest associated with the headwaters of Gopher Canyon Creek. The (mafic) southern mixed chaparral and (mafic) chamise chaparral habitat types are considered upland sensitive natural communities, and the southern coast live oak riparian forest is considered a riparian sensitive natural community. Therefore, CIP P-42 may result in significant direct impacts to sensitive natural communities.

Wastewater Projects

Sewer Pipeline Projects

As evaluated below, four of the thirty proposed wastewater pipeline projects would result in direct impacts to sensitive natural communities.

SP-10. Implementation of the Diamond Siphon Replacement Project Option 1 would cause direct temporary impacts to 0.03 acre of southern arroyo willow riparian forest that is a potential jurisdictional USACE wetland water, RWQCB wetland water, and CDFW riparian wetland. Because this impact would be considered temporary, mitigation would be performed at a 1:1 ratio with revegetation of the impacted area. As all impacted areas would be revegetated following construction, there would be no net loss of wetlands and the impact would be reduced to below a level of significance.

Implementation of the Diamond Siphon Replacement Project Option 2 would cause direct temporary impacts to less than 0.01 acre of a channelized portion of San Marcos Creek. This drainage would likely be considered USACE non-wetland water of the U.S., a CDFW streambed, and RWQCB non-wetland water of the state based on observed vegetation and hydrologic features. It is anticipated that this mitigation would be accomplished at a 1:1 ratio with replacement of the impacted area. With the recommended revegetation, there would be no net loss of jurisdictional waters and the impact would be reduced to below a level of significance.

SP-11. The proposed replacement and construction for CIP SP-11 would occur primarily within disturbed and developed land associated with Cribbage Lane and uplands north of San Marcos Creek. Undeveloped land that occurs north of San Marcos Creek may support riparian and/or wetland habitats that are suitable for special status species. These habitats may be considered sensitive natural communities requiring mitigation. Project-level

studies have already been completed for this CIP project (see Section 3.3.2 of this PEIR; VWD 2001). As discussed above in Section 4.2.3.1 (Issue 1 – Candidate, Sensitive, or Special Status Species), CIP projects SP-11 and SP-12, are collectively referred to as VWD's San Marcos Interceptor Sewer Replacement Project. SP-11 is determined to result in temporary and permanent loss of 4.14 acres of wetland habitat types, including sensitive natural community types. VWD is required to obtain permits from the USACE, RWQCB, and CDFW, and compensate the temporary and permanent loss of wetland habitat. With the implementation of mitigation measures, the project impacts to wetland habitat would be reduced to a less than significant level. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP SP-11 can be found within its respective document sources on file at VWD.

SP-13. The proposed replacement for CIP SP-13 would occur primarily within existing disturbed and developed land associated with existing roadway ROWs. Portions of the existing alignment that run north of Redwing Way and east of Melrose Drive occur within undeveloped land characterized by disturbed land and non-native grassland habitat. The non-native grassland habitat is suitable for special status species and may be considered an upland sensitive natural community requiring mitigation. Therefore, CIP SP-13 may result in significant direct impacts to sensitive natural communities.

SP-25. The northernmost portions of the existing alignment cross an existing railroad easement and a reach of San Marcos Creek that supports riparian habitat. This evaluation assumes that the riparian habitat present is southern willow scrub. This evaluation also assumes that micro tunneling and/or jack-and-bore construction methodologies would be implemented for pipeline replacement activities that require the crossing of the railroad easement and San Marcos Creek. Excavation and construction staging for this CIP project may impact riparian habitat and/or other resources potentially occurring within or in the immediate vicinity of San Marcos Creek. Therefore, implementation of CIP SP-25 may result in significant direct impacts to sensitive natural communities.

Parallel Land Outfall

As evaluated below, portions of four outfall subprojects would result in direct impacts to sensitive natural communities.

Outfall Subprojects LO-D1 and LO-D2 (Gravity Section D). Limited portions of the proposed alignment will occur within Encinas Creek and adjacent upland areas that contain Diegan coastal sage scrub, chaparral, and riparian habitat. This evaluation assumes that the type of chaparral habitat present is southern mixed chaparral and/or southern maritime chaparral, and the type of riparian habitat present is southern willow scrub and/or southern riparian forest. Diegan coastal sage scrub, southern mixed chaparral, and southern maritime chaparral are upland sensitive natural communities, and southern willow scrub and southern riparian forest are riparian sensitive natural communities.

Portions of the alignment also occur within USFWS-designated Critical Habitat for the coastal California gnatcatcher, as well as existing preserved habitat located within the

Encinas Creek Open Space Preserve and Encinas Creek Habitat Conservation Area. The extreme western portions of the alignment also occur within the coastal zone, as identified within the Carlsbad LCP, and specifically, within areas identified as coastal stream, wetland, and riparian vegetation ESHA protected under the Carlsbad CRPOZ Ordinance. Potential impacts to ESHA and conflicts with the CRPOZ ordinance are specifically addressed below within Section 4.2.3.4 (Issue 4 – Local Policies and Ordinances). Therefore, the proposed LO-D1 and LO-D2 may result in significant direct impacts to sensitive natural communities.

Outfall Subprojects LO-A1 and LO-A2. Portions of the proposed alignment for LO-A1 and LO-A2 may occur within undeveloped land characterized by Diegan coastal sage scrub, chaparral, riparian, and wetland habitats, which are sensitive natural communities. Diegan coastal sage scrub occurs between Acacia Drive and White Sands Drive in the eastern portions of the subproject alignment; further to the west between White Sands Drive and Melrose Drive; and within the slope adjacent and south of Poinsettia Lane between El Fuerte Street and Alicante Road. The alignment also traverses a short section of southern willow scrub and emergent wetland habitat south and east of the intersection of Poinsettia Lane and Alicante Road. Additional Diegan coastal sage scrub, and southern mixed and/or southern maritime chaparral habitat, occurs further to the west along the section of the alignment between Alicante Road and the eastern terminus of LO-B. Installation of pipeline for this subproject may require temporary disturbance and removal of sensitive natural communities. Therefore, direct impacts to sensitive natural communities may occur as a result of LO-A1 and LO-A2. Additional areas supporting sensitive natural communities occur in the immediate vicinity of portions of this subproject, and potential indirect impacts may occur as a result of construction activities, as discussed below.

CIP Pipeline Project Access Roads

No direct impacts to sensitive natural communities would be expected to occur as a result of access roads for CIP projects SP-5, and LO-B due to the absence of sensitive natural communities on or in the immediate vicinity of the CIP sites. However, access roads for CIP projects P-43, P-30, P-64, P-42, SP-11, SP-25, LO-D1, LO-D2, and LO-A2 may occur within coastal sage scrub, chaparral, riparian and/or wetland habitats that are considered sensitive natural communities. Therefore, access roads for CIP projects P-43, P-30, P-64, P-42, SP-11, SP-25, LO-D1, LO-D2, and LO-A2 could result in direct impacts to sensitive natural communities.

Indirect Impacts

Indirect impacts to riparian habitat and other sensitive natural communities would be the same as those listed above in Section 4.2.3.1 (Issue 1 – Candidate, Sensitive, or Special Status Species). Indirect impacts to on-site sensitive natural communities could also occur during the installation of any on-site mitigation or revegetation activities after project construction. Implementation of mitigation measures Bio-1F, Bio-1G, Bio-1I, and Bio-1J would ensure CIP projects would avoid and setback from sensitive habitat, where feasible, and that construction activities are restricted to authorized areas surrounding by

temporary construction fencing. As described in Section 3.3.6, Section 4.5, and Section 4.7 of this PEIR, construction activities for CIP projects, including on-site mitigation or revegetation activities, would comply with the federal CWA, California's Porter-Cologne Water Quality Control Act, the implementing regulations of the SWRCB and RWQCB, and the NPDES Program, including preparation of Erosion Control Plans SWPPPs and implementing prescribed BMPs, thereby avoiding potential indirect impacts to sensitive habitat resulting from on-site mitigation activities as it pertains to erosion and sedimentation, and storm water runoff from mitigation sites. In addition, and as described in Section 3.3.6 and Section 4.1 of this PEIR, construction activities for CIP projects, including on-site mitigation or revegetation activities, would comply with SDAPCD Rule 55 for Fugitive Dust Control, thereby reducing potential construction-related impacts to sensitive habitat resulting from fugitive dust to less than significant levels.

Summary

Implementation of CIP projects R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, P-10, P-15, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2 could result in direct and/or indirect impacts to grassland, coastal sage scrub, chaparral, riparian, and wetland vegetation communities that are considered sensitive natural communities. Therefore, the 2018 Master Plan could result in a significant impact to these communities.

c. Mitigation Measures

Implementation of mitigation measures Bio-1A, Bio-1F through Bio-1H, and Bio-1J would reduce direct and indirect impacts to natural communities and habitat potentially resulting from CIP projects R-4, R-5, R-10, R-11, PS-4, PS-6, PS-8, P-43, P-16 and P-56, P-30, P-64, P-42, P-10, P-15, SP-10, SP-11, SP-13, SP-25, LO-D1, LO-D2, LO-A1, and LO-A2, and access roads for CIP projects P-43, P-30, P-64, P-42, SP-11, and SP-25 to a less than significant level. Implementation of mitigation measure Bio-2A through Bio-2C would further reduce impacts to upland, riparian, and wetland sensitive natural communities associated with these CIP projects to a less than significant level.

Bio-2A **Habitat Replacement**. Unavoidable impacts to sensitive natural communities will be mitigated by VWD according to the range of ratios provided below, consistent with the North County MHCP (AMEC 2003), and would be increased or decreased depending on whether the habitat supports special status species or other sensitive resources, and/or the impacts and mitigation would occur inside or outside an existing preserve area:

Sensitive Natural Community	Mitigation Ratio
Non-native grassland	0:1 – 0.5:1
Valley needlegrass grassland	1:1 – 3:1
Diegan coastal sage scrub	1:1 – 2:1
Diegan coastal sage – chaparral scrub	1:1 – 2:1

Sensitive Natural Community	Mitigation Ratio
Chamise chaparral (granitic, mafic)	1:1, 1:1 – 3:1
Scrub oak chaparral	1:1 – 2:1
Southern maritime chaparral	1:1 – 3:1
Southern mixed chaparral (granitic, mafic)	1:1, 1:1 – 3:1
Coast live oak woodland	1:1 – 3:1
Southern coastal live oak riparian forest	1:1 – 3:1
Southern riparian forest	1:1 – 3:1
Southern riparian scrub	1:1 – 3:1
Coastal and valley freshwater marsh	1:1 – 3:1

Permanent and temporary impacts to sensitive natural communities will be mitigated in-kind by VWD through implementation of any one or combination of the following measures, as approved and/or amended by the USFWS, USACE, RWQCB, and/or CDFW for individual CIP projects, if applicable:

1. On-site as creation of new habitat, or enhancement or restoration of existing habitat within avoided and preserved areas at the CIP project site;

2. On-site as restoration of existing habitat within temporary impact areas and/or avoided and preserved areas at the CIP project site;

3. On-site as enhancement of existing habitat within avoided and preserved areas at the CIP project site;

4. Off-site as purchase of habitat credits within an approved mitigation bank(s) (e.g., North County Habitat Bank);

5. Off-site as habitat preservation, creation, restoration, and/or enhancement within other properties or approved mitigation programs available at the time of grading; or

6. A combination of the above.

For on- or off-site creation, restoration, and/or enhancement mitigation of upland sensitive natural communities (e.g., grassland, coastal sage scrub, chaparral, woodland), VWD will prepare an Upland Habitat Restoration Plan, Habitat Mitigation and Monitoring Plan, or similar plan, detailing the specific upland habitat creation, restoration, and/or enhancement measures to be implemented as project mitigation. The Upland Habitat Restoration Plan will be approved by the USFWS and CDFW prior to vegetation clearing, grading, and/or construction activities.

For on- or off-site creation, restoration, and/or enhancement mitigation of riparian and wetland sensitive natural communities (e.g., riparian forest, riparian scrub, willow scrub, mule fat scrub, freshwater marsh), VWD will prepare a Riparian/Wetland Habitat Restoration Plan, Habitat Mitigation and Monitoring Plan, or similar plan, detailing the specific riparian/wetland creation, restoration, and/or enhancement measures to be implemented as project mitigation. The Riparian/Wetland Habitat Restoration Plan will be approved by the USFWS, USACE, RWQCB, and/or CDFW, as appropriate, prior to vegetation clearing, grading, and/or construction activities.

Bio-2B **Riparian/Wetland Replacement Ratio**. Any upland or riparian/wetland habitat impacts that occur beyond the approved fencing described above within Bio-1F will be mitigated at a ratio to be negotiated with the USFWS, USACE, RWQCB, and/or CDFW.

Bio-2C **Hydroseeding of Graded Areas**. Unless otherwise required by the USFWS, USACE, RWQCB, and/or CDFW, and excluding those CIP projects where a permanent access road, path, or other permanent development is required, after completion of final grading for CIP projects located adjacent to native vegetation, the construction documents will require that all graded areas within 100 feet of native vegetation are hydroseeded and/or planted with native plant species similar in composition to the adjacent undisturbed vegetation communities. VWD or the construction contractor will retain a qualified biologist to monitor these activities to ensure non-native or invasive plant species are not used in the hydroseed mix or planting palettes. The hydroseeded/planted areas will be watered via a temporary drip irrigation system or watering truck. Irrigation will cease after successful plant establishment and growth, to be determined by the biologist. Any irrigation runoff from hydroseeded/planted areas will be directed away from adjacent native vegetation communities, and contained and/or treated within the development footprint of individual projects. All planting stock will be inspected for exotic invertebrate pests (e.g., argentine ants) and any stock found to be infested with such pests will not be allowed to be used in the hydroseeded/planted areas.

4.2.3.3 Issue 3 – Wetlands

Biological Resources Issue 3 Summary	
Would implementation of the 2018 Master Plan have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act?	
Impact: Implementation of the 2018 Master Plan could result in impacts to waters, wetlands, and associated resources subject to the regulatory jurisdiction of the USACE, RWQCB, and CDFW, including federally protected wetlands as defined by Section 404 of the Clean Water Act.	**Mitigation**: Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); and Hydroseeding of Graded Areas (Bio-2C).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it would 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.

b. Impact Analysis

This impact analysis is based on a programmatic assessment of CIP projects proposed under the 2018 Master Plan. For CIP projects that have been identified as potentially occurring within federally-protected wetlands or other areas subject to the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW, project-level studies, including, but not limited to, general biological surveys and formal jurisdictional wetland delineations would be performed by VWD as part of subsequent project-level CEQA documents prepared for these projects. As stated in Section 3.3.6 of this PEIR, prior to construction for CIP projects where it has been confirmed through jurisdictional wetland delineations that wetland and/or other resources potentially subject to the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW would be impacted by the project, VWD would comply with Section 404 and Section 401 of the CWA, and Section 1600 et seq. of the California Fish and Game Code, and will prepare the necessary notifications and obtain the required permits from the USACE, RWQCB, and CDFW prior to project construction.

Direct Impacts

Activities proposed within riparian and wetland habitats are regulated by the USACE, RWQCB, CDFW, and USFWS. As discussed above within Section 4.2.3.2 (Issue 2 – Riparian Habitat and Other Sensitive Natural Communities), five potable water pipeline CIP projects, four sewer pipeline CIP projects, and three parallel land outfall subprojects

identified in the 2018 Master Plan have the potential to result in direct impacts to riparian and wetland sensitive natural communities associated with Gopher Canyon Creek, San Marcos Creek, and Encinas Creek. In addition, two CIP projects would occur within concrete storm drains that could qualify as jurisdictional resources regulated by the USACE, RWQCB, and CDFW. The projects resulting in direct impacts to jurisdictional waters and wetlands are discussed below. Impacts to coastal stream, riparian, and wetland ESHA subject to the regulatory jurisdiction of the California Coastal Commission and City of Carlsbad are discussed within Section 4.2.3.4 (Issue 4 – Local Policies or Ordinance).

Potable Water Pipeline CIP Projects

P-43. Portions of CIP P-43 could require the crossing of an unnamed ephemeral drainage feature that occurs within a canyon between CIP R-2 (from the 2008 Master Plan) and PS-2. This drainage feature could support riparian and/or wetland resources subject to the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW. Therefore, CIP P-43 may result in significant direct impacts to jurisdictional waters and wetlands.

P-42. The proposed construction of CIP P-42 would occur within southern coast live oak riparian forest habitat associated with the headwaters of Gopher Canyon Creek. This resource would be subject to the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW. Therefore, CIP P-42 may result in significant direct impacts to jurisdictional waters and wetlands.

P-24. The proposed construction of CIP P-24 would be restricted to existing developed land associated with the San Marcos Boulevard ROW; however, the pipeline would cross an existing culvert for an unnamed tributary to San Marcos Creek. The unnamed tributary to San Marcos Creek, including the culvert feature, could be subject to the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW. Therefore, implementation of CIP P-24 may result in significant direct impacts to jurisdictional waters and wetlands.

Sewer Pipeline Projects

SP-10. A wetland delineation would be required to determine the extent of the jurisdictional resources on-site. A Section 404 Nationwide Permit from USACE, a Streambed Alteration Agreement from CDFW, and a 401 Water Quality Certification from the RWQCB would be required for impacts to jurisdictional wetlands or waters. The approval of mitigation for impacts to jurisdictional waters is part of the required permit process that authorizes the impacts.

Implementation of the Diamond Siphon Replacement Project Option 1 would cause direct temporary impacts to 0.03 acre of southern arroyo willow riparian forest that is a potential jurisdictional USACE wetland water, RWQCB wetland water, and CDFW riparian wetland. Because this impact would be considered temporary, mitigation would be performed at a 1:1 ratio with revegetation of the impacted area. As all impacted areas would be revegetated following construction, there would be no net loss of wetlands and the impact would be reduced to below a level of significance.

Implementation of the Diamond Siphon Replacement Project Option 2 would cause direct temporary impacts to less than 0.01 acre of a channelized portion of San Marcos Creek. This drainage would likely be considered USACE non-wetland water of the U.S., a CDFW streambed, and RWQCB non-wetland water of the state. It is anticipated that this mitigation would be accomplished at a 1:1 ratio with replacement of the impacted area. With the recommended revegetation, there would be no net loss of jurisdictional waters and the impact would be reduced to below a level of significance.

SP-11. The proposed replacement and construction for CIP SP-11 would occur primarily within disturbed and developed land associated with Cribbage Lane and uplands north of San Marcos Creek. Undeveloped land that occurs north of San Marcos Creek may support riparian and/or wetland habitats that are suitable for special status species. These habitats may be considered sensitive natural communities requiring mitigation. Project-level studies have already been completed for this CIP project (see Section 3.3.2 of this PEIR; VWD 2001). As discussed above in Section 4.2.3.1 (Issue 1 – Candidate, Sensitive, or Special Status Species), CIP projects SP-11 and SP-12 are collectively referred to as VWD's San Marcos Interceptor Sewer Replacement Project. SP-11 is determined to result in the temporary and permanent loss of 4.14 acres of wetland habitat types, including jurisdictional waters and wetlands. VWD is required to obtain permits from the USACE, RWQCB, and CDFW, and compensate the temporary and permanent loss of wetland habitat. With the implementation of mitigation measures, the project impacts to wetland habitat would be reduced to a less than significant level. Complete project-level findings, impact analyses, and mitigation measures pertaining to CIP SP-11 can be found within its respective document sources on file at VWD.

SP-25. The northernmost portions of the existing alignment cross an existing railroad easement and a reach of San Marcos Creek that supports riparian habitat. This evaluation assumes that micro tunneling and/or jack-and-bore construction methodologies would be implemented for pipeline replacement activities that require the crossing of the railroad easement and San Marcos Creek. However, excavation and construction staging for this CIP project may impact jurisdictional waters and wetlands potentially occurring within or in the immediate vicinity of San Marcos Creek. Therefore, implementation of CIP SP-25 may result in significant direct impacts to jurisdictional waters and wetlands.

Parallel Land Outfall

Outfall Subproject LO-D1 and LO-D2. Limited portions of the proposed alignment will occur within Encinas Creek that contain southern willow scrub and/or southern riparian forest riparian habitat. Furthermore, portions of the alignment occur within preserved riparian habitat located within the Encinas Creek Open Space Preserve and Encinas Creek Habitat Conservation Area. Additional riparian and wetland habitat occurs immediately adjacent and downslope of the alignment. Therefore, the proposed LO-D1 and LO-D2 may result in significant direct impacts to jurisdictional waters and wetlands.

Outfall Subproject LO-A2. Portions of the proposed alignment for LO-A2 occur within undeveloped land characterized by riparian and wetland habitats, which may fall under the regulatory jurisdiction of the USACE, RWQCB, and/or CDFW. The subproject traverses a

short section of southern willow scrub and emergent wetland habitat south and east of the intersection of Poinsettia Lane and Alicante Road in the western portions of the alignment. Additional riparian and wetland habitat occurs immediately adjacent and downslope of the alignment. This habitat is associated with an unnamed drainage feature and large emergent wetland area that drains further west and into the golf course for La Costa Resort and Spa, eventually discharging into Batiquitos Lagoon and the Pacific Ocean. Therefore, the proposed LO-A2 may result in significant direct impacts to jurisdictional waters and wetlands.

CIP Pipeline Project Access Roads

Similar to their associated pipelines, the access roads for CIP projects P-43, P-42, and SP-25 may require the crossing of areas potentially supporting jurisdictional waters and wetlands. Therefore, access roads for CIP projects P-43, P-42, and SP-25 could result in direct impacts to jurisdictional waters and wetlands.

Indirect Impacts

Potential indirect impacts to jurisdictional waters and wetlands resulting from implementation of the 2018 Master Plan include increased trash/debris and pollutants from construction runoff, increased sedimentation during construction, and erosion and transportation of silt to adjacent waterways and downstream riparian areas. Construction measures designed to prevent downstream siltation and prevent erosion could impede flows to downstream habitat. Additionally, if facilities are not properly constructed, operated, and maintained, unexpected leaks and spills of wastewater into jurisdictional areas could occur. Indirect impacts to jurisdictional waters and wetlands resulting from implementation of the 2018 Master Plan may be a significant impact.

As described in Section 4.7 of this PEIR, construction activities for CIP projects would comply with the federal CWA, California's Porter-Cologne Water Quality Control Act, the implementing regulations of the SWRCB and RWQCB, and the NPDES Program, including preparation of SWPPPs and implementing prescribed BMPs, thereby avoiding potential construction-related indirect impacts to jurisdictional waters and wetlands.

Summary

Implementation of the Master Plan could result in direct and indirect impacts to waters, wetlands, and associated habitats subject to the regulatory jurisdiction of the USACE, RWQCB, CDFW, and USFWS during project construction and operation. As discussed in Section 4.7, VWD would comply with Section 404 and 401 of the CWA, and Sections 1600 et seq. of the California Fish and Game Code by conducting the appropriate project-level wetland delineation studies and obtaining permits, if required, from the USACE, RWQCB, and CDFW.

During the design phase and prior to the construction of individual CIP projects, VWD will retain a qualified biologist to conduct jurisdictional wetland delineations and prepare jurisdictional delineation reports for the following CIP projects: P-24, P-42, P-43, SP-10,

SP-11, SP-25, LO-D1, LO-D2, and LO-A2. Wetland delineations will be conducted according to the methodologies and current regulatory guidance recommended by the USACE, RWQCB, and CDFW. The results of wetland delineations will be verified by the USACE during or prior to obtaining permits from the USACE, RWQCB, and CDFW.

In accordance with permit requirements, VWD will mitigate the loss of jurisdictional waters and wetlands through the implementation of the riparian and wetland sensitive natural community measures proposed within Bio-2A through Bio-2C.

c. Mitigation Measures

Potential impacts to jurisdictional waters and wetlands would be considered less than significant with the preparation of wetland delineation studies; the avoidance or minimization of impacts; fulfillment of notification and permitting requirements from the USACE, RWQCB, and CDFW; and implementation of mitigation measures Bio-2A through Bio-2C. No additional mitigation is required.

4.2.3.4 Issue 4 – Local Policies or Ordinances

Biological Resources Issue 4 Summary	
Would implementation of the 2018 Master Plan conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	
Impact: Implementation of the Master Plan could conflict with the County of San Diego RPO and City of Carlsbad CRPOZ Ordinance.	**Mitigation:** Oak Tree Avoidance (Bio-3A); Oak Tree Replacement (Bio-3B); Project-level studies (Bio-1A); Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and, Construction-Related Erosion Control Plan and Geotechnical Investigation (Geo-1 and Geo-2).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan.

b. Impact Analysis

As a district, VWD may acquire, construct, own, operate, control, or use works for supplying the inhabitants of its district with water or the means for the collection, treatment, or disposition of sewage; and may construct such works across or along any street or public highway, with the same rights and privileges appertaining thereto as are granted to municipalities, such as the City of San Marcos, City of Escondido, City of Vista, and City of Carlsbad (see California Public Utilities Code Sections 12801 and 12808). Under Section 53091(d) and (e) of the California Government Code, building ordinances of a county or city will not apply to the construction of facilities for the production, generation, storage, treatment, or transmission of water or wastewater, and zoning ordinances of a county or city will not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water or wastewater by VWD. In addition, under Section 53096 of the Government Code, VWD, by a four-fifths vote of its members, may render a city or county zoning ordinance inapplicable to a proposed use of the property, related to the storage or transmission of water if VWD determines by resolution at a public hearing that there is no feasible alternative to its proposal. This determination may be made at the time VWD approves the Environmental Impact Report. Consequently, zoning regulations only apply to wastewater CIP projects proposed in the 2018 Master Plan.

County of San Diego

Resource Protection Ordinance

Certain projects occurring within unincorporated County of San Diego lands and outside of approved MSCP areas must comply with the RPO. The purpose of the RPO is to provide local protection of sensitive resources and prevent their degradation and/or loss. Resources protected under the RPO include wetlands, sensitive habitat lands, and oak trees, among other resources. The RPO is applicable to several types of discretionary applications such tentative parcel maps, rezones, major use permits, administrative permits, and vacations of open space easements. For these types of actions, the County of San Diego requires a Resource Protection Study be completed.

Individual CIP projects occurring within County of San Diego lands may result in impacts to wetlands and sensitive habitat lands, as defined under the RPO. Such impacts may be considered significant and conflict with the policies of the RPO. CIP project P-42 and associated access road occurs within County lands and would cross a reach of Gopher Canyon Creek that may contain RPO wetlands. To demonstrate voluntary compliance with the RPO, VWD would mitigate potential impacts to wetlands through the implementation of mitigation measures Bio-1A, Bio-1F through Bio-1H, Bio-1J, and Bio-2A through Bio-2C, in addition to Geo-1 and Geo-2, described in Section 4.5, Geology, Soils, and Paleontology.

In addition, individual CIP projects R-4, P-16, and P-56 occurring within County of San Diego lands could result in oak tree removal, pruning, and/or damage to root systems. Such impacts would be considered significant and conflict with the policies of the RPO. To demonstrate voluntary compliance with the RPO, VWD would avoid direct impacts to

individual oak trees to the maximum extent feasible and compensate any unavoidable impacts to trees through replacement mitigation, as proposed within mitigation measures Bio-3A and Bio-3B below, and in accordance with the ratios and habitat creation, restoration, and/or enhancement discussed above in Section 4.2.3.2 and mitigation measure Bio-2A.

Habitat Loss Permit Ordinance

The HLP Ordinance states that projects within the unincorporated County of San Diego must obtain an HLP prior to the issuance of a grading permit, clearing permit, or improvement plan if the project will directly or indirectly impact any coastal sage scrub habitat types. CIP projects R-5, R-11, P-42, and P-43 have the potential to result in impacts to coastal sage scrub located within unincorporated County of San Diego lands that are not subject to the MSCP.

Prior to construction for CIP projects located within unincorporated County of San Diego lands outside of approved MSCP areas where it has been confirmed through project-level studies, including but not limited to, general biological surveys and focused protocol-level surveys, that coastal sage scrub would be impacted by the project, VWD would comply with the HLP Ordinance and will prepare the necessary notifications and obtain the required HLP from the County of San Diego prior to project construction.

VWD would avoid impacts to coastal sage scrub to the maximum extent feasible and compensate any unavoidable impacts to this habitat type through replacement mitigation in accordance with the ratios and habitat creation, restoration, and/or enhancement discussed above in Section 4.2.3.2 and mitigation measure Bio-2A. If required by the County of San Diego, USFWS, and/or CDFW, VWD would obtain an HLP consistent with the ordinance to mitigate impacts to coastal sage scrub within County of San Diego lands.

City of Carlsbad

Chapter 21.203 – Coastal Resource Protection Overlay Zone Ordinance

Outfall Subprojects LO-D1 and LO-D2 of the 2018 Master Plan occur within the boundaries of the coastal zone in Carlsbad, as identified within the approved Carlsbad LCP. Coastal zone resources that occur within the service area include coastal stream, riparian, and wetland ESHA associated with Encinas Creek. In conformance with the LCP, the City of Carlsbad regulates developments within the coastal zone, including pipelines, according to the CRPOZ Ordinance. LO-D1 and LO-D2 would be subject to the Development Standards in Section 21.203.040 of the CRPOZ and would require a CDP. Temporary impacts may occur to coastal stream, riparian, and wetland ESHA as a result of pipeline construction for LO-D1 and LO-D2.

Prior to construction for CIP projects located within the coastal zone where it has been confirmed through project-level studies, including but not limited to, general biological surveys, focused protocol-level surveys, and jurisdictional wetland delineations, that potential ESHA would be impacted by the project, VWD would comply with the Carlsbad

CRPOZ Ordinance, including the provisions of the LCP. VWD will prepare the necessary notifications and obtain the required CDP from the City of Carlsbad and CCC prior to project construction.

In accordance with CDP requirements and to the maximum extent feasible, VWD will avoid and setback LO-D1 and LO-D2 from coastal stream, riparian, and wetland ESHA through avoidance and minimization in project-level siting and design, and construction methodologies (e.g., trenchless methodologies). VWD would compensate unavoidable impacts to coastal stream, riparian, and wetland ESHA in accordance with the ratios and habitat creation, restoration, and/or enhancement discussed above in Section 4.2.3.2 and mitigation measures Bio-2A and Bio-2B. In combination, these requirements of the CIP project and mitigation measures would reduce potential impacts to less than significant.

Chapter 21.210 – Habitat Preservation and Management Requirements Ordinance

CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 of the 2018 Master Plan occur within the boundaries of the City of Carlsbad MHCP Subarea Plan. The Habitat Preservation and Management Requirements (HPMR) Ordinance requires all development to comply with the Carlsbad MHCP Subarea Plan as well as the implementing agreement, permit conditions, the MHCP, the NCCP and 10(a)(1)(B) permit conditions, and the requirements contained in Habitat Preservation and Management Requirements Ordinance. Construction of CIP projects would not be permitted to occur in the city until all processing and permitting requirements of the HPMR Ordinance are fulfilled. If required by the City of Carlsbad and/or USFWS and CDFW, VWD would demonstrate compliance with the City's MHCP Subarea Plan and implement all required measures, as addressed below within Section 4.2.3.5 (Issue 5 – Habitat Conservation Plans). Mitigation measures Bio-4A through Bio-4C would ensure consistency with the City of Carlsbad's HPMR Ordinance.

Summary

CIP projects R-4, P-16, and P-56 could result in a conflict with the RPO protecting oak trees, which would result in a significant impact. CIP projects R-5, R-11, P-42, and P-43 may result in a conflict with the HLP Ordinance; however, VWD would obtain an HLP from the County of San Diego and mitigate the loss of coastal sage scrub habitat in accordance with Bio-2A, thereby reducing the impact to less than significant. CIP projects LO-D1 and LO-D2 could result in a conflict with the Carlsbad CRPOZ Ordinance; however, VWD would obtain a CDP from the City of Carlsbad and CCC and mitigate the loss of ESHA in accordance with mitigation measures Bio-2A and Bio-2B, thereby reducing the impact to less than significant.

c. Mitigation Measures

Implementation of mitigation measures Bio-3A and Bio-3B would reduce direct impacts to oak trees to a less than significant level.

Bio-3A **Oak Tree Avoidance**. All oak trees and their root systems will be avoided by CIP projects R-4, P-16, and P-56 through project design or site selection, to the extent practicable.

Bio-3B **Oak Tree Replacement**. To offset any impacts to oak trees potentially resulting from CIP projects R-4, P-16, and P-56, VWD will implement the following measures:

1. Unavoidable impacts will be compensated by VWD at a ratio of 1:1 to 3:1. A minimum of one 15-gallon oak tree will be planted within approved areas at the CIP project site as a replacement for every one oak tree damaged. For temporary impacts, trees will be replaced at the same location as the impact area. For permanent impacts, trees will be replaced within avoided areas at the CIP project site where natural water is available.

2. The landscape architect/designer for the project will design replacement trees into landscape plans which will be subject to review by the VWD and local jurisdiction in which the planting would occur.

3. Planting specifications will comply with the following:

    a. The newly planted trees will be planted high, as much as 0.75 foot above the new adjacent grade.

    b. Amend the backfill soil with wood shavings, unless existing soil is high in natural organic matter with a sandy loam texture as reflected in soils tests following County protocol.

4.2.3.5 Issue 5 – Habitat Conservation Plans

Biological Resources Issue 5 Summary	
Would implementation of the 2018 Master Plan conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan?	
Impact: Implementation of the 2018 Master Plan could conflict with the Carlsbad MHCP Subarea Plan (Carlsbad HMP).	**Mitigation**: Project-Level Biological Studies (Bio-4A); Species and Habitat Avoidance within Carlsbad MHCP Subarea Plan (Bio-4B); Habitat In-Lieu Fees (Bio-4C), Habitat Replacement (Bio-2A); Riparian/Wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and Construction-Related Erosion Control Plan and Geotechnical Investigation (Geo-1 and Geo-2).
Significance Before Mitigation: Potentially significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan.

b. Impact Analysis

Carlsbad MHCP Subarea Plan

Portions of the 2018 Master Plan occur within Carlsbad and the boundaries of the adopted Carlsbad MHCP Subarea Plan (Carlsbad HMP). CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 requiring approval or permitting from the City of Carlsbad may be required to incorporate mitigation measures and procedures of the MHCP Subarea Plan in the project design, and implement procedures, protocols, and mitigation measures described in the MHCP if sensitive species and habitat identified under the Carlsbad MHCP Subarea Plan are detected during project-level studies. For the purposes of this analysis, a significant impact could occur if the proposed project would result in a substantial inconsistency with the adopted Carlsbad MHCP Subarea Plan.

CIP projects within Subarea Plans would conform to the measures identified in the MSCP/MHCP and thereby obtain third-party benefits from the Wildlife Agencies through these plans. As evaluated above within Issue 1 – Candidate, Sensitive, and Special Status Species, and Issue 2 – Riparian Habitat and Other Sensitive Natural Communities, there

are CIP projects identified within the 2018 Master Plan that occur within the city of Carlsbad and that would result in potential impacts to special status species and sensitive habitats. Therefore, individual CIP projects could result in substantial conflict with the adopted Carlsbad MHCP Subarea Plan if impacts to these resources cannot be avoided and/or mitigated consistent with the Subarea Plan, as determined during individual CIP project review. Conflicts within the adopted Carlsbad MHCP Subarea Plan have the potential to be significant.

Draft MHCP and MSCP Subarea Plans

Portions of the 2018 Master Plan occur within the city of San Marcos and city of Escondido. Draft Subarea Plans under the MHCP have been prepared for these cities; however, these Draft MHCP Subarea Plans have not yet been adopted and finalized. In addition, portions of the 2018 Master Plan occur within unincorporated north San Diego County. A Draft Subarea Plan under the MSCP has been prepared for the County of San Diego; however, similar to the Draft MHCP Subarea Plans, this Draft MSCP Subarea Plan has not yet been adopted and finalized. Therefore, projects are not required to demonstrate consistency and compliance with these Draft MHCP and MSCP Subarea Plans. To demonstrate voluntary compliance with the Draft MHCP and MSCP Subarea Plans, VWD would address, as feasible, the proposed requirements of Draft Subarea Plans during the design phase of individual CIP projects, and in consultation with the USFWS, CDFW, and local city and/or county jurisdiction. No further analysis is required.

Summary

CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 could result in potential conflicts with the adopted Carlsbad MHCP Subarea Plan. The City of Carlsbad holds a Section 10(a) permit to approve development within its planning area and has the authority to extend the 3rd party benefits to developers. Conflicts with the Subarea Plan may result in a significant impact.

c. Mitigation Measures

Implementation of mitigation measures Bio-2A, Bio-2B, Bio-2C, Bio-1F, Bio-1G, Bio-1H, Bio-1J, Geo-1 and Geo-2 would eliminate potential conflicts with the adopted Carlsbad MHCP Subarea Plan. Implementation of mitigation measures Bio-4A through Bio-4C would further ensure that the 2018 Master Plan would not conflict with the adopted Carlsbad MHCP Subarea Plan.

Bio-4A **Project-Level Biological Studies**. During the design phase of CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 occurring within the jurisdictional boundaries of the city of Carlsbad, VWD will prepare project-level biological studies, to include consistency analysis with the Carlsbad MHCP Subarea Plan (Carlsbad HMP), in order to ensure that CIP projects would not conflict with this adopted plan. As necessary, VWD will conduct project design and review of biological studies in consultation with the USFWS, CDFW, and City of Carlsbad

when covered resources identified under the Carlsbad MHCP Subarea Plan have the potential to be affected by individual CIP projects.

Bio-4B **Species and Habitat Avoidance within Carlsbad MHCP Subarea Plan**. VWD will implement the following specific measures for CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2 occurring within the Carlsbad MHCP Subarea Plan:

1. Impacts to narrow endemic species will be avoided to the maximum extent practicable; however, where impacts to a narrow endemic species population are demonstrated to be unavoidable, impacts will be restricted to less than the maximum allowed under the Carlsbad MHCP Subarea Plan.

2. All development projects will be located and designed to minimize overall impacts to natural habitat.

3. Impacts to wetland and riparian habitats will be avoided to the maximum extent feasible. All development projects that would affect these habitats must demonstrate that the impacts: (1) cannot be avoided by a feasible alternative; (2) have been minimized to the maximum extent practicable; (3) are mitigated at a minimum 3:1 ratio; and (4) will be mitigated in ways that assure no net loss of habitat value or function.

Bio-4C **Habitat In-Lieu Fees**. Prior to issuance of permits from the City of Carlsbad, VWD may pay Habitat In-Lieu Mitigation Fees for impacts to Group E (Non-Native Grassland) and Group F (Disturbed Habitat, Eucalyptus Woodland) Habitats identified within the Carlsbad MHCP Subarea Plan for CIP projects SP-13, LO-D1, LO-D2, LO-B, and LO-A2. Fees may be paid in an amount to be determined by City Council, in lieu of providing on-site or off-site mitigation land. The Habitat In-Lieu Mitigation Fee will also apply to off-site mitigation for impacts to Group D (Unoccupied Coastal Sage Scrub, Coastal Sage/Chaparral, Chaparrals – excluding Southern Maritime Chaparral) Habitat which is not conserved or mitigated on site in accordance with mitigation measures Bio-2A through Bio-2C, or otherwise required by the City of Carlsbad, USFWS, and CDFW during review of individual CIP projects.

4.2.4 Cumulative Impacts

Biological Resources Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative Biological Resources impact considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Candidate, Sensitive, or Special Status Species	Yes	Not cumulatively considerable.
Riparian Habitat and Sensitive Natural Communities	Yes	Not cumulatively considerable.
Wetlands	Yes	Not cumulatively considerable.
Local Policies and Ordinances	Yes	Not cumulatively considerable.
Habitat Conservation Plans	Yes	Not cumulatively considerable.

The geographic scope of cumulative impact analysis for biological resources includes the VWD service area, which encompasses a large region of northern San Diego County and represents a wide variety of habitat types and sensitive biological resources, including a comprehensive list of species of regional concern. For federally listed species whose critical habitat occurs within the service area (e.g., coastal California gnatcatcher), the geographic scope for the cumulative impact analysis encompasses all contiguous critical habitat units that extend beyond the boundaries of the VWD. The cumulative projects listed in Table 4.0-5 of the 2011 PEIR would have the potential to contribute to cumulative direct and indirect impacts to sensitive species and natural communities, including wetlands. Sensitive species are designated as such due to their scarcity (e.g., threatened and endangered) throughout their habitat ranges. Similarly, sensitive natural communities, including wetlands, are considered sensitive based on their regional distribution within the bioregion and watershed areas. Therefore, the baseline cumulative impact to sensitive biological resources within and adjacent to the service area (i.e., regional cumulative impact area) is significant. The proposed Master Plan's potential contribution toward the cumulative impact is discussed in further detail below.

4.2.4.1 Candidate, Sensitive, or Special Status Species

As discussed above within Section 4.2.3.1 (Issue 1), construction of some CIP projects under the 2018 Master Plan would have the potential to directly and indirectly impact special status plant and wildlife species and their habitats, including USFWS-designated Critical Habitat. The magnitude of potential impacts is anticipated to be low due to the small size of the CIP projects and temporary nature of proposed activities. The likelihood of direct impacts to special status species is low. In the event that sensitive species would occur on

or in the immediate vicinity of proposed CIP project sites, they would be avoided to the maximum extent feasible through project siting and design. VWD would be required to consult with, and obtain permits from, the USFWS and/or CDFW, and implement avoidance measures preventing potential "take" of any individual species and impacts to USFWS-designated Critical Habitat. VWD would compensate the loss of habitat through creation, restoration, and/or enhancement measures. Therefore, with implementation of mitigation measures Bio-1B through Bio-1D, Bio-2A through Bio-2C, Bio-4B and Bio-4C, and Geo-1 and Geo-2, development of CIP projects under the Master Plan would not result in a cumulatively considerable contribution toward impacts to special status species within the regional cumulative impact area.

4.2.4.2 Riparian Habitat and Sensitive Natural Communities

As discussed above within Section 4.2.3.2 (Issue 2), a number of CIP projects would have the potential to directly and indirectly impact upland, riparian, and wetland sensitive natural communities. The magnitude of potential impacts is anticipated to be low due to the small size of the CIP projects and temporary nature of proposed activities. Sensitive natural communities would be avoided and setback to the maximum extent feasible through project siting and design. VWD would compensate the loss of sensitive natural communities through creation, restoration, and/or enhancement measures at superior replacement ratios. Where creation, restoration, and/or enhancement measures would be implemented at off-site locations, they would occur within the watershed and regional cumulative impact area to the extent possible. Therefore, with implementation of mitigation measures Bio-2A through Bio-2C, and Geo-1 and Geo-2, development of CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution toward impacts to sensitive natural communities within the regional cumulative impact area.

4.2.4.3 Wetlands

As discussed above within Section 4.2.3.3 (Issue 3), several CIP projects would have the potential to directly and indirectly impact wetlands. The magnitude of potential impacts is anticipated to be relatively low due to the small size of the CIP projects and temporary nature of proposed activities. Wetlands would be avoided and setback to the maximum extent feasible through project siting and design. As discussed above for sensitive natural communities, VWD would compensate the loss of wetlands through creation, restoration, and/or enhancement measures at superior replacement ratios. Where creation, restoration, and/or enhancement measures would be implemented at off-site locations, they would occur within the watershed and regional cumulative impact area to the extent possible. Therefore, with implementation of mitigation measures Bio-2A through Bio-2C, Geo-1 and Geo-2, development of CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution toward impacts to wetlands within the regional cumulative impact area.

4.2.4.4 Local Policies and Ordinances

As discussed above within Section 4.2.3.4 (Issue 4), several CIP projects would have the potential to directly and indirectly impact species and habitat afforded further protection through local policies and ordinances, including coast live oak trees, coastal sage scrub, wetlands, and ESHA resources. As discussed above, sensitive natural communities such as coastal sage scrub, wetlands, and ESHA would be avoided and setback to the maximum extent feasible through project siting and design. Oak trees would also be would be avoided and setback to the maximum extent feasible through project siting and design. VWD would compensate the loss of oak trees, coastal sage scrub, wetlands, and ESHA through creation, restoration, and/or enhancement measures at superior replacement ratios. Where creation, restoration, and/or enhancement measures would be implemented at off-site locations, they would occur within the watershed and regional cumulative impact area to the extent possible. Therefore, with implementation of mitigation measures Bio-2A through Bio-2C, Bio-3A, Bio-3B, Geo-1 and Geo-2, development of CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution toward impacts to resources protected under local policies and ordinances within the regional cumulative impact area.

4.2.4.5 Habitat Conservation Plans

Habitat conservation plans, such as the MHCP and MSCP, have been prepared to minimize regional cumulative impacts to natural habitats and the species that occur within those habitats. As discussed above within Section 4.2.3.5 (Issue 5), the only approved habitat conservation plan within the regional cumulative impact area is the Carlsbad MHCP Subarea Plan. Within this Subarea Plan's boundaries, the cumulative project impacts are limited relative to the larger encompassing regional cumulative impact area. Further, impacts associated with CIP projects proposed within the Carlsbad MHCP Subarea Plan boundaries are primarily temporary and associated with pipeline construction. Sensitive species and habitat would be avoided and setback to the maximum extent feasible through project siting and design. VWD would compensate the loss of habitat through creation, restoration, and/or enhancement measures at superior replacement ratios within the boundaries of the Carlsbad MHCP Subarea Plan to the extent possible. Where creation, restoration, and/or enhancement measures would be implemented outside of the Carlsbad MHCP Subarea Plan, they would occur within the regional cumulative impact area to the extent possible. Therefore, with implementation of mitigation measures Bio-1B through Bio-1D, Bio-2A through Bio-2C, Bio-4B and Bio-4C, and Geo-1 and Geo-2, development of CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution toward impacts to habitat conservation plans within the regional cumulative impact area.

4.2.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would implementation of the 2018 Master Plan interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident migratory corridors?

Although several of the proposed CIP projects would occur within and/or in the immediate vicinity of regional corridors/linkages identified under the MHCP and MSCP, none of the proposed projects are anticipated to adversely affect the continued function of the areas in facilitating wildlife movement through the local and regional area. The majority of the proposed CIP projects are proposed within disturbed and developed land that contains existing developments. The proposed reservoir projects would occur within developed land associated with existing water district facilities, or within small isolated areas, on hilltop features, surrounded by expansive, undeveloped land. The proposed reservoir impact footprints would be limited in overall space, and confined, such that wildlife could continue to move through the local area and around the proposed developments. The majority of the proposed pump station projects would occur within disturbed land, and all are associated with very small impact footprints. Due to the small size and limited aboveground developments proposed for pump stations, no adverse effects toward wildlife movement are anticipated to occur. Potential impacts associated with the proposed pipeline projects would be temporary, and all pipelines developments would be placed beneath the ground such that there would be no aboveground hindrances to wildlife movement during project operation. Therefore, the proposed pipeline projects are not anticipated to have any adverse effects toward wildlife movement.

In conclusion, no significant adverse impacts to wildlife movement are anticipated to result from the 2018 Master Plan. Therefore, no further analysis is required. Potential impacts to species and habitats associated with the identified corridor/linkage areas would be reduced to less than significant levels through the implementation of mitigation measures Bio-1A through Bio-1J, and Bio-2A through Bio-2C, and Geo-1 and Geo-2.

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4.3 Cultural Resources

This section of the Program Environmental Impact Report (PEIR) describes the potential environmental impacts associated with cultural resources that may occur as a result of the Capital Improvement Program (CIP) projects within the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

Cultural resources are generally categorized into three subtopics: archaeological, historic, and tribal cultural. Archaeological resources (generally located below ground surface) are divided into two categories: prehistoric and historic age. Prehistoric archaeological resources date from before the onset of the Spanish Colonial period (1769 to 1848) and historic archaeological resources date from and after the onset of the Spanish Colonial period. An historic resource (generally located above ground) is any building, structure, or object that is at least 45 years of age and that is, or may be, significant architecturally or culturally in local, state, or national history. Tribal cultural resources (TCRs) are generally similar to the federally defined Traditional Cultural Properties (TCPs), but incorporate consideration of local and state significance and required mitigation under the California Environmental Quality Act (CEQA). A TCP may be considered eligible based on "its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1998:1). Strictly speaking, TCPs are both tangible and intangible; they are anchored in space by cultural values related to community-based physically defined "property referents" (Parker and King 1998:3). On the other hand, TCPs are largely ideological, a characteristic that may present substantial problems in the process of delineating specific boundaries. Such a property's extent is based on community conceptions of how the surrounding physical landscape interacts with existing cultural values. By its nature, a TCP need only be important to community members and not the general outside population as a whole.

A TCR may be considered significant if it is included in a local or state register of historical resources or determined by the lead agency to be significant pursuant to criteria set forth in California Public Resources Code (PRC) Section 5024.1; is a geographically defined cultural landscape that meets one or more of these criteria; or is a historical resource described in PRC Section 21084.1, a unique archaeological resource described in PRC Section 21083.2, or a non-unique archaeological resource if it conforms with the above criteria.

The 2011 PEIR for the Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified one potentially significant impact associated with cultural resources (potential for construction activities to adversely affect historic and archaeological resources). The 2011 PEIR identified mitigation measures Cul-1, Cul-2, and Cul-3 to reduce this impact to a less than significant level. The 2018 Master Plan update has been

evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts to cultural resources beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

This section of this PEIR evaluates the potential for cultural impacts associated with development of proposed CIP projects under the 2018 Master Plan. Information in this section was based upon a cultural resources records search, performed by RECON in July 2016, and included as Appendix D to this PEIR. Since paleontological resources are largely linked to geological formations, potential issues related to paleontological resources are discussed within Section 4.5 (Geology, Soils, and Paleontology) of this PEIR.

4.3.1 Environmental Setting

4.3.1.1 Archaeological (Prehistoric) Setting

Archaeological investigations along the southern California coast have indicated that there was a diverse range of human occupation activities extending from the early Holocene (approximately 11,000 to 10,000 years ago) into the Ethnohistoric period 100 to 400 years ago. The continuum of culture throughout the San Diego area is represented by evidence for continuous habitation with many distinctive cultural responses to changing conditions. The regional populations also changed environmental conditions as well, through the management of the diverse habitats present in southern California to encourage the growth of certain plants. This management included selective burning, transplanting, weeding and pruning.

There are four general periods that are used to describe prehistory in the VWD service area. These are Early Man (Human Occupation Prior to 11,500 Before Present [B.P.]), Paleoindian (11,500 B.P. to 8500/7500 B.P.), Archaic (8500 B.P. to 1300/800 B.P.), and Late Prehistoric (1300/800 B.P. to 200 B.P.). The use of these terms should not be interpreted to imply that they represent different cultures or populations that inhabited the area; rather, the terms are used to refer to cultural patterns that change over time in response to environmental and social conditions. Trade and human travel and movement introduce new ideas and people to culture areas. In addition to the four prehistory periods there is an Ethnohistoric Period that covers the time of Spanish contact beginning in 1542 to the mid-1800s.

4.3.1.2 Ethnohistoric Setting

The VWD service area lies within the traditional use-areas of the Luiseño. In addition, the service area is situated in the northern portion of lands traditionally associated with the Ipai or ‘lipay (Northern Diegueño). The Tipai or Kumeyaay (Southern Diegueño) are then found to the south of the Ipai. The following ethnographic setting is informed by various articles found in Heizer (1978).

a. Luiseño

The VWD service area is located in the southern portion of the territory associated with the Luiseño, a tribe affiliated with the San Luis Rey Mission at Oceanside, California. The Luiseño traditional use area is mapped as extending from the Pacific Ocean inland to Lake Elsinore and Palomar Mountain in the east, and extending from Agua Hedionda in the south to Aliso Creek in the north. The Luiseño were characterized by the occupation of sedentary villages in subsistence territories that permitted them to reach the majority of their resources within a day walk. Villages were commonly located along valley bottoms, streams, or coastal strands. From October to November, much of the village population moved to temporary camps in the mountains to harvest acorns and hunt game. Inland groups also had fishing and gathering spots on the coast that they visited annually. In comparison with neighboring groups to the north and east, such as the Gabrieliño and Cahuilla, the Luiseño appear to have had higher population density and a more rigid social structure. The Luiseño patterns may have been relatively stable until mission secularization. Instability could have resulted from the policy of the Catholic Mission fathers or padres to maintain imported European traditional style settlement and economic patterns.

b. Ipai (Northern Diegueño) and the Tipai or Kumeyaay (Southern Diegueño)

The VWD service area also includes lands associated with various cultural groups, once identified generically and somewhat erroneously as Diegueño. Various ethnographies document these geographically diverse groups of peoples. Father Junipero Serra referred to the indigenous population surrounding the Mission San Diego de Alcala as "Dieguino" in 1769, and this term was utilized for over a century. Presently, the terms Ipai and Tipai are utilized to discuss the groups once collectively referred to as Diegueño. Both terms generally translate to "person," and divide this cultural group based upon regional geography within San Diego and Baja California. Tipai typically references peoples in portions of Imperial County and south of the border, and Ipai refers to people on the coast and mountain regions. Also included within these designations is the term Kumeyaay, which is a Diegueño word that may have meant the steep ones, or those from the cliffs. This group of peoples was also purportedly named Quemeya by the Yuma, who described them as the people of the western Colorado floodplain, extending to the coast. In 1973, some of the Diegueño of southern San Diego County stated a preference for Kumeyaay as their tribal name. Thereafter, the Kumeyaay Tribal Affairs Office was opened in El Cajon and the Kumeyaay Corporation was established.

4.3.1.3 Historic Setting

The earliest European explorers to enter the Alta California region were the Spanish, who navigated along the Pacific coast during the 17th and 18th centuries. In the latter portion of the 18th century, Father Junipero Serra was sent to Alta California to create a chain of Missions and Mission outposts to bring Christianity to the indigenous population, and create a foundation for colonization of the region. Between 1769 and 1823, the Spanish

established 21 missions, 4 presidios, and 4 pueblos between San Diego and Sonoma, along El Camino Real. Following Mexico's independence from Spain in 1822, the Mexican government gained control over California. As the power of the missionary system weakened, wealthy ranchero families began to assert control and influence, and many ranchos were established throughout southern California. These ranchos were generally subdivided or sold over time, resulting in numerous smaller tracts of land being owned by various ranchero family members, friends or affiliates. Then, as the size of the Mexican ranchos dwindled, the advent of the Southern California Railroad greatly influenced the development of the area. The Railroad reached the region by the mid-1880s, linking the San Diego and San Bernardino areas, and allowing for the future development of the beach areas of San Diego County.

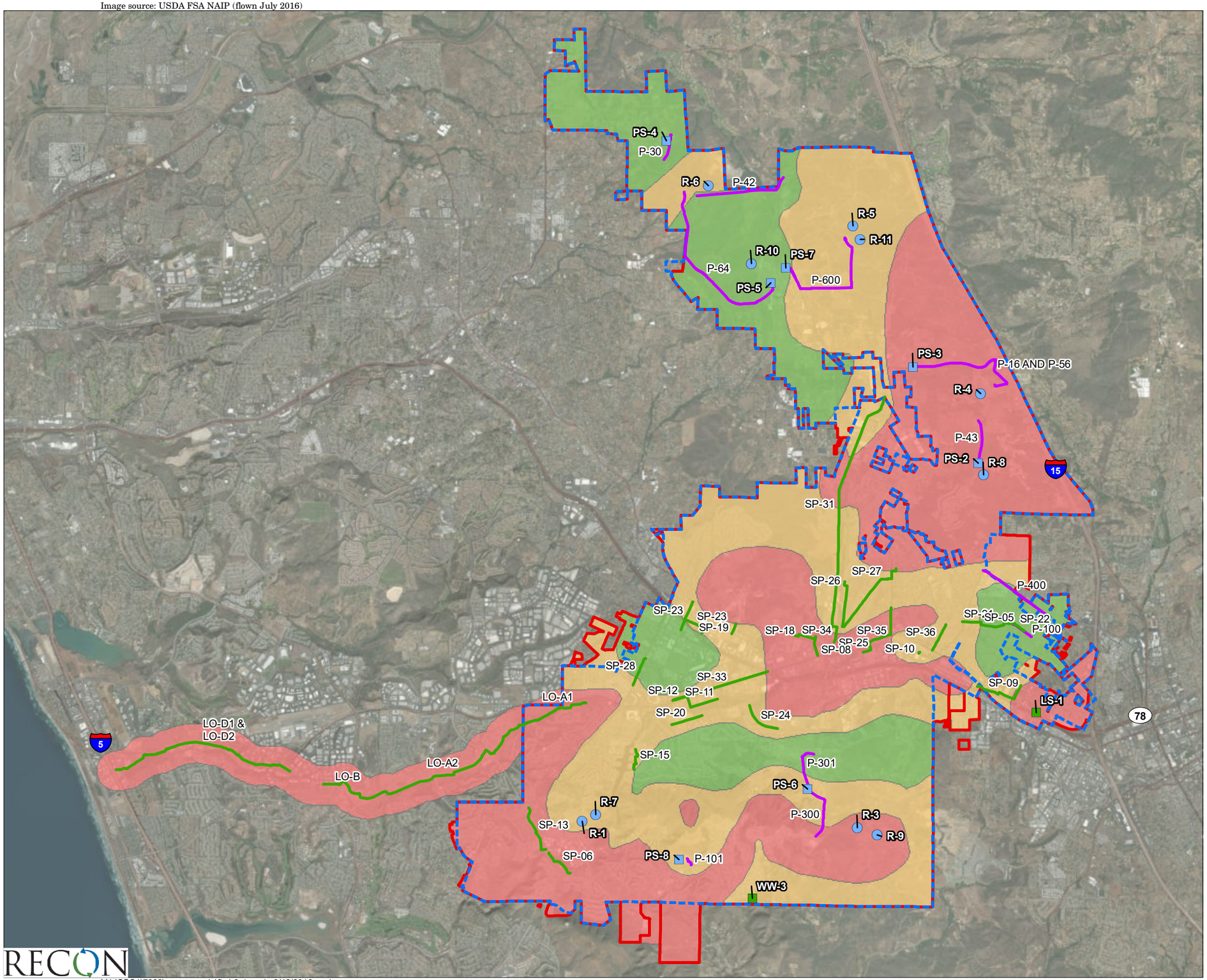
4.3.1.4 Cultural Resource Records Search

In July 2016, RECON requested a records search for the VWD service area from the California Historical Resources Information System, at the South Coastal Information Center, located at San Diego State University. The records search included all proposed potable water and wastewater CIP project sites, and the entirety of the land outfall area. To identify the presence of cultural resources, the cultural records search inventoried the following: The National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Historical Landmarks, California Points of Historical Interest, and the California State Historic Resources Inventory through the Office of Historic Preservation Historic Property Data File for San Diego County.

Numerous archaeological resources exist throughout the VWD service area. The records search identified a total of 234 cultural resources, 427 past investigations, and 38 historic addresses.

Figure 4.3-1 identifies the archaeological resource sensitivity of the VWD service area, based upon the frequency of known and recorded archaeological sites. Areas of high sensitivity are found in the vicinity of the Batiquitos and Buena Vista (Agua Hedionda) Lagoons, in the southwest corner of the VWD service area surrounding San Marcos Creek, in the southeast at Double Peak and Mount Whitney, in the central portion of San Marcos, and in the southern portion of the Merriam Mountains, extending west into Twin Oaks Valley.

Image source: USDA FSA NAIP (flown July 2016)



VWD Service Area

Vallecitos Water District

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

Archaeological Resource Sensitivity (PBS&J)

High

Medium

Low

0 Miles 1.2

RECON

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FIGURE 4.3-1

Archaeological Resource Sensitivity

a. Native American Heritage Commission Records Search

A letter was sent to the Native American Heritage Commission (NAHC) on July 8, 2016 requesting a search of their Sacred Lands File in the VWD service area for the 2018 Master Plan (see Appendix A). A reply letter was received July 13, 2016 indicating that sites have been located in the Bonsall and Valley Center USGS Quadrangles. The 2018 Master Plan NAHC response letter also provided a listing of Native American contacts that might have knowledge about the project area and the presence or absence of any properties of religious and cultural significance not listed in the Sacred Lands File. As part of Section 106 and Assembly Bill (AB) 52 consultations, the VWD sent letters to these Native American contacts. See Section 4.3.3.3, Tribal Cultural Resources for more details.

4.3.2 Regulatory Framework

4.3.2.1 Federal

a. National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 established the NRHP as the official federal list of cultural resources that have been nominated by state offices for their historical significance at the local, state, or national level. The NRHP, which is administered by the National Park Service, is "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment." Listing in the National Register assists in preservation of historic properties through the following actions: recognition that a property is of significance to the nation, the state, or the community; consideration in planning for Federal or federally assisted projects; eligibility for Federal tax benefits; consideration in the decision to issue a federal permit; and, qualification for Federal assistance for historic preservation grants, when funds are available.

Properties may qualify for NRHP listing if they qualify under the following criteria:

Criterion A: Associated with events that have made a significant contribution to the broad patterns of history;

Criterion B: Associated with the lives of persons significant in the past;

Criterion C: Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: Have yielded, or may be likely to yield, information important in prehistory or history.

Structures and features must usually be at least 50 years old to be considered for listing on the NRHP, barring exceptional circumstances. According to the NRHP guidelines, a resource must retain its integrity, or the "ability to convey its significance." The seven aspects of integrity are location, design, setting, materials, workmanship, feeling and association.

b. Federal Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) is a federal law that was established in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items – human remains, funerary objects, sacred objects, or objects of cultural patrimony – to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking in these items. Implementation of the proposed project would be conducted in compliance with NAGPRA. On March 15, 2010, the Department of the Interior issued a final rule on 43 Code of Federal Regulations Part 10, of the NAGPRA Regulations – Disposition of Culturally Unidentifiable Human Remains. The final rule implements NAGPRA by adding procedures for the disposition of culturally unidentifiable Native American human remains in the possession or control of museums or Federal agencies. The rule also amends sections related to purpose and applicability of the regulations, definitions, inventories of human remains and related funerary objects, civil penalties, and limitations and remedies. The rule became effective on May 14, 2010.

Federal curation regulations are also provided in 36 Code of Federal Regulations Part 79, which apply to collections that are excavated or removed under the authority of the Antiquities Act (16 United States Code [U.S.C.] 431-433), the Reservoir Salvage Act (16 U.S.C. 469-469c), Section 110 of the NHPA (16 U.S.C. 470h-2), or the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm). Such collections generally include those that are the result of a prehistoric or historic resources survey, excavation or other study conducted in connection with a federal action, assistance, license or permit.

4.3.2.2 State

a. California Health and Safety Code Sections 7050.5, 7051, and 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures. Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code (PRC) Section 5097.98 (refer to

second paragraph below). The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric (Native American), the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification, and may recommend scientific removal and non-destructive analysis of human remains and items associated with Native American burials.

b. California Register of Historic Resources (PRC Section 5020 et seq.)

State law also protects cultural resources by requiring evaluations of the significance of prehistoric and historic age resources. The California criteria for the register are nearly identical to those for the NRHP. The State Historic Preservation Officer (SHPO) maintains the CRHR. Properties listed in, or formally designated eligible for listing on the NRHP are automatically listed on the CRHR, as are state landmarks numbered 770 and higher and Points of Interest recommended for listing by the State Historical Resources Commission. A resource is eligible for listing on the California Register if it meets any of the following criteria:

Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

Criterion 2: Is associated with the lives of persons important in our past;

Criterion 3: Embodies the distinctive work of an important creative individual, or possesses high artistic values; or

Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history.

The California Register may also include properties listed in local registers of historic properties. A "local register of historic resources" is broadly defined in Section 5020.1(k) as "a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution." Local registers of historic properties come in two forms: (1) surveys of historic resources conducted by a local agency in accordance with Office of Historic Preservation procedures and standards, adopted by the local agency and maintained as current and (2) landmarks designated under local ordinances or resolutions (PRC Sections 5024.1, 21804.1, and 15064.5). The minimum age criterion for the California Register is 45 years. Properties less than 45 years old may be eligible for listing on the California Register, if "it can be demonstrated that sufficient time has passed to understand its historical importance" [Chapter 11, Title 14, Section 4842(d)(2)].

c. Native American Historic Cultural and Sanctified Cemetery Sites (PRC Section 5097 et seq.)

State law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NAHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to a year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR. In the fall of 2006, the law was amended to revise the process for the discovery of Native American remains during land development. The revisions encourage culturally sensitive treatment of Native American remains, and to require meaningful discussions and agreements concerning treatment of the remains at the earliest possible time. The intent is to foster the preservation and avoidance of human remains during development. The changes in the law allow additional time to notify, consult and confer with the Most Likely Descendent/Native American representatives on any given project. In addition, the new language provides more protection for re-interment sites.

Specifically, PRC Section 5097.9 states that no public agency, and no private party using or occupying public property or operating on public property shall interfere with the free expression or exercise of Native American religion, nor shall any such agency cause severe or irreparable damage to any Native American Sanctified Cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

d. CEQA Statutes [PRC Section 21083.2(g) and (h)]

CEQA statutes [PRC Section 21083.2(g)] define a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

As defined in PRC Section 21083.2(h), a "non-unique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria described above. A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the Lead Agency if it so elects.

e. Assembly Bill 52

As of July 1, 2015, PRC Section 21084.2 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource, as defined, is a project that may have a significant effect on the environment." The bill requires lead agencies to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a project will result in an adverse effect to TCRs, the lead agency must consider measures to mitigate the impact.

The District notified the following tribes of the project, and was contacted with a request for consultation by some of those tribes, as indicated below.

4.3.2.3 Local

a. County of San Diego Resource Protection Ordinance

The County of San Diego Resource Protection Ordinance (RPO) requires that cultural resources be evaluated as part of the County of San Diego Planning and Development Services' discretionary environmental review process and if any resources are determined significant under RPO, they must be preserved. The County RPO prohibits development, trenching, grading, clearing, and grubbing, or any other activity or use that may result in damage to significant prehistoric or historic site lands, except for scientific investigations with an approved research design prepared by an archaeologist certified by the Society of Professional Archaeologists. The County RPO limits the alteration of significant prehistoric and historic site lands without prior approved research design by a certified archaeologist. Sites determined to be highly significant must be preserved. Local historic records are managed at the South Coastal Information Center (SCIC) at San Diego State University (SDSU), and at the San Diego Museum of Man.

4.3.3 Master Plan Impacts and Mitigation

4.3.3.1 Issue 1 – Historic and Archeological Resources

Cultural Resources Issue 1 Summary	
Would implementation of the 2018 Master Plan cause a substantial adverse change in the significance of an historic resource or cause a substantial adverse change in an archaeological resource pursuant to Section 15064.5?	
Impact: Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect historic resources or archeological resources within the VWD service area.	**Mitigation:** Site-specific Records Search (Cul-1), Phase I Cultural Resources Survey (Cul-2); Procedure for Unintentional Disturbance of Cultural Resources (Cul-3).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Historic Resources

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would cause a substantial adverse change in the significance of a historic resource as defined in CEQA Guidelines Section 15064.5. CEQA requires evaluation of project impacts on historic resources, including properties "listed in, or determined eligible for listing in, the California Register of Historical Resources [or] included in a local register of historical resources."

A "substantial adverse change" means "demolition, destruction, relocation, or alteration of the resource such that the significance of an historical resource would be materially impaired" [Public Resources Code, Section 5020.1(q)]. The setting of a resource should also be taken into account in that it too may contribute to the significance of the resource, as impairment of the setting could affect the significance of a resource. Material impairment occurs when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA. [CEQA Guidelines, Section 15064.5(b)(2)]

2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public

Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant.

Archaeological Resources

Implementation of the 2018 Master Plan may have a significant impact if it would cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines Section 15064.5. Archaeological resources include resources that the Lead Agency determines meet at least one of the criteria listed in PRC Section 21083.2(g). PRC Section 21083.2(g) defines a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

As defined in PRC Section 21083.2(h), a "non-unique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria discussed above. A non-unique archaeological resource is not considered significant pursuant to CEQA Guidelines Section 15064.5(c)(4) and need be given no further consideration, other than the simple recording of its existence by the Lead Agency if it so elects.

b. Impact Analysis

Various built-environment historic resources (buildings or structures aged 45 years old or older) and numerous archaeological sites exist within the VWD service area. The records search identified 234 cultural resources and 38 historic addresses. The results of the records search are discussed below.

Historic Resources

Two historic-era resources are crossed by CIP projects in the 2018 Master Plan. The Vista Irrigation District Bench Flumes and Siphons (P-37-030889) site is crossed by CIP SP-31 (N. Twin Oaks Valley Sewer Replacement). The flumes and siphons were built in 1926 and between 1947 and 1955 reinforced concrete arched covers were added. The site was determined eligible at the local level for listing in the California Register of Historical Resources under Criteria A and C. Under Criterion A, the flumes and siphons have been the main conduit for the Vista Irrigation District since its inception in the 1920s and have been vital to the area's development for over 90 years. Under Criterion C, the method of

construction is unique and consists of gunite bench flumes along ridges connected by steel and concrete pipe siphons. The bench flumes were constructed as aboveground gunite canals with a domed gunite cover. A roadway was graded, wooden forms were constructed for the flume over mesh for reinforcing the bottom, and wire mesh was used for the sidewalls and rail. The wire mesh was sprayed with gunite to form the structure of the flume. The flume was constructed as a monolithic structure with no expansion joints. (Van Wormer 2009).

Site P-37-015945 consists of three or four partially destroyed concrete and cobble domes of an unknown age and may be associated with the Rancho de los Kiotes (P-37-017444), also known as the Leo Carrillo Ranch. This site appears not to have been evaluated for CEQA significance. The Rancho is listed in the NRHP, CRHR, and California Historical Landmarks and consists of various adobe buildings, a windmill, stable, swimming pool, barbeque, and a fish pond. This resource is considered significant under Criterion B for its association with the film actor and California State Parks Commissioner Leo Carrillo who built it circa 1937 (Cratty 1988).

Significant historical resources are non-renewable and therefore cannot be replaced. The disturbance or alteration of a historical resource causes an irreversible loss of significant information. Regionally, the loss of historical resources results in the loss of cultural identity and a connection with the past. Historical resources in close proximity to the proposed CIP projects could be directly adversely affected by construction activities that may cause excessive groundborne vibration, such as grading, clearing, blasting, and demolition; or activities that may cause dust or debris fallout that may damage the historic resource. Impacts to these historic resources from implementation of the 2018 Master Plan is considered significant.

Archaeological Resources

Several archaeological resources are located within the VWD service area. Six CIP projects (R-3, P-16 and P-56, LO-A1, LO-A2, and SP-31) in the 2018 Master Plan may impact the five known archaeological sites. Known cultural resources associated with these archaeological sites that may be affected by the construction of proposed CIP project sites are listed in Table 4.3-1. These resources are predominately prehistoric archaeological sites of varying sizes and occupancy duration, and exhibit prehistoric material culture through midden, hearths, rock art, and scatters of lithic and ground stone tools. Some of the identified sites in Table 4.3-1 (CA-SDI-4558, CA-SDI-9822, and CA-SDI-9846) are considered significant under CEQA and the County of San Diego RPO. Because these sites are considered significant under CEQA, these sites may also be considered historical resources under CEQA. Because CA-SDI-9281 and CA-SDI-4688 have not been evaluated, these resources should be assumed significant until further evaluation.

Table 4.3-1
Cultural Resources that May be Affected by CIP Project Construction

Cultural Resources Identification Number	Cultural Resource Description	Evaluation	CIP
CA-SDI-9281	Prehistoric - lithic scatter with cores, scrapers, blades, and flakes	Not evaluated	R-3 (Coronado Hills Reservoir #2). Water storage tank
CA-SDI-4558	Prehistoric - habitation site consisting of metates, manos, debitage, and lithic tools.	Significant under CEQA and San Diego County Resource Protection Ordinance; tested in 1977 and 2004	P-16 & P-56 (Deer Springs PS to Deer Springs Reservoir water pipeline)
CA-SDI-9822	Prehistoric- habitation site consisting of midden, flakes, ceramic sherds, mano fragments, shell fragments, shell beads, bedrock milling features, rock art, and cremations	Significant under CEQA and San Diego County Resource Protection Ordinance; tested between 1980 and 1989	P-16 & P-56 (Deer Springs PS to Deer Springs Reservoir water pipeline)
CA-SDI-4688	Prehistoric - shell scatter	Not evaluated	LO-A1 & LO-A2 (Outfall Section A Improvement Project)
CA-SDI-9846	Prehistoric - lithic and shell scatter	Significant under CEQA, tested in 1992	LO-A1 & LO-A2 (Outfall Section A Improvement Project)
37-015945	Historic age – Three or four partially destroyed concrete and cobble dams of an unknown age. These water control features may be related to the Rancho de Los Quiotes complex.	Not evaluated	LO-A1 & LO-A2 (Outfall Section A Improvement Project)
37-030889	Historic age - Vista Irrigation District Bench Flumes and Siphons, built in 1926, cover was added in 1947-1955	Significant under CEQA	SP-31 (N. Twin Oaks Valley Sewer Replacement)

Due to the frequency of known and recorded archaeological sites throughout the VWD service area, including significant archaeological sites, the potential exists for proposed CIP projects to encounter unrecorded archaeological resources during facility construction. Any such unrecorded archaeological sites may require research or testing programs to determine their eligibility for inclusion in registers of significant resources.

The alteration of known or unknown significant or unique archaeological resources may result in a loss of valuable information that could be gained from the resources, or prevent potentially eligible sites from being listed on a register of cultural resources. Ground-disturbing activities, such as clearing, trenching, and grading, and the construction of access roads have the potential to damage or destroy archaeological resources that may be present on or below the ground surface, particularly in areas that have not previously been developed. In the event that buried significant or unique cultural resources are discovered during construction, such resources could be damaged or destroyed, potentially resulting in significant impacts to cultural resources. For these reasons, construction of the 2018 Master Plan CIP projects has the potential to have potentially significant impacts on archaeological resources.

One CIP project was examined in more detail because the design plans are in progress for the Diamond Siphon Replacement Project (CIP SP-10). A cultural resources survey was conducted on August 31, 2017 to determine impacts to cultural resources. This project proposes the replacement of 200 feet of two 10-inch-diameter existing, adjacent pipelines. The existing lines cross beneath San Marcos Creek, running northeast-southwest between the Diamond Environmental Services parking lot and the Inland Rail Trail and Sprinter light rail line. Specific construction methods are yet to be determined, as the project is in the design stage. There are two construction options:

1. Replacement in place of both pipelines beneath San Marcos Creek with double barrel 12-inch-diameter siphons. This project design may include a trenchless option.

2. Rerouting and replacement of the sewer line with 15-inch-diameter gravity pipeline. This option would involve cutting, plugging, and abandoning the portion of the existing pipeline that makes a 90-degree bend in front of Diamond Environmental Services on Mission Road. The proposed alignment would continue west on Mission Road for approximately 1,320 feet, make a 90-degree turn into 753 East Mission Road, continue south for approximately 450 feet, and connect to the existing sewer system that runs along San Marcos Creek.

No cultural resources were identified during the survey. Neither option would result in a significant impact to known cultural resources. However, because the project is located within the floodplain of San Marcos Creek and of the recorded prehistoric sites in the vicinity of the projects, the project does have the potential to encounter buried archaeological deposits during construction of Option 2. Mitigation measures Cul-1 and Cul-2 have been completed for this project.

c. Mitigation Measures

Implementation of the following measures would reduce impacts to potential historical and unique or significant archaeological resources to a less than significant level. CEQA analysis has been conducted separately for the Diamond Siphon Replacement Project (CIP SP-10); therefore, this project is not subject to the mitigation measures identified below.

Cul-1 **Site-specific Records Search.** Prior to construction activities within a CIP project site, a qualified cultural resource professional shall be retained by VWD to complete a CIP project site-specific records search at the South Coastal Information Center to determine if the CIP project site has been subject to a professional survey. If a current cultural resources report to address potential impacts on cultural resources is available, VWD shall implement the mitigation measures provided within the report.

Cul-2 **Phase I Cultural Resources Study**. In the event that a current and valid report is not available or if the entirety of the CIP project site has not been professionally surveyed (see Cul-1), a Phase I Cultural Resources Survey study shall be completed by a qualified cultural resource professional.

a. If the Phase I study detects built-environment resources (buildings or structures aged 45 years old or older), and construction or implementation of the CIP project will either disturb or destroy such buildings or affect their historic setting, then a cultural resource professional who minimally meets the Secretary of the Interior's Professional Qualifications Standards for Architectural History shall be contracted to determine if the resource site is significant and if the project may cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines. VWD shall be responsible for implementing methods for eliminating or substantially reducing impacts on historical resources identified in the technical report or memorandum. Such methods could include, but are not limited to, written and photographic recordation of the resource in accordance with the level of Historic American Building Survey documentation that is appropriate to the significance (federal, state, local) of the resource.

b. In the event that known or previously undetected archaeological resources are identified during the Phase I study then such resources must be recorded or updated onto Department of Parks and Recreation (DPR) 523 forms in accordance with all applicable regulations. In addition, any addressed resources must be evaluated for significance and eligibility for inclusion in federal, state and local registers of significant resources. This evaluation shall be undertaken by a cultural resource professional who minimally meets the SOI Professional Qualifications Standards for Archaeology. In the event that such resources are found to be historical resources pursuant to CEQA, potential adverse impacts must be analyzed as stated in PRC Sections 21084.1 and 21083.2(l), and appropriate measures must be generated to avoid or substantially reduce potential impacts on archaeological resources as necessary.

Cul-3 Procedure for Unintentional Disturbance of Cultural Resources. If historical resources are identified during a Phase I Cultural Resources Study and cannot be avoided, construction monitoring by a qualified archaeologist and a Native

American monitor, if requested during AB 52 consultation, would be required. If subsurface cultural resources are encountered during CIP project construction, or if evidence of an archaeological site or other suspected historic resources are encountered, all ground-disturbing activity shall cease within 100 feet of the resource. A qualified archaeologist shall be retained by VWD to assess the find, and to determine whether the resource requires further study. Potentially significant cultural resources could consist of, but are not limited to, stone, bone, fossils, wood or shell artifacts or features, including structural remains, historic dumpsites, hearths and middens. Midden features are characterized by darkened soil, and could conceal material remains, including worked stone, fired clay vessels, faunal bone, hearths, storage pits, or burials and special attention should always be paid to uncharacteristic soil color changes. Any previously undiscovered resources found during construction should be recorded on appropriate DPR 523 forms and evaluated by a qualified archaeologist retained by VWD for significance under all applicable regulatory criteria.

No further grading shall occur in the area of the discovery until VWD approves the measures to protect the resources. Any archaeological artifacts recovered as a result of mitigation shall be donated to a qualified scientific institution approved by VWD where they would be afforded long-term preservation to allow future scientific study.

4.3.3.2 Issue 2 – Human Remains

Cultural Resources Issue 2 Summary	
Would implementation of the 2018 Master Plan disturb any human remains, including those interred outside of formal cemeteries?	
Impact: Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect historic resources or archeological resources within the VWD service area.	**Mitigation:** Compliance with PRC §5097.98 and California State Health and Safety Code 7050.5 would ensure less than significant impacts to any human remains inadvertently discovered during CIP project construction. (Cul-4)
Significance Before Mitigation: Potentially significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it would disturb any human remains, including those interred outside of formal cemeteries. Section 15064.5(d) and (e) of the CEQA Guidelines assigns special importance to human remains and specifies certain procedures when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98.

b. Impact Analysis

Based upon the results of the records search, no formal cemeteries were identified within the footprint of the proposed CIP project sites. Therefore, it is not expected that construction activities at CIP projects would disturb formal cemeteries. However, one known and previously recorded archaeological site located within the footprint of a proposed CIP site included cremated human remains (CA-SDI-9822), which indicates that remnants of cremated human remains may still be present on the site or in the surrounding area. Sections 15064.5(d) and (e) of the CEQA Guidelines assign special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98. The disturbance of any human remains is considered a significant impact, regardless of archaeological significance or association. Any ground disturbing activities associated with the 2018 Master Plan, including grading, trenching, and excavation during construction, would have the potential to unintentionally disturb human remains, resulting in a significant impact. However, with implementation of mitigation measure Cul-4, potential impacts to human remains resulting from the 2018 Master Plan would be reduced to a less than significant level.

c. Mitigation Measures

Cul-4 **Procedure for Unintentional Disturbance of Human Remains.** Implementation of the procedures set forth in PRC Section 5097.98 and California State Health and Safety Code 7050.5 would reduce impacts to human remains to a less than significant level. The procedures outline steps to be followed upon unintentional disturbance of human remains. California State Health and Safety Code Section 7050.5 dictates that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined by the County Coroner to be Native American, the NAHC shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. A professional archaeologist with Native American burial experience shall conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD), if any, identified by the NAHC. As necessary and appropriate, a professional archaeologist shall be retained by VWD to provide technical assistance to the MLD, including but not limited to, the excavation and removal of the human remains. Compliance with California State Health and Safety Code Section 7050.5 and PRC Section 5097.98 would reduce any potential impacts to human remains from the 2018 Master Plan to a level below significance.

4.3.3.3 Issue 3 – Tribal Cultural Resources

Cultural Resources Issue 3 Summary	
Would implementation of the 2018 Master Plan disturb any tribal cultural resources?	
Impact: Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect tribal cultural resources within the VWD service area.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

According to Public Resources Code 21080.3.1, the VWD must consult with traditionally and culturally affiliated Native American Tribes to determine if a project will result in a substantial adverse change in the significance of a tribal cultural resource. The consultation will identify what is considered a significant impact. Impacts may include disturbance or lack of access to TCRs.

b. Impact Analysis

The NAHC was contacted for a search of their sacred lands files. A reply letter indicated that sites have been located in the Bonsall and Valley Center U.S. Geological Survey quadrangles. Additionally, in November 2017, VWD sent a notice regarding the Master Plan to interested Native American tribes, including the Pala Band of Mission Indians, the Rincon Band of Luiseno Indians, and the Torres Martinez Desert Cahuilla Indians. The Pala Band of Mission Indians indicated via response letter on November 22, 2017 that they declined AB 52 consultation. No response was received from the Torres Martinez Desert Cahuilla Indians. The Rincon Band of Luiseno Indians requested consultation via letter on November 29, 2017. VWD attempted to contact the Rincon Band of Luiseno Indians via telephone on April 17, 2018, and via letter on May 2, 2018. VWD engineer Robert Scholl spoke with Destiny Colocho on June 8, 2018, who provided a confidential cultural sites exhibit indicating that there are seven cultural sites within and immediately adjacent to the VWD service area boundary. Of these, two cultural sites may be in the vicinity of future work. Ground-disturbing activities, such as clearing, trenching, and grading, and the construction of access roads have the potential to damage or destroy tribal cultural resources that may be present on or below the ground surface at these cultural sites, particularly in areas that have not previously been developed. In the event that significant tribal cultural resources are discovered during construction, such resources could be damaged or destroyed, potentially resulting in significant impacts to tribal cultural resources. For these reasons, construction of the 2018 Master Plan CIP projects has the potential to result in potentially significant impacts to tribal cultural resources. However, with implementation of mitigation measure Cul-5, potential impacts to tribal cultural

resources resulting from the 2018 Master Plan would be reduced to a less than significant level.

c. Mitigation Measures

Cul-5 **Procedure for Unintentional Disturbance of Tribal Cultural Resources.** If tribal cultural resources are identified within future CIP project areas and cannot be avoided, construction monitoring by a Luiseño Native American monitor would be required. If subsurface tribal cultural resources are encountered during CIP project construction, all ground-disturbing activity shall cease within 100 feet of the resource. Through AB-52 consultation, appropriate measures to protect the resource will be determined between interested Native American tribes/monitor and VWD. No further grading shall occur in the area of the discovery until VWD approves the measures to protect the resources.

4.3.4 Cumulative Impacts

Cultural Resources Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative cultural resources impact considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Regional loss of historic and archaeological resources.	Yes	Not cumulatively considerable with implementation of Cul-1, Cul-2, and Cul-3.
Regional loss of human remains.	Yes	Not cumulatively considerable with implementation of Cul-4.
Regional loss of tribal cultural resources	No	No cumulative impact.

4.3.4.1 Historic and Archaeological Resources

The geographic context for the analysis of cumulative impacts to archaeological and historic resources includes the VWD service area, which includes 45 square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites. Ground disturbance (e.g., grading, trenching, excavation) associated with implementation of cumulative projects could have significant impacts to archaeological and historical resources. Therefore, the baseline cumulative impact to archaeological and historical resources due to future development within the planning area (i.e., regional cumulative impact area) is significant. As discussed in Section 4.3.3.1 above, implementation of the 2018 Master Plan has the potential to result in significant impacts to both historic and archeological resources. However, implementation of mitigation measures Cul-1, Cul-2, and Cul-3 would reduce these potential impacts to a less than significant level. Therefore, construction of the 2018 Master Plan would not result in a cumulatively

considerable contribution to the loss of archaeological or historical resources within the regional cumulative impact area.

4.3.4.2 Human Remains

The geographic context for the analysis of cumulative impacts to human remains includes the VWD service area, which includes 45-square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites. Ground disturbance (e.g., grading, trenching, excavation) associated with implementation of a cumulative project could have significant impacts to human remains through the discovery of unidentified human remains during construction activities. However, similar to the 2018 Master Plan, all cumulative projects would be required to comply with PRC 5097.98 and California State Health and Safety Code 7050.5. As discussed in Section 4.3.3.2 above, implementation of the 2018 Master Plan would comply with PRC 5097.98 and California State Health and Safety Code 7050.5. Therefore, with implementation of mitigation measure Cul-4, the proposed Master Plan, in combination with other cumulative projects, would not result in a cumulative impact to human remains because compliance with these regulations would reduce the potential to disturb human remains during construction activities to a level below significance.

4.3.4.3 Tribal Cultural Resources

The geographic context for the analysis of cumulative impacts to TCRs includes the VWD service area, which includes 45-square miles of land with a similar archaeological, ethnohistoric, and historic setting as the individual CIP project sites.

Seven TCRs or place names are known to exist within the project area. . As discussed in Section 4.3.3.3 above, implementation of the 2018 Master Plan has the potential to result in significant impacts to tribal cultural resources. However, implementation of mitigation measure Cul-5 would reduce these potential impacts to a less than significant level. Therefore, construction of the 2018 Master Plan would not result in a cumulatively considerable contribution to the loss of tribal cultural resources within the regional cumulative impact area.

4.3.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

All CEQA checklist items related to cultural resources have been discussed in this section of this PEIR, including the new checklist items for TCRs included in the 2017 CEQA Guidelines; no topics were left unaddressed.

4.3.6 References

Cratty, Patty
1988 Site form for P-37-015945. On file at the South Coastal Information Center, San Diego.

Heizer, R. F.
1978 Handbook of North American Indians, Vol. 8: California, William Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Parker, Patricia L., and Thomas F. King
1998 Guidelines for Evaluating and Documenting Traditional Cultural Properties. *National Register Bulletin 38*, National Park Service.

Van Wormer, Stephen
2009 Site form for P-37-030889. On file at the South Coastal Information Center, San Diego.

4.4 Energy

This section of the Program Environmental Impact Report (PEIR) pertains to the Capital Improvement Program (CIP) projects within the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan), in accordance with Public Resources Code Section 21100(b)(3), California Environmental Quality Act (CEQA) Guidelines Section 15126.4, and CEQA Appendix F: Energy Conservation, to assess whether the 2018 Master Plan would employ a wise and efficient use of energy (including electricity and diesel fuel consumption).

The 2011 PEIR for the 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified no potentially significant impacts associated with energy consumption, and no mitigation was required. The 2018 Master Plan update has been evaluated to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

Energy usage from the CIP project facilities proposed in the 2018 Master Plan is also a consideration in assessing potential impacts to global climate change. For further discussion on this issue, please refer to Section 4.6, Greenhouse Gas Emissions, of this PEIR.

4.4.1 Environmental Setting

4.4.1.1 Existing Conditions

Electrical usage data at VWD facilities was obtained from meter readings covering all electricity purchased from San Diego Gas & Electric (SDG&E) and consumed by VWD facilities for the year 2016. In 2016, total annual electricity consumption for existing VWD pump and lift stations was 3.3 million kilowatt-hours (kWh), approximately 279,000 kWh per month. Among its facilities, the highest rate of electric consumption occurs in the operation of VWD's water pump and wastewater lift stations. The 2016 average monthly electricity consumption for water pump and wastewater lift stations is presented in Table 4.4-1. The pump and lift stations identified in Table 4.4-1 vary both in size (capacity) and frequency of use. Some pump and lift stations are in operation more than others, depending on their locations, the distance to the customer base, and the overall demand of the local customer base. Depending on frequency of use, a larger-sized pump station such as

North Twin Oaks 1330 may have a lower average monthly electricity usage than a smaller pump station such as Deer Springs 1235.

Table 4.4-1
Average Monthly Electricity Consumption of Existing VWD Pump and Lift Stations

Existing Facility	Operational Firm Capacity (gpm)	Average Monthly Electricity Consumption (kWh)
Pump Stations		
Meadowlark Hydro	470	1,900
Schoolhouse 1115	2,100	31,600
Deer Springs 1235	1,500	7,100
North Twin Oaks 1330	2,000	43,400
Palos Vista 1500	3,375	27,200
South Lake 1530	2,200	23,200
Double Peak	1,050	23,600
Wulff 1549	1,000	5,100
Coggan 1608	4,000	13,500
San Elijo Hills	3,180	42,900
Lift Stations		
Lift Station No. 1	2,200	35,700
Lake San Marcos	1,792	18,100
Questhaven	600	3,100
Montiel	100	2,600
Total	**25,567**	**279,000**

SOURCE: Vallecitos Water District 2018 (based on 2016 data).
gpm = gallons per minute, kWh = kilowatt hours

4.4.2 Regulatory Framework

4.4.2.1 State

a. California Energy Commission Process Energy Recommendations

The California Energy Commission (CEC) does not have any regulations that pertain specifically to water supply infrastructure, but it has published energy efficiency recommendations, technical information, descriptions of successful energy/efficiency programs, and financing information for process energy, which includes energy required for industry, agriculture, potable water, and wastewater treatment (CEC 2015, 2016a, 2016b, and 2016c).

b. California Code of Regulation Title 24, Part 6

Title 24 of the California Code of Regulation (CCR), Energy Efficient Standards for Residential and Nonresidential Buildings, was adopted in 1978 by the CEC in response to a legislative mandate to reduce California's energy consumption. Title 24 requires developers to incorporate energy conserving features into new construction. New buildings in California are required to conform to energy conservation standards specified in Title 24 of the CCR. The standards apply only to residential and non-residential buildings for human occupancy. There are no standards for infrastructure facilities such as the proposed CIP

projects in Title 24. However, Title 24 does include standards for outdoor lighting, whether attached to buildings, poles, structures, or self-supporting. Any outdoor lighting associated with the proposed CIP projects would be subject to Title 24.

c. California Energy Plan

The CEC is responsible for preparing the state's Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Energy Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the fewest environmental and energy costs. To further this policy, the plan identifies a number of strategies, including providing assistance to public agencies and fleet operators, encouraging urban designs that reduce vehicle miles traveled, and accommodating pedestrian and bicycle access.

d. Senate Bill 350

Senate Bill 350 (SB 350) includes a goal of doubling energy efficiency savings among electricity and natural gas end uses by 2030. The bill also requires the CEC and California Public Utilities Commission (CPUC) to establish targets towards the 2030 goal and report progress every two years starting with the 2019 Integrated Energy Progress Report. Annual targets for statewide energy efficiency savings were established November 1, 2017. To meet these goals, detailed, localized, and sector-specific analyses of energy efficiency and demand will be required (CEC 2015).

4.4.3 Master Plan Impacts and Mitigation

4.4.3.1 Issue 1 – Energy Consumption

Energy Issue 1 Summary	
Would implementation of the 2018 Master Plan result in the inefficient, wasteful, and unnecessary use of energy?	
Impact: The construction and operation of CIP projects under the 2018 Master Plan would not result in the inefficient, wasteful or unnecessary use of energy because all projects would be consistent with the energy efficiency recommendations of the CEC.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Public Resources Code Section 21100(b)(3), CEQA Guidelines Section 15126.4, and CEQA Appendix F: Energy Conservation, implementation of the 2018 Master Plan would have a significant impact associated with energy conservation if it would result in the wasteful, inefficient, and unnecessary consumption of energy. A project would result in the wasteful, inefficient, and unnecessary consumption of energy during construction if it would require fuel consumption beyond what is typically required for a similar construction project, and the conditions that require the additional fuel consumption are feasibly avoidable. A project would result in wasteful, inefficient, and unnecessary consumption of energy during operation if it is not consistent with the energy efficiency recommendations from the CEC. These recommendations are:

1. Install energy-efficient motors that meet or exceed the energy efficiency levels listed in the National Electric Manufacturers Association's (NEMA) MGI-1993 publication.

2. Install variable-frequency drives that adjust the speed of an electric motor by modulating the power being delivered. The variable-frequency drive should provide continuous control, matching motor speed to the specific demands of the work being performed.

3. Use of advanced fluorescent interior lighting, high-intensity discharge outdoor lighting, and lighting controls.

4. Implement regulation cleaning, replacement, and maintenance of motors, motor components and lighting.

b. Impact Analysis

CIP Project Construction

Construction of the 2018 Master Plan proposed CIP projects would result in the consumption of fuel associated with the operation of construction equipment. Due to a number of unknown factors including the specific site conditions, the horsepower of the engine, the load factor of each machine, and the number of days each piece of equipment would be used, it is not possible to determine the precise total fuel consumption that would occur during construction at each CIP project site at this time. However, there are no unusual project site characteristics within VWD that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of the region and the state. Construction fuel consumption associated with the proposed CIP projects would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region. Assumptions for construction of the proposed CIP projects are based on typical requirements for previously constructed facilities within the VWD. Any unforeseen circumstances that would result in wasteful, inefficient or unnecessary consumption of energy are speculative and are not a reasonably foreseeable impact of the proposed Master Plan. Therefore, construction of the proposed CIP projects

would not result in the wasteful, inefficient, and unnecessary consumption of energy. This impact would be less than significant.

CIP Project Operation

Transportation Energy Demand

The net increase in operational vehicular traffic generated by the 2018 Master Plan is discussed in Chapter 5.0 (Other CEQA Considerations) of this PEIR. As addressed in Chapter 5.0, operation of CIP projects proposed under the 2018 Master Plan would not generate a substantial volume of new vehicle trips. The maintenance for most of the CIP projects would require approximately two visits per day, worst case. The vehicle trips needed for the CIP projects would have a purpose, such as scheduled or emergency maintenance. No wasteful, inefficient, or unnecessary trips would be generated. Therefore, this impact would be less than significant.

Electricity Demand

Pipeline projects, once constructed, would not require the use of electricity, emergency generators, or any other type of fuel-consuming operating equipment. The storage/reservoir projects would not require any type of fuel-consuming operating equipment. They would require a minimal amount of power for computerized monitoring. The storage/reservoir projects, as well as the pump and lift station projects, would require some nighttime security lighting and would require the periodic use of landscape maintenance equipment. Existing facilities already utilize monitoring programs, security lighting, and landscape screening; therefore, only the CIP projects that propose new facilities would result in a net increase in electricity demand for lighting and fuel consumption for landscaping. As discussed in Section 3.3.8, Project Design Features, all security lighting installed at the above-ground CIP facilities (i.e., storage reservoirs/tanks and pump/lift stations) under the 2018 Master Plan would use advanced fluorescent interior lighting, high-intensity discharge outdoor lighting, and lighting controls such as timers or motion detectors. Lighting would only be used when personnel are on-site at night and lighting is required. All lighting would be low illumination, shielded, and directed downwards to avoid potential impacts to neighboring properties and to avoid potential impacts to nocturnal wildlife from increased predation that occurs from "spill-over" of nighttime light levels into the adjacent habitats. As described in Section 4.1, Air Quality, landscape maintenance occurs only periodically and only enough landscaping to provide screening would be planted at each new facility. Operation of the monitoring programs requires minimal electricity and is essential for the safe operation of the storage/reservoir facilities. Therefore, the additional landscaping and monitoring programs as a result of the ten storage projects, seven pump station projects, and one lift station project would result in only a negligible increase in energy consumption and would not be wasteful, unnecessary, or inefficient. None of the CIP projects would require space heating.

The 2018 Master Plan includes seven potable water pump station CIP projects and one wastewater lift station CIP project. Of the seven pump station projects, two would be new facilities (PS-2 and PS-4) and five stations would replace old pumps with new pumps (PS-3,

PS-5, PS-6, PS-7, and PS-8). The construction of pump station projects would occur during all phases. The one lift station project (LS-1) would occur during Phase 1 and would replace an existing lift station.

Using the average monthly electricity consumption of existing VWD pump stations, shown in Table 4.4-1, the average monthly electricity consumption of the proposed CIP pump and lift stations was estimated by graphing the electricity use and capacity of current pump and lift stations, separately, and then fitting the data points with a trend line comparing electricity usage and capacity to estimate energy consumption of new pump and lift stations based on past usage rates. The estimated energy consumption is conservative because it does not take into account that the new CIP projects would install high-efficiency pumps and motors, energy-efficient security lighting, soft start and stop motors, variable-frequency drives and periodic pump efficiency testing. These measures would be implemented by VWD to promote energy efficiency. The estimated average monthly electricity consumption of the proposed CIP pump stations is shown in Table 4.4-2. Assuming pumping will occur during off-peak hours for 7 hours per day (210 hours per month) with a pump efficiency of 75 percent, implementation of the 2018 Master Plan CIP projects would result in a total estimated average monthly consumption of 619,000 kWh of electricity. The existing pump stations and lift station that would be replaced currently consume 121,400 kWh of electricity every month; therefore, the proposed upgraded and new CIP pump stations and lift station would generate a net increase of 497,600 kWh. As described previously, other factors may influence the energy usage of each pump station, but the monthly estimate provides a general guide for the likely average monthly electricity consumption of the proposed CIP pump stations. The proposed pump and lift stations would result in an approximately 409 percent increase in electricity consumption compared to existing conditions. As described in Section 3.3.8, Project Design Features, consistent with CEC recommendations, VWD would install energy-efficient mechanical motors consistent with NEMA, soft start and stop motors, and variable-frequency drives. VWD conducts routine maintenance on all infrastructure facilities and would incorporate the proposed CIP projects into the maintenance schedule, including periodic pump-efficiency testing. Therefore, the CIP projects would comply with CEC recommendation and the increase in energy use associated with the 2018 Master Plan would not be considered wasteful, inefficient, or unnecessary.

Table 4.4-2
Estimated Average Monthly Electricity Consumption for CIP Pump and Lift Stations

Proposed Pump/ Lift Stations	Existing Operational Firm Capacity (gpm)	Existing Average Monthly Electricity Consumption (kWh)	Proposed Operational Firm Capacity (gpm)	Estimated Average Monthly Electricity Consumption (kWh)
PS-2 1625 High Point Hydro	N/A	N/A	1,200	21,800
PS-3 1235 Deer Springs	1,500	7,100	3,400	37,200
PS-4 1330 Mountain Belle	N/A	N/A	3,000	34,000
PS-5 North Twin Oaks	2,000	43,400	6,800	108,500
PS-6 1530 South Lake	2,200	23,200	6,500	209,400
PS-7 1608 Coggan	4,000	13,500	5,400	165,400
PS-8 1115 Schoolhouse	2,100	31,600	3,100	39,000
LS-1 Montiel Lift Station Replacement	100	2,600	400	3,700
Total	**11,900**	**121,400**	**29,800**	**619,000**

SOURCE: Vallecitos Water District, 2018.
gpm = gallons per minute, kWh = kilowatt hours

c. Mitigation Measures

Construction and operation of the proposed CIP projects would not result in the consumption of energy that would be considered wasteful, inefficient, or unnecessary. Therefore, no mitigation is required.

4.4.4 Cumulative Impacts

Energy Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to the inefficient, wasteful, and unnecessary use of energy considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Energy Consumption	No	No cumulative impact.

The VWD service area is the geographic scope for cumulative energy use. This area was chosen as the geographic scope of analysis because it covers all proposed VWD CIP projects contained in the 2018 Master Plan. The VWD service area encompasses a 45-square-mile area serving a population of approximately 97,000 people and is served by SDG&E. As required by the CPUC, California utilities, including SDG&E, are required to file long-term energy resources plans with the CPUC. SDG&E's 2006 Long Term Procurement Plan includes plans and strategies to meet the future energy demands of its customers (SDG&E 2009). However, if the cumulative projects did not implement energy-efficient features to prevent the wasteful and inefficient use of energy, demand could exceed the SANDAG projections and a cumulative impact would occur. However, the present and probable

projects would comply with Title 24 regulations that would ensure that energy use would not be wasteful or inefficient. All new structures would also comply with the 2010 California Green Building Standards Code, which went into effect January 1, 2011, and would further ensure that energy use is efficient. The proposed CIP projects are exempt from Title 24, with the exception of outdoor lighting. However, VWD would implement the project design features listed in Section 3.3.8 to ensure that the CIP projects would be energy efficient. Therefore, the 2018 Master Plan, in combination with other cumulative projects, would not result in a cumulatively significant increase in energy usage.

4.4.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

All issues associated with energy usage within CEQA Guidelines Appendix F: Energy Conservation have been discussed in this section of the PEIR.

4.4.6 References

California Energy Commission (CEC)

2015 Integrated Energy Policy Report. 15-IEPR-01. Accessed August 3, 2016. http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN212017_20160629T154354_2015_Integrated_Energy_Policy_Report_Small_File_Size.pdf.

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2016b Energy Smart Lighting. Accessed on August 3, 2016. Available at http://www.energy.ca.gov/process/pubs/lighting.pdf.

2016c Variable-Frequency Drive. Accessed on August 3, 2016. Available at http://www.energy.ca.gov/process/pubs/vfds.pdf.

San Diego Gas and Electric Company

2009 San Diego Gas and Electric Company's 2006 Long Term Procurement Plan. February 20, 2009. Accessed on August 3, 2016. Available at https://www.sdge.com/sites/default/files/regulatory/2006LTPP-Redacted.pdf.

Vallecitos Water District

2018 Email correspondence with Robert Scholl, Senior Engineer, August 14.

4.5 Geology, Soils, and Paleontology

This section of the Program Environmental Impact Report (PEIR) describes the potential physical environmental effects related to the issues of geology, soils, and paleontology resulting from development of proposed Capital Improvement Program (CIP) projects under the Vallecitos Water District (VWD) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan). The paleontological analysis is based on the Paleontological Resources Evaluation prepared by George Burwasser, California Registered Geologist.

The 2011 PEIR for the VWD 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified three potentially significant impacts associated with geology, soils, and paleontology (potential for CIP facilities to be located on unstable soil, potential for construction activities to result in erosion or loss of topsoil, and potential for construction activities to disturb or destroy paleontological resources). The 2011 PEIR identified mitigation measures Geo-1, Geo-2, and Geo-3 to reduce these impacts to a less than significant level. The 2018 Master Plan update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.5.1 Environmental Setting

4.5.1.1 Geology

The VWD service area is situated in the coastal foothill section of the Peninsular Ranges Geomorphic Province which extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California, and varies in width from approximately 30 to 100 miles. In general, the Peninsular Ranges Province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest (Ninyo & Moore 2008).

4.5.1.2 Faults

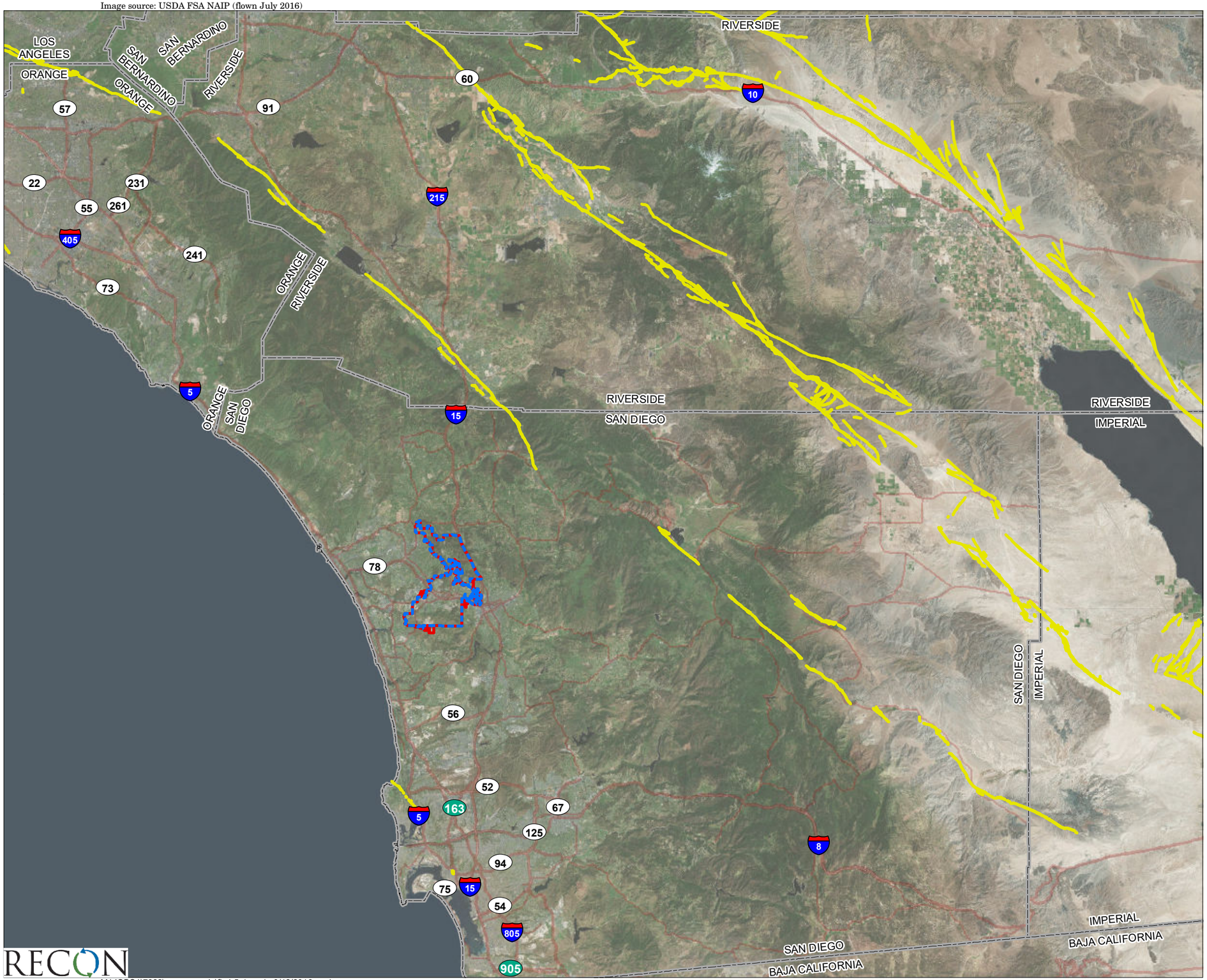
Active or potentially active faults are defined as faults that have exhibited evidence of ground displacement in the last 11,000 years and 2,000,000 years, respectively. Faults classified as inactive have not exhibited ground displacement in the last 2,000,000 years.

Table 4.5-1 identifies active faults located within approximately 60 miles of the VWD service area, measured from the location of the Palomar Community College District, San Marcos Campus. The approximate locations of the faults are shown on Figure 4.5-1. Movement on any of these faults may generate seismically induced ground shaking and surface rupture. Ground shaking can cover a wide area relative to the distance to the fault movement. Fault movement may result in a variety of seismic hazards, which are discussed below under Section 4.5.1.3.

a. Magnitude Scales

The Richter scale was developed in 1935 by Charles Richter for use in a study area in California to measure the strength of an earthquake. The more commonly used scale today is the moment magnitude (M_W) scale, developed at the U.S. Geological Survey (USGS) in 1978, which is a measure of the potential energy released on a fault expressed in whole numbers and decimals (e.g., 4.2). The M_W of an earthquake is defined relative to the seismic moment for an earthquake event. The magnitude of each earthquake varies with the recorded seismic moment. Each whole number increase in magnitude of an earthquake event represents an increase in amplitude of 10 times and the energy released by approximately 31 times. The Mw for active faults within 60 miles of the VWD service area is shown in Table 4.5-1.

Image source: USDA FSA NAIP (flown July 2016)



VWD Service Area

Vallecitos Water District

Alquist-Priolo Faults

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FIGURE 4.5-1

Active Faults

Table 4.5-1
Active Faults within 60 Miles of the VWD Service Area

Fault	Moment Magnitude (M_W)[1]	Slip Rate (mm/yr)[2]	Fault Type[1]	Fault Movement[1]	Approximate Distance (miles)
Rose Canyon	7.2	1.5	B	SS-RL	12
Newport-Inglewood (Offshore)	7.1	1.5	B	SS-RL	14
Elsinore (Julian Segment)	7.1	5.0	A	SS-RL	18
Elsinore (Temecula Segment)	6.8	5.0	A	SS-RL	19
Coronado Bank	7.6	3.0	B	SS-RL	27
Earthquake Valley	6.5	2.0	B	SS-RL	35
Elsinore (Glen Ivy Segment)	6.8	5.0	A	SS-RL	35
San Jacinto Anza Segment)	7.2	12.0	A	SS-RL	41
San Joaquin Hills	6.6	0.5	B	DS-R (23 SW)	42
San Jacinto (San Jacinto Valley Segment)	6.9	12.0	A	SS-RL	43
San Jacinto (Coyote Creek Segment)	6.8	4.0	A	SS-RL	44
Palos Verdes	7.3	3.0	B	SS-RL	45
Elsinore (Coyote Mountain Segment)	6.8	4.0	A	SS-RL	49
Chino Central Avenue (Elsinore Segment)	6.7	1.0	B	RL-R-O (65 SW)	52
Newport-Inglewood (L.A. Basin)	7.1	1.0	B	SS-RL	53
Whittier	6.8	2.5	A	RL-R-O (75NE)	55
San Jacinto (Borrego Segment)	6.6	4.0	A	SS-RL	58
San Jacinto (San Bernardino Segment)	6.7	12.0	A	SS-RL	60

SOURCE: Ninyo & Moore 2008.
NOTE: Measurements in this table were taken from the Palomar Community College District, San Marcos Campus, located along the western central boundary of the VWD service area.
[1]See text for definitions and explanations.
[2]Millimeters per year (mm/yr).

b. Fault Types

The California Department of Conservation, Division of Mines and Geology classifies active surface faults into one of the following three categories:

- **Type A Faults.** Faults that exhibit a Mw of 7.0 or greater, and have a slip rate of at least 5 millimeters per year.
- **Type B Faults.** Faults that exhibit a Mw of 6.5 to 7.0, and have slip rates that vary depending on magnitude.
- **Type C Faults.** All other faults not classified as Type A or B.

The above-listed classification of faults into Types A, B, and C is based on the potential energy released along a fault during displacement of the earth's crust in the form of earthquakes and in some cases, seismic creep. The classification type for active faults within 60 miles of the VWD service area is shown in Table 4.5-1. The potential energy released along a fault is determined by four factors: the slip rate, the area (fault length multiplied by down-dip width), maximum magnitude (MMAX), and the rigidity of displaced rocks. These factors in combination are used to calculate the Mw (Ninyo & Moore 2008).

c. Fault Movement

Table 4.5-1 identifies three types of differential movement of faults within 60 miles of the VWD service area:

- **Strike-Slip Faults (SS)**. During strike-slip faulting, the sides of the fault move laterally relative to each other. These faults are predominantly described as right-lateral (RL) or left-lateral (LL).

- **Dip-Slip Faults (DS).** During dip-slip faulting, one side of the fault moves up or down relative to the other side. These faults are predominantly described as normal (N) or reverse (R).

- **Oblique-Slip Faults (O).** Oblique-slip faults have characteristics of both a strike-slip fault and dip-slip fault.

4.5.1.3 Seismic Hazards

Earthquake-related geologic hazards pose a significant threat to areas within San Diego County and can impact extensive regions of land. Earthquakes can produce fault rupture and strong ground shaking, and can trigger landslides, rockfalls, soil liquefaction, tsunamis, and seiches. In turn, these geologic hazards can lead to other hazards such as fires, dam failures, and toxic chemical releases.

Primary effects of earthquakes include violent ground motion, and sometimes permanent displacement of land associated with surface rupture. Earthquakes can snap and uproot trees, or knock people to the ground. They can also shear or collapse large buildings, bridges, dams, tunnels, pipelines and other rigid structures, as well as damage transportation systems, such as highways, railroads, and airports. Secondary effects of earthquakes include near-term phenomena such as liquefaction, landslides, fires, tsunamis, seiches, and floods. Long-term effects associated with earthquakes include phenomena such as regional subsidence or emergence of landmasses and regional changes in groundwater levels (County of San Diego 2011).

a. Fault Rupture

During earthquakes, the ground can rupture at or below the surface. Ground rupture occurs when two lithospheric plates heave past each other, sending waves of motion across the earth. Earthquakes can cause large vertical and/or horizontal displacement of the

ground along the fault. Ground rupture can completely demolish structures by rupturing foundations or by tilting foundation slabs and walls, as well as damage buried and above ground utilities. Drinking water can be adversely affected, and the loss of water lines or water pressure can affect emergency services, including firefighting ability. Research of historical earthquakes has shown that, although only a few structures have been ripped apart by fault rupture, this hazard can produce severe damage to structures built across active fault lines.

b. Ground Shaking

Ground shaking is the earthquake effect that produces the vast majority of damage. Several factors control how ground motion interacts with structures, making the hazard of ground shaking difficult to predict. Earthquakes, or earthquake induced landslides, can cause damage near and far from fault lines. The potential damage to public and private buildings and infrastructure can threaten public safety and result in significant economic loss. Ground shaking is the most common effect of earthquakes that adversely affects people, animals, and constructed improvements. The California Building Code (CBC) defines different Seismic Design Categories based on building occupancy type and the severity of the probable earthquake ground motion at the site. There are six Seismic Design Categories, designated as Categories A through F, with Category A having the least seismic potential and Category F having the highest seismic potential. All of San Diego County is located within Seismic Design Categories E and F (County of San Diego 2011).

c. Liquefaction

Liquefaction occurs primarily in saturated, loose, fine- to medium-grained soils in areas where the groundwater table is generally 50 feet or less below the surface. When these sediments are shaken during an earthquake, a sudden increase in pore water pressure causes the soils to lose strength and behave as a liquid. In general, three types of lateral ground displacement are generated from liquefaction: (1) flow failure, which generally occurs on steeper slopes; (2) lateral spread, which generally occurs on gentle slopes; and (3) ground oscillation, which occurs on relatively flat ground. In addition, surface improvements on liquefiable areas may be prone to settlement and related damage in the event of a large earthquake on a regionally active fault. The primary factors that control the type of failure that is induced by liquefaction (if any) include slope, and the density, continuity, and depth of the liquefiable layer.

d. Landslides

A landslide is the down slope movement of soil and/or rock. Landslides can range in speed from very rapid to an imperceptible slow creep. Landslides can be caused by ground shaking from an earthquake or water from rainfall, septic systems, landscaping, or other origins that infiltrate slopes with unstable material. Boulder-strewn hillsides can pose a boulder-rolling hazard from ground shaking, blasting or a gradual loosening of their contact with the surface. The likelihood of a landslide depends on an area's geologic formations, topography, ground shaking potential, and influences of man. Improper or excessive

grading can increase the probability of a landslide. Land alterations such as excavation, filling, removing of vegetative cover, and introducing the concentration of water from drainage, irrigation or septic systems may contribute to the instability of a slope and increase the likelihood of a landslide. Undercutting support at the base of a slope, or adding too much weight to the slope, can also produce a landslide.

e. Subsidence

Subsidence refers to elevation changes of the land, which can occur either gradually or suddenly. Subsidence can be caused by groundwater depletion, seismic activity, and other factors, and can cause a variety of problems including broken utility lines, blocked drainage, or distorted property boundaries and survey lines.

f. Expansive Soils

Certain types of clay soils expand when they are saturated and shrink when dried. These are called expansive soils, and can pose a threat to the integrity of structures built on them without proper engineering. Expansive soils are derived primarily from weathering of feldspar minerals and volcanic ash. The expansion and contraction of the soil varies with the soil moisture content (wet or dry), and can be aggravated by the way a property is maintained or irrigated. Human activities can increase the moisture content of the soils, and the threat of expansive soil damage. For example, a subdivision of homes that continually irrigates the landscaping or removes significant amounts of native vegetation could create this condition (County of San Diego 2011).

g. Seiches and Tsunamis

A seiche is a standing wave in a completely or partially enclosed body of water. A seiche can occur from seismic ground shaking or by the sudden movement of a landslide into a reservoir. A seiche could result in localized flooding or damage to low lying areas adjacent to large bodies of water. Areas located along the shoreline of lakes or reservoirs are susceptible to inundation by a seiche. The size of a seiche and affected inundation area is dependent on different factors including size and depth of the water body, elevation, source, and if man made, the structural condition of the body of water in which the seiche occurs. A tsunami is a series of large waves in the open ocean that are caused by a sudden disturbance that displaces large volumes of water. The impacts on coastlines can be similar to those of a seiche, but can be much more devastating, causing loss of life and extensive property damage. Triggers for a tsunami include earthquakes, submarine landslides, volcanic eruptions, or meteor impacts (County of San Diego 2011).

4.5.1.4 Paleontology

Paleontological resources are the remains or traces of prehistoric animals and plants. Fossils are important paleontological resources because of their use in documenting the presence and evolutionary history of particular groups of now-extinct organisms, reconstructing the environments in which those organisms lived, and determining the

relative ages and geologic processes of the strata (sediment or rock layers) in which they occur. With few exceptions, fossils that are useful for these determinations are preserved in sedimentary rocks. There are three major categories of fossils: vertebrate animals, invertebrate animals, and plants. Each category represents a somewhat different set of conditions for preservation, although they often overlap. There are five sensitivity categories to classify the probability of finding paleontological resources within sedimentary rocks: High, Moderate, Low, Marginal, and No Potential. These categories are described below.

a. High Sensitivity

High sensitivity is assigned to geologic formations known to contain paleontological localities with rare, well-preserved, and/or critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleobiology and evolutionary history (phylogeny) of animal and plant groups. Highly sensitive formations are known to produce vertebrate fossil remains or are considered to have the potential to produce such remains.

b. Moderate Sensitivity

Moderate sensitivity is assigned to geologic formations known to contain paleontological localities with moderately preserved, common elsewhere, or stratigraphically long-ranging fossil material. The moderate-sensitivity category also is applied to geologic formations that are judged to have a strong but unproven potential for producing important fossil remains (e.g., Pre-Holocene sedimentary rock units representing low to moderate energy, of marine to non-marine depositional settings).

c. Low Sensitivity

Low sensitivity is assigned to geologic formations that, based on their relative youthful age and/or high energy depositional history, are judged unlikely to produce important fossil remains. Typically, low sensitivity formations may produce invertebrate fossil remains in low abundance.

d. Marginal Sensitivity

Marginal sensitivity is assigned to geologic formations that are composed of either volcanoclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcanoclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources in them, those resources may have survived the metamorphism and still be identifiable in the metasedimentary rock, but because the probability of this occurring is so limited, these formations are considered only marginally sensitive.

e. No Potential

No Potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential; in other words, they are not sensitive.

4.5.2 Regulatory Framework

4.5.2.1 Federal

a. USGS Landslide Hazard Program

In fulfillment of the requirements of Public Law 106-113, the USGS created the Landslide Hazards Program (LHP) in the mid-1970s. The primary objective of the LHP is to reduce long-term losses from landslide hazards by improving our understanding of the causes of ground failure and suggesting mitigation strategies. The federal government takes the lead role in funding and conducting this research, whereas the reduction of losses due to geologic hazards is primarily a state and local responsibility. In San Diego County, the Unified Disaster Council (UDC) is the governing body of the Unified San Diego County Emergency Services Organization. The primary purpose of the UDC and the Emergency Services Organization is to provide for the coordination of plans and programs designed for the protection of life and property in San Diego County.

b. American Antiquities Act

The American Antiquities Act prohibits appropriation, excavation, injury, or destruction of "any historic or prehistoric ruin or monument, or any object of antiquity" located on lands owned, controlled, or funded by the federal government. The act establishes penalties for such actions and sets forth a permit requirement for collection of antiquities on federally owned lands. Objects of antiquity are considered by a number of federal agencies to include fossils. The act has been amended specifically to allow funding for paleontological mitigation. Natural or paleontological resources on privately owned land are currently not subject to federal law.

c. Paleontological Resources Conservation Act

The Paleontological Resources Conservation Act protects paleontological resources on federally owned lands and limits collecting vertebrate fossils and other rare and scientifically significant fossils on those lands to qualified researchers with a permit from the appropriate state or federal agency.

d. Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act aims to manage and protect paleontological resources on federally owned lands and promotes the use of scientific principles and

expertise and the development of plans for inventorying, monitoring, and deriving the scientific and educational use of such resources.

e. Omnibus Public Land Management Act – Paleontological Resources Preservation [Public Law 111-011. P.L. 111-011, Title VI, Subtitle D]

The Omnibus Public Land Management Act – Paleontological Resources Preservation (OPLMA-PRP) requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise. The OPLMA-PRP includes specific provisions addressing management of these resources by the Bureau of Land Management, the National Park Service, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the U.S. Forest Service of the Department of Agriculture. The OPLMA-PRP affirms the authority for many of the policies the federal land managing agencies already have in place for the management of paleontological resources such as issuing permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data. The statute establishes new criminal and civil penalties for fossil theft and vandalism on federal lands. The OPLMA-PRP only applies to federal lands and does not affect private lands. It provides authority for the protection of paleontological resources on federal lands including criminal and civil penalties for fossil theft and vandalism.

4.5.2.2 State

a. California Building Code

The CBC provides a minimum standard for building design. The 2016 CBC is included in the California Code of Regulations, Title 24. The CBC contains specific requirements for seismic safety and regulates excavation, foundations, and retaining walls. The CBC also contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Appendix Sections J109 and J110 of the 2016 CBC regulate grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in California Occupational Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Appendix Sections J106 and J107 of the 2016 CBC.

b. California Alquist-Priolo Earthquake Fault Zoning Act [California Public Resources Code Sections 2621-2630]

The California Legislature passed this law in 1972 for the purpose of prohibiting the development of human-occupied structures within active fault areas, and to thereby mitigate the hazards associated with earthquake fault rupture.

c. California Seismic Hazards Mapping Act [California Public Resources Code Sections 2690-2699.6]

The California Geologic Survey, formerly the California Department of Conservation, Division of Mines and Geology (CDMG), provides guidance with regard to seismic hazards. Under CDMG's Seismic Hazards Mapping Act (1990), seismic hazard zones are identified and mapped to assist local governments in land use planning. The intent of this publication is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CDMG's Special Publications 117, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations.

d. National Pollution Discharge Elimination System Permits

In California, the State Water Resources Control Board (SWRCB) and its Regional Water Quality Control Board (RWQCB) administer the National Pollution Discharge Elimination System (NPDES) permit program. The NPDES permit system was established as part of the Clean Water Act (CWA), discussed in more detail in Section 4.7, Hydrology and Water Quality, of this PEIR, to regulate both point source discharges and nonpoint source discharges to surface waters of the U.S., including the discharge of soil eroded from construction sites. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents (including siltation), targeting potential sources of pollutants (including excavation and grading operations), and implementing a comprehensive storm water management program. Construction and industrial activities typically are regulated under statewide general permits that are issued by the SWRCB. Additionally, the SWRCB issues Waste Discharge Requirements that also serve as NPDES permits under the authority delegated to the RWQCBs, under the CWA (see Section 4.7, Hydrology and Water Quality, of this PEIR).

4.5.2.3 Local

a. County of San Diego Grading Ordinance

Chapter 4 of the County of San Diego Grading Ordinance (Section 87.401 et seq.) includes requirements for the maximum slope allowed for cuts and fills, drainage terraces on cut or fill slopes exceeding 40 feet in height, expansive soils for cuts and fills, minimum building setbacks from cut and fill slopes, and a soil engineer's report which includes specific approval of the grading as affected by geological factors.

Section 87.430 of the County Grading Ordinance provides for the requirement of a paleontological monitor at the discretion of the County. In addition, the suspension of grading operations is required upon the discovery of fossils greater than 12 inches in any dimension. The Grading Ordinance also requires notification of the County Official (i.e., Permit Compliance Coordinator), and gives the County Official the authority to determine the appropriate resource recovery operations, which shall be carried out prior to the County

Official's authorization to resume normal grading operations. VWD is exempt from the requirements of the County Grading Ordinance. Therefore, the analysis of grading in this PEIR is for informational purposes and is set in the context of this exemption.

b. County of San Diego General Plan Safety Element

The primary purpose of the Safety Element is to include safety considerations in the planning and decision-making process by establishing policies related to future development that will minimize the risk of personal injury, loss of life, property damage, and environmental damage associated with natural and man-made hazards. Minimizing personal injury and property damage by reducing seismic hazards may be accomplished by prohibiting the construction of essential public facilities (which include "lifeline" systems that provide water, sewers, electricity, fuel, and transportation to the community) within Alquist-Priolo and County special studies zones (Policy S-7.3). Development shall be located a minimum of 50 feet from active or potentially active faults unless approval of alternative setback distance is based upon geologic analysis and feasible engineering design measures adequate to demonstrate a fault rupture hazard would be avoided (Policy S-7.1). All development in areas known to have or potentially have significant seismic and/or other geologic hazards will include risk-reducing measures in accordance with the CBC, International Building Code, and other seismic and geologic hazard safety standards (Policy S-7.2).

c. County of San Diego Multi-Jurisdictional Hazard Mitigation Plan

In 2004, the County of San Diego Board of Supervisors adopted the Multi-Jurisdictional Hazard Mitigation Plan (URS 2011) into the County's General Plan Safety Element. The Hazard Mitigation Plan was updated in August 2010. The updated Hazard Mitigation Plan complies with both federal and state regulations, which are intended to reinforce the importance of mitigation planning with an emphasis on planning for disasters before they occur. The Hazard Mitigation Plan is a comprehensive assessment of natural hazards, which include erosion, tsunami, earthquakes, floods, rain-induced landslides and liquefaction, that enhances public awareness and understanding, creates a management decision-making tool, promotes state and federal program requirement compliance, enhances local policies for hazard mitigation capability, and provides inter-jurisdictional coordination of mitigation-related programming. The Hazard Mitigation Plan was last revised in 2018.

4.5.3 Master Plan Impacts and Mitigation

4.5.3.1 Issue 1 – Exposure to Seismic and Geologic Hazards

Geology, Soils, and Paleontology Issue 1 Summary	
Would implementation of the 2018 Master Plan expose people or structures to potential substantial adverse effects of a rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, landslides, expansive, or otherwise unstable soils?	
Impact: Portions of the proposed CIP facilities could be located on geologic or soil units that are unstable and could result in damage from liquefaction, lateral spreading, subsidence, expansive soils, and/or landslides.	**Mitigation:** Site-specific Geotechnical Investigation (Geo-1).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if people or CIP facilities would be exposed to the substantial risk of loss, injury, or death as a result of:

1. 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;
2. Strong seismic ground shaking;
3. Seismic-related ground failure;
4. Liquefaction;
5. Landslides; or
6. Expansive soils.

b. Impact Analysis

Fault Rupture

The Alquist-Priolo Earthquake Fault Zoning Act identifies areas that are subject to fault rupture. None of the proposed CIP facilities involve human habitation. Therefore, the Alquist-Priolo Earthquake Fault Zoning Act is not applicable to the 2018 Master Plan. Further, active faults in the region that could result in fault rupture include segments of the San Jacinto, Elsinore, and Rose Canyon Faults. These faults are not located within the

VWD service area. Therefore, the 2018 Master Plan CIP projects would not be subject to a significant risk of fault rupture.

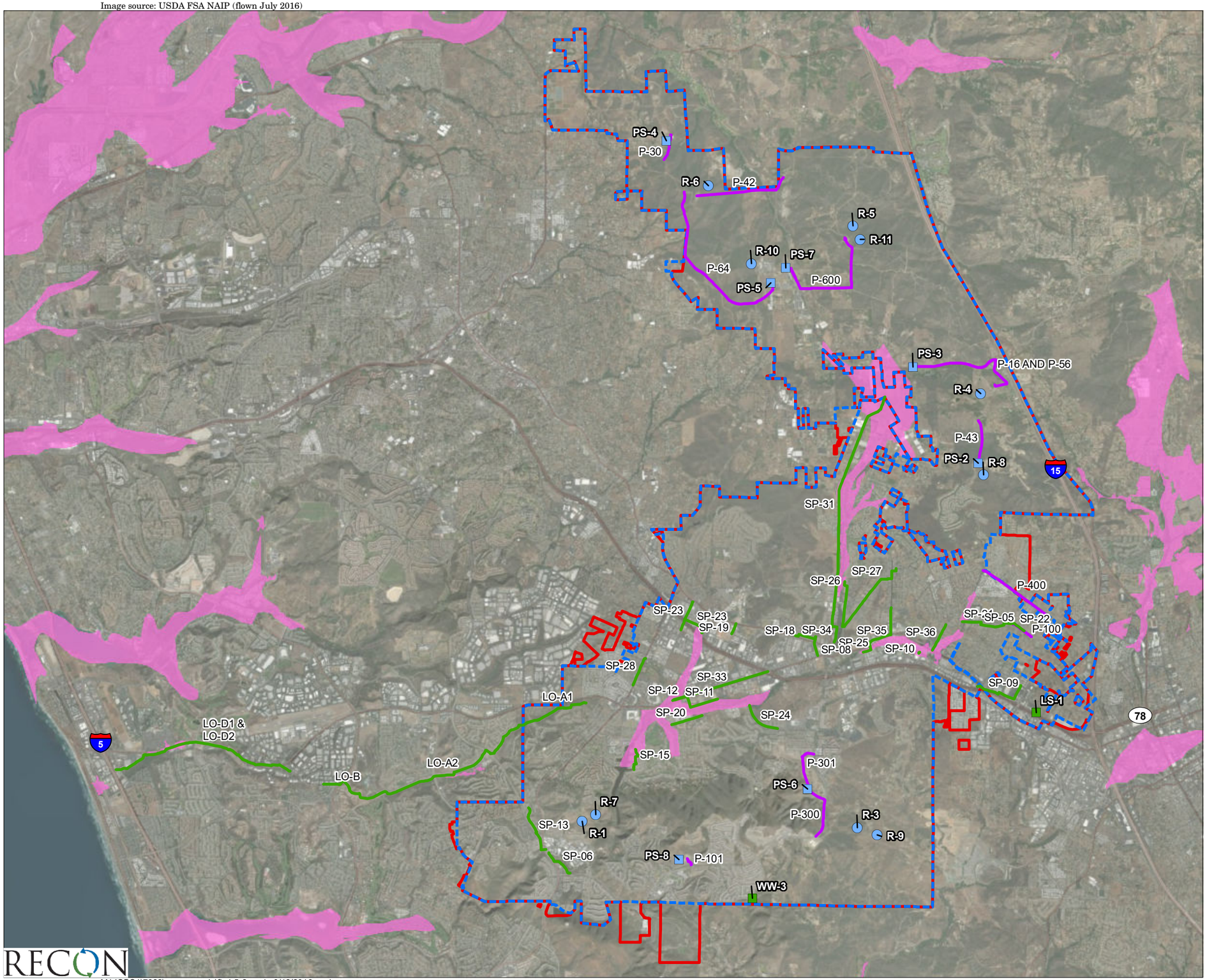
Ground Shaking

Ground shaking is the most common effect of earthquakes that adversely affects people and structures. The CBC defines different regions of the United States and ranks them according to their seismic hazard potential. All of San Diego County is located within Seismic Design Categories E and F, which have the highest seismic potential (County of San Diego 2011). Therefore, proposed CIP projects may be subject to the adverse effects of seismic ground shaking. Although the 2018 Master Plan does not propose any facilities involving human habitation, seismic ground shaking has the potential to result in significant structural damage or facility failure. Structural damage or facility failure of a reservoir, pipeline, pump station, or lift station could result in flooding, loss of potable drinking water, and/or sewage spills. At the time of CIP project design, VWD would implement the relevant requirements of the 2013 CBC, as updated or amended, and CDMG's Special Publication 117A. However, because CIP projects are within the areas of high seismic potential, they would remain at risk for damage from ground shaking. This is considered a potentially significant impact.

Liquefaction

Liquefaction is not known to have occurred historically in San Diego County. However, the potential exists for liquefaction to occur in areas with loose sandy soils combined with a shallow groundwater table, which typically are located in alluvial river valleys/basins and floodplains (County of San Diego 2011). Figure 4.5-2 depicts soils within the District boundary that generally have a high potential for liquefaction, based on regional soil data. Many of the proposed CIP projects, such as the water and sewer pipelines, are located within areas of high liquefaction potential. This includes the land outfall, which is proposed along Encina Creek, and the Diamond Siphon project alternatives (project SP-10), which are located on young alluvial floodplain deposits adjacent to San Marcos Creek. These CIP projects could be subject to liquefaction, which may result in significant structural damage or facility failure. Structural damage or facility failure of a CIP project could result in flooding, loss of potable drinking water, and/or sewage spills. At the time of proposed CIP project design, VWD would implement the relevant requirements of the 2013 CBC and CDMG's Special Publication 117A. However, CIP projects that are within areas of high liquefaction potential would remain at risk for damage. This is considered a potentially significant impact.

Image source: USDA FSA NAIP (flown July 2016)



VWD Service Area

Vallecitos Water District

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

Liquifaction Zones

0 Miles 1.2

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FIGURE 4.5-2
Geohazards

Landslides

Certain lands within the VWD service area are subject to landslides. Generally, landslide potential is considered high for areas that contain slopes of 15 percent or greater, as shown in Figure 4.5-3. Specifically, the San Marcos General Plan Safety Element maps an area near the western edge of the city as having a potential for landslides (City of San Marcos 1983). Additionally, areas within the unincorporated county of San Diego communities of Bonsall, North County Metro, and San Dieguito are identified as at high risk for landslides (County of San Diego 2011). CIP projects most susceptible to landslide events include reservoirs, which are generally located at higher elevations for design purposes. Pump stations and lift stations located on slopes or hillsides would also be susceptible to landslide events. Therefore, the CIP projects proposed in the 2018 Master Plan would be susceptible to landslides, which could result in significant structural damage or facility failure. Structural damage or facility failure of a proposed CIP project could result in flooding, loss of potable drinking water, and/or sewage spills. At the time of CIP project design, the VWD would implement the relevant requirements of the 2013 CBC and CDMG's Special Publication 117A. However, CIP projects that are within high slope areas would remain at risk for damage from landslide potential, particularly areas within slopes of 15 percent or greater. This is considered a significant impact.

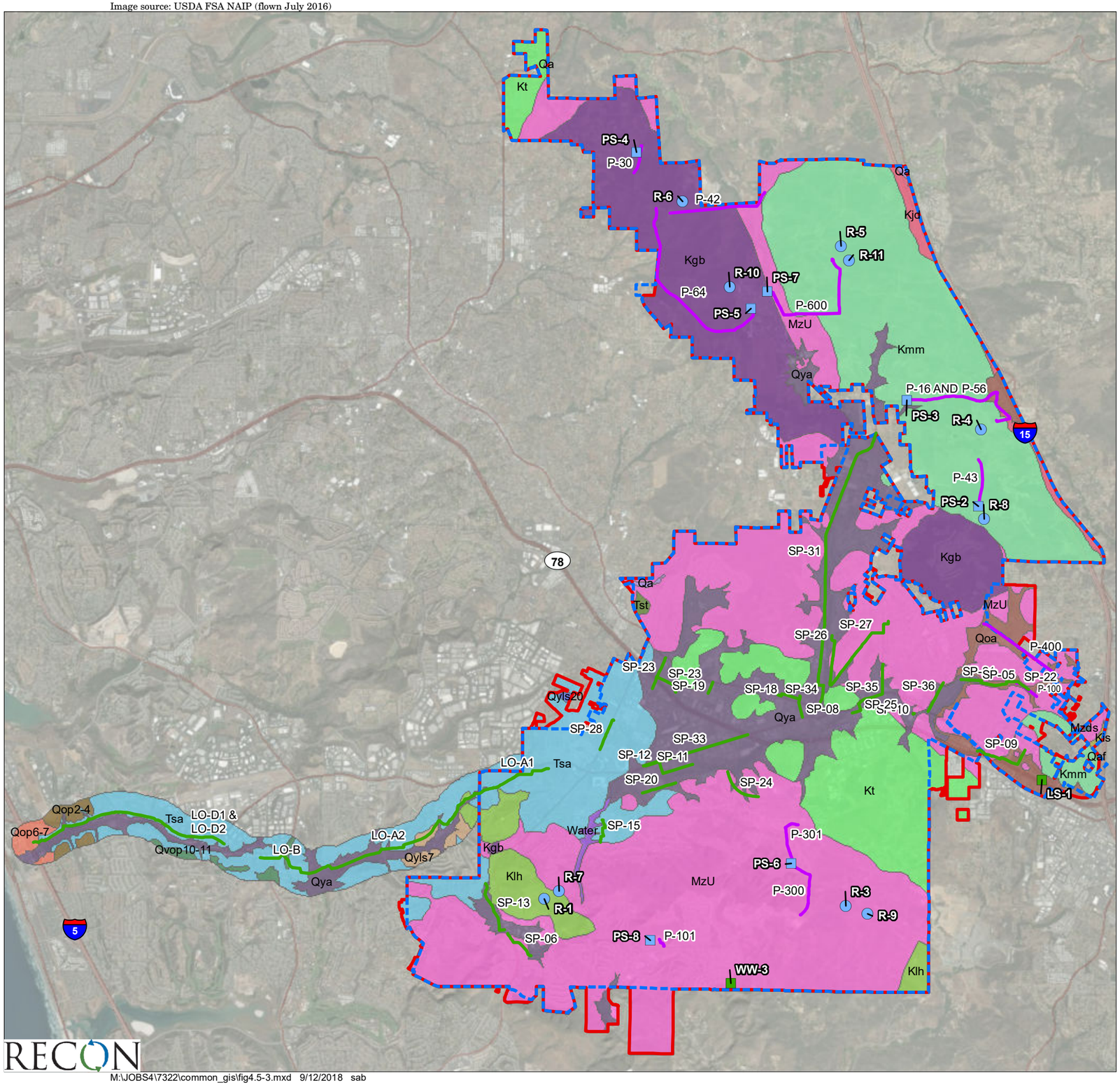
Expansive Soils

Certain types of clay soils expand when they are saturated and shrink when dried. These are called expansive soils, and can pose a threat to the integrity of structures built on them without proper engineering. If the moisture content and/or soil type differs at various locations under the foundation of a structure, localized or non-uniform (differential) movement may occur. This movement can cause damage to a CIP project's foundation and/or structure, which could result in flooding, loss of potable drinking water, and/or sewage spills. CIP projects that may be subject to expansive soils primarily include sewer pipelines, including the parallel outfall. At the time of CIP project design, the VWD would implement the relevant requirements of the 2013 CBC and CDMG's Special Publication 117A. However, CIP projects that are within area of high soil expansion potential would remain at risk for damage. This is considered a significant impact.

c. Mitigation Measures

Implementation of the following mitigation measure would reduce the exposure of people and CIP facilities to substantial adverse effects associated with seismically induced ground shaking, liquefaction potential, landslides, and expansive soils to a less than significant level. CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-2, SP-3, SP-11, and SP-12; therefore, these projects are not subject to the mitigation measure identified below.

Image source: USDA FSA NAIP (flown July 2016)



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- VWD Service Area
- Vallecitos Water District
- Sewer Pump Station CIP
- Sewer Line CIP
- Water Reservoir CIP
- Water Pump Station CIP
- Water Line CIP

Geologic Formations (USGS)

- Kgb - Gabbro undivided (Cretaceous)
- Kis - Granite of Indian Springs (mid-Cretaceous)
- Kjd - Granodiorite of Jesmond Dean (mid-Cretaceous)
- Klh - Leucogranodiorite of Lake Hodges (mid-Cretaceous)
- Kmm - Monzogranite of Merriam Mountain (mid-Cretaceous)
- Kt - Tonalite undivided (Cretaceous)
- MzU - Metasedimentary and metavolcanic rocks undivided (Mesozoic)
- Mzds - Metavolcanic dikes (Mesozoic)?
- Qa - Active alluvial flood plain deposits (late Holocene)
- Qaf - Artificial fill (late Holocene)
- Qoa - Older alluvial flood plain deposits (Pleistocene, younger than 500,000 years)
- Qop2-4 - Old paralic deposits, Units 2-4 (late to middle Pleistocene)
- Qop6-7 - Old paralic deposits, Units 6-7 (late to middle Pleistocene)
- Qvop10-11 - Very old paralic deposits, Unit 10 (middle to early Pleistocene)
- Qya - Young alluvial flood plain deposits (Holocene and late Pleistocene)
- Qyls20 - Young landslide flood plain deposits (Holocene and late Pleistocene)?
- Qyls7 - Young landslide flood plain deposits (Holocene and late Pleistocene)?
- Tsa - Santiago Formation (middle Eocene)
- Tst - Stadium Conglomerate (middle Eocene)
- Water - Water

0 Miles 1.2

FIGURE 4.5-3
Geologic Formations

Geo-1 **Site-specific Geotechnical Investigation.** Prior to construction of proposed CIP projects, a site-specific geotechnical investigation shall be conducted to determine whether geologic or other hazardous conditions exist and, if so, provide recommendations for construction that would reduce the damage potential. Areas of liquefaction; static or ground shaking-induced landslides, lateral spreading, subsidence, liquefaction, soil collapse, expansive soils, and/or mudslide potential shall be identified as part of the geotechnical investigation. The investigations shall specifically address foundation and slope stability in liquefiable, landslide, expansive soils and mudslide areas proposed for construction. Recommendations made in conjunction with the geotechnical investigations shall be implemented during construction, including (as appropriate) but not necessarily limited to the following actions:

1. Over-excavate unsuitable materials and replace them with engineered fill.

2. For thinner deposits, remove loose, unconsolidated soils and replace with properly compacted fill soils, or apply other design stabilization features (i.e., excavation of overburden).

3. For thicker deposits, implement applicable techniques such as dynamic compaction (i.e., dropping heavy weights on the land surface), vibro-compaction (i.e., inserting a vibratory device into the liquefiable sand), vibro-replacement (i.e., replacing sand by drilling and then vibro-compacting backfill in the bore hole), or compaction piles (i.e., driving piles and densifying surrounding soil).

4. Lower the groundwater table to below the level of liquefiable soils.

5. Perform in-situ densification of soils or other alterations to the ground characteristics.

6. For landslides, implement applicable techniques such as stabilization (i.e., construction of buttress fills, retaining walls, or other structural support to remediate the potential for instability of cut slopes composed of landslide debris); remedial grading and removal of landslide debris (e.g., over-excavation and recompaction); or avoidance (e.g., structural setbacks).

7. To minimize or avoid lateral spreading of on-site soils, remove compressible soils and replace them with properly compacted fill, perform compaction grouting or deep dynamic compaction, or use stiffened conventional foundation systems.

8. To minimize or avoid differential compression or settlement of on-site soils, manage oversized material (i.e., rocks greater than 12 inches) via off-site disposal, placement in non-structural fill, or crushing or pre-blasting to generate material less than 12 inches. Oversized material greater than 4 feet shall not be used in fills, and shall not be placed within 10 feet of finished

grade, within 10 feet of manufactured slope faces (measured horizontally from the slope face), or within 3 feet of the deepest pipeline or other utilities.

9. Locate foundations and larger pipelines outside of cut/fill transition zones and landscaped irrigation zones.

As part of the geotechnical investigation, a database search of hazardous materials sites pursuant to Government Code Section 65962.5 shall be performed within a one-mile radius surrounding the proposed CIP site. If the database search identifies hazardous material sites within the search parameters, a Phase I environmental assessment shall be required. In the event hazardous materials sites are identified within the database search and a Phase I environmental assessment is required, VWD shall retain a registered environmental assessor to perform a Phase I Environmental Site Assessment. The Phase I Environmental Site Assessment shall follow the current ASTM standard and the recommendations contained within the Phase I Environmental Site Assessment shall be implemented according to standard regulatory procedures.

4.5.3.2 Issue 2 – Soil Erosion or Topsoil Loss

Geology, Soils, and Paleontology Issue 2 Summary	
Would implementation of the 2018 Master Plan result in substantial soil erosion or the loss of topsoil?	
Impact: Construction activities associated with CIP projects could result in soil erosion or loss of topsoil.	**Mitigation**: Construction-Related Erosion Control Plan (Geo-2).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if CIP construction projects would result in substantial soil erosion or loss of topsoil.

b. Impact Analysis

Earth-disturbing activities and soil stockpiling associated with the construction of CIP facilities would expose soils that could be subject to erosion during rain and wind events. Soil removal associated with grading and excavation activities would reduce soil cohesion, which could accelerate erosion. Increased erosion and soil loss could impact soil stability, in addition to causing indirect effects on communities and sensitive biological resources

downstream of the proposed CIP project sites. Indirect effects of soil erosion include the deposition of pollutants and sediment to watershed outlets, an increase in polluted runoff to surface and groundwater receiving bodies, and an increase in flood potential downstream. Therefore, construction activities associated with CIP facilities, including the Diamond Siphon project alternatives (CIP SP-10), would have the potential to result in substantial soil erosion or loss of topsoil. This would be considered a significant impact.

Upon completion of construction for a proposed CIP facility, no exposed soils would remain on site that would be susceptible to the effects of wind erosion. For the CIP projects constructed in undeveloped areas (R-7, R-10, R-11, PS-1, and PS-2) an increase in impermeable surfaces would occur. However, all CIP projects would comply with the requirements of the local municipal separate storm sewer systems (MS4) permit requirements regarding storm water discharge, which require no net increase in storm water runoff when compared to existing conditions. Compliance with the applicable MS4 requirements would result in less than significant impacts related to topsoil loss or increased erosion from CIP operational activities.

c. Mitigation Measures

Implementation of mitigation measure Geo-2 would reduce construction-related impacts associated with soil erosion or loss of topsoil to a less than significant level. CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-2, SP-3, SP-11, and SP-12; therefore, these projects are not subject to the mitigation measures identified below.

Geo-2 **Construction-Related Erosion Control Plan.** The construction bid documents for each proposed CIP project shall include either a 90 percent Erosion Control Plan (for projects that would result in less than one acre of land disturbance) or a 90 percent Storm Water Pollution Prevention Plan (SWPPP) (for projects that would result in one acre or greater of land disturbance). The Erosion Control Plan shall comply with the storm water regulations or ordinances of the local agency jurisdiction within which the proposed CIP project occurs; the SWPPP shall comply with the NPDES General Construction Permit. These plans shall be based on site-specific hydraulic and hydrologic characteristics, and identify a range of Best Management Practices (BMPs) to reduce impacts related to storm water runoff, including sedimentation BMPs to control soil erosion. The Erosion Control Plan or SWPPP shall identify the specific storm water BMPs to be implemented during the construction phase of a given CIP project. Typical BMPs to be implemented as part of the Erosion Control Plan or SWPPP may include, but may not be limited to, the actions listed below.

1. Development of a written plan that includes sequencing of construction activities and the implementation of erosion control and sediment control BMPs that shall take local climate (rainfall, wind, etc.) into consideration. The purpose of the written plan is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform

the construction activities and control practices in accordance with the planned schedule.

2. Preserve existing vegetation to minimize the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

3. Use hydraulic mulch on disturbed soils to provide a layer of temporary protection from wind and water erosion.

4. Temporarily protect exposed soils from erosion by water and wind by applying hydraulic seeding, hydroseeding, or other appropriate soil cover.

5. Divert runoff or channel water to a desired location by constructing earth dikes or drainage swales. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off-site runoff around the construction site to divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

6. Prevent scour of the soil caused by concentrated, high velocity flows by providing outlet protection; a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel.

7. Apply a compost blanket to slopes and earth-disturbed areas to prevent erosion, and in some cases, increase infiltration and/or establish vegetation. The compost blanket can be applied by hand, conveyor system, compost spreader, or pneumatic delivery (blower) system. The blanket thickness is determined from the slope steepness and anticipated precipitation. A compost blanket protects the soil surface from raindrop erosion, particularly rills and gullies that may form under other methods of erosion control.

8. Detain sediment-laden water, promoting sedimentation behind a silt fence. A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support.

9. Contain sediment-laden runoff in a sediment trap, allowing sediment to settle out before the runoff is discharged. Sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area.

10. Place fiber rolls at the toe and on the face of slopes along the contours. Fiber rolls intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can reduce sheet and rill erosion until vegetation is established.

11. Intercept or divert sheet flows with a sandbag barrier on a level contour. Sandbag barriers placed on a level contour pond sheet flow, allowing sediment to settle out.

12. Construct a straw bale barrier to pond sheet-flow runoff and allow sediment to settle out. A straw bale barrier is a series of straw bales placed on a level contour to intercept sheet flows.

4.5.3.3 Issue 3 – Paleontological Resources

Geology, Soils, and Paleontology Issue 3 Summary	
Would implementation of the 2018 Master Plan directly or indirectly destroy a unique paleontological resource or site?	
Impact: Construction of CIP projects proposed within the Santiago formation has the potential to disturb or destroy paleontological resources.	**Mitigation**: Paleontological Resources Investigation (Geo-3).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if CIP construction projects would directly or indirectly destroy a unique paleontological resource or site. Because paleontological resources are typically buried and, therefore, not apparent until revealed by excavation, significant impacts to paleontological resources are often determined based on the geologic formations that would be disturbed and the potential for those geologic formations to contain fossils.

b. Impact Analysis

To evaluate the 2008 Master Plan impacts, a paleontological resources evaluation was conducted for the VWD service area. This evaluation was performed by a registered geologist. No changes to the potential for paleontological resources have occurred since the 2011 PEIR was prepared. Therefore, the following impact analysis is unchanged.

According to the paleontological resources evaluation, the VWD service area contains one geologic unit of high paleontological sensitivity: the Santiago formation. The Santiago formation is located along the southern portion of the VWD service area's western boundary.

The Santiago formation is sandstone and conglomerate throughout most of its exposed area. This formation is finer-grained and muddier in the southern part of San Diego County. Petrified wood of avocado and other types of trees and terrestrial mammals (e.g. horses, rodents, insectivores, etc.) indicate a coastal lowland paleo-environment. Thousands of vertebrate specimens have been recovered and catalogued from this formation, attesting to the significance of this geologic unit. This formation has produced so much paleo-environmental information that the County of San Diego Planning and Development Services Department has assigned it to the special category of Very High Sensitivity. Excavation and construction activities associated with proposed CIP projects located within the Santiago formation have the potential to disturb or destroy paleontological resources. The location of the Santiago formation within the VWD service area is identified in Figure 4.5-3. A portion of the parallel land outfall is proposed within areas containing the Santiago formation (Burwasser 2011). Proposed CIP projects located within or near the Santiago formation include SP-2, SP-3, SP-6, SP-11, SP-12, SP-13, SP-15, SP-19, SP-20, SP-23, SP-28, SP-29, R-1, R-3, R-7, and the parallel land outfall. The other geologic units within the VWD service area consist of unconsolidated Quaternary deposits (low paleontological sensitivity) in the valleys and on the lower hillsides and the more ancient hill and ridge rocks of igneous (no paleontological potential) or meta-volcanic (marginal paleontological sensitivity) origin. Other than the Santiago formation, other geologic units in the VWD service area are not expected to contain recoverable paleontological resources. Therefore, for proposed CIP projects that are within or near the Santiago formation, impacts are considered potentially significant (Burwasser 2010).

The Diamond Siphon project alternative sites (CIP SP-10) are located within young alluvial floodplain deposits, and are not located within or near the Santiago formation. The Diamond Siphon project alternatives would, therefore, not be anticipated to result in significant impacts to paleontological resources.

c. Mitigation Measure

Implementation of mitigation measure Geo-3 would reduce potential impacts associated with disturbance of paleontological resources to a less than significant level. CEQA analysis has been conducted separately for CIP projects R-1, SP-2, SP-3, SP-11, and SP-12; therefore, these projects are not subject to the mitigation measures identified below.

Geo-3 **Paleontological Resources Investigation.** For CIP projects that propose ground-disturbing activities located within the Santiago formation (potentially SP-6, SP-13, SP-15, SP-19, SP-20, SP-23, SP-28, SP-29, R-1, R-3, R-7, and the parallel land outfall), a project-level paleontological resources investigation shall be conducted by a qualified professional paleontologist in cooperation with the County of San Diego and the San Diego Natural History Museum. The paleontological resources investigation shall include:

1. A review of the records search performed in the Paleontological Resources Evaluation for the VWD Service Area and, if necessary, an updated records search;

2. Project-level pedestrian surveys of portions of the proposed CIP site where paleontological resources could be encountered based on presence and depth of sensitive formations;

3. Formal evaluation of any potentially affected paleontological resources to determine whether they qualify as unique paleontological resources; and

4. Recommended measures to avoid, where feasible, impacts on unique paleontological resources, such as preservation in place, planning construction to avoid unique paleontological sites, placing paleontological sites into permanent conservation easements, or planning parks, green space, or other open space to incorporate paleontological sites. Where avoidance or preservation in place is not feasible, excavation and curation may be recommended as mitigation.

The results of the paleontological resources investigation shall be compiled into a technical report or memorandum and submitted to VWD for further coordination with the County of San Diego Department of Planning and Land Use and the San Diego Natural History Museum, as necessary.

4.5.4 Cumulative Impacts

Geology, Soils, and Paleontology Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to cumulative geology/soils impacts considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Localized soil erosion or loss of topsoil in affected watersheds due to development.	Yes	Not cumulatively considerable with implementation of Geo-2.
Regional loss of paleontological resources.	Yes	Not cumulatively considerable with implementation of Geo-3.

Impacts relative to seismic hazards and other geologic/soil conditions (i.e., fault rupture, ground shaking, ground failure, liquefaction/collapse, landslides, lateral spreading, subsidence, and expansive soils) are generally site-specific. Impacts that may occur geoseismically at one site would not contribute cumulatively with another site unless the sites are contiguous, identical geoseismically or pedologically, and the geoseismic or pedologic stressor is identical for both sites. The likelihood of this occurrence is extremely rare (Burwasser 2011). Therefore, these issues are not subject to a cumulative impact analysis, and are not addressed in this section.

4.5.4.1 Soil Erosion

The geographic context for the analysis of cumulative impacts relative to soil erosion encompasses the Carlsbad and San Luis Rey watersheds directly downstream from proposed CIP construction sites. This is because rainfall erosion of soils exposed by land disturbance activities can lead to downstream sedimentation effects, as sediment-laden runoff is carried along drainage facilities and natural water courses by storm water flows. Land disturbance activities may include agricultural practices, cattle grazing and land development (e.g., vegetation clearing, grading, excavation, trenching), and these activities are expected to continue in the vicinity of the Carlsbad and San Luis Rey watersheds. Even with the promulgation of storm water regulations, land disturbance associated with development activities throughout these watersheds continues to contribute, however incrementally, to the overall sedimentation problems observed in runoff flows that discharge into watercourses, lagoons, and eventually the Pacific Ocean. Therefore, the baseline cumulative impact to the Carlsbad and San Luis Rey watersheds (i.e., local cumulative impact areas) caused by downstream sedimentation effects from soil erosion associated with basinwide land disturbance activities is significant.

As described in Section 4.5.3.2 above, construction and operational activities associated with proposed CIP projects could result in soil erosion or loss of topsoil. Implementation of mitigation measure Geo-2 would reduce construction impacts to a level below significance and compliance with MS4 permit requirements would reduce post-construction (operation) impacts to a level below significance. Therefore, the 2018 Master Plan would not result in a cumulatively considerable contribution to downstream sedimentation effects from soil erosion within the local cumulative impact areas.

4.5.4.2 Paleontological Resources

The geographic context for the analysis of cumulative impacts to paleontological resources encompasses the paleontologically sensitive geologic formations within the VWD service area. Excavation activities associated with land development within these areas could have significant impacts to paleontological resources. Therefore, the baseline cumulative impact to paleontological resources caused by excavation activities associated with future land development within the regional cumulative impact area is significant. As described in Section 4.5.3.3, excavation activities associated with proposed CIP project construction and located within the Santiago formation have the potential to disturb or destroy paleontological resources. Implementation of mitigation measure Geo-3 would reduce this impact to a level below significance. Therefore, excavation and construction activities associated with CIP construction projects SP-2, SP-3, SP-6, SP-11, SP-12, SP-13, SP-15, SP-19, SP-20, SP-23, SP-28, SP-29, R-1, R-3, R-7, and the parallel land outfall, would not result in a cumulatively considerable contribution to the loss of paleontological resources within the regional cumulative impact area.

4.5.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would the planning area 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 waste water?

The 2018 Master Plan would not involve the use of septic tanks or other alternative wastewater disposal systems and no impact would occur. No further evaluation is necessary.

4.5.6 References

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4.6 Greenhouse Gas Emissions

This section of the Program Environmental Impact Report (PEIR) describes the potential cumulative impacts resulting from development of proposed Capital Improvement Program (CIP) projects under the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) associated with the generation of greenhouse gas (GHG) emissions, climate change hazards, and compliance with applicable plans, policies, and regulations adopted for the purpose of reducing the emissions of GHG.

The 2011 PEIR for the VWD 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified no potentially significant impacts associated with GHG emissions, and no mitigation was required. The 2018 Master Plan update has been evaluated to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts associated with GHG emissions would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.6.1 Environmental Setting

4.6.1.1 Global Climate Change Overview

Climate change refers to any substantial change in measures of climate (such as temperature, precipitation, or wind) lasting for decades or longer. According to the U.S. Environmental Protection Agency (U.S. EPA), the earth's climate has changed many times during the planet's history, with events ranging from ice ages to long periods of warmth. Historically, natural factors such as volcanic eruptions, changes in the earth's orbit, and the amount of energy released from the sun have affected the earth's climate. Some GHG, such as water vapor, occur naturally and are emitted to the atmosphere through natural processes, while others are emitted through human activities. Beginning late in the eighteenth century, human activities associated with the Industrial Revolution have changed the composition of the atmosphere and therefore very likely are influencing the earth's climate. For over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation has caused the concentrations of heat-trapping GHG to increase substantially in the atmosphere.

The accumulation of GHG in the atmosphere regulates the earth’s temperature. Without the natural heat-trapping effects of GHG, the earth’s temperature would be about 34 degrees Celsius (60 degrees Fahrenheit [°F]) cooler (California Climate Action Team

[CCAT] 2007). However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

4.6.1.2 Greenhouse Gases

GHG are gases that trap heat in the atmosphere, analogous to the way a greenhouse retains heat. Common GHG include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), ozone (O_3), and aerosols. Global atmospheric concentrations of CO_2, CH_4, and N_2O have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years.

Individual GHG have varying potential to contribute to global warming and atmospheric lifetimes. The reference gas for global warming potential is CO_2. GHG emissions and global warming potentials are compared in relation to CO_2. The CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent measure. CO_2 has a global warming potential of one; by comparison, the global warming potential of CH_4 is 21 and the global warming potential of N_2O is 310. This means that CH_4 and N_2O have a greater global warming effect than CO_2 on a molecule per molecule basis. One metric ton (MT) of CO_2e represents the emissions of an individual GHG multiplied by its global warming potential. The global warming potential of other GHG are discussed in Section 4.6.1 of the 2011 PEIR for the 2008 Master Plan.

State law defines GHGs to include the following compounds: CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 (Health and Safety Code Section 38505(g)). Descriptions of these compounds and their sources are provided below.

a. Carbon Dioxide (CO_2)

CO_2 enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of human-generated CO_2 emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to substantial CO_2 emissions. CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Natural sources of CO_2 that occur within the carbon cycle where billions of tons of atmospheric CO_2 are removed from the atmosphere by oceans and growing plants and are emitted back into the atmosphere annually through natural processes. When in balance, the total CO_2 emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal and gas and deforestation, have increased CO_2

concentrations in the atmosphere. In 2005, global atmospheric concentrations of CO_2 were 35 percent higher than they were before the Industrial Revolution (U.S. EPA 2010). The Global Carbon Project (2016) released an update of the global carbon budget for the year 2015. The atmospheric carbon dioxide (CO_2) concentration in 2015 was 399 parts per million (ppm), 44 percent above the concentration at the start of the Industrial Revolution (277 ppm in 1750) (U.S. EPA 2016).

b. Methane (CH_4)

CH_4 is emitted from a variety of both human-related and natural sources. Human-related activities include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH_4 emissions are related to human-related activities. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources, such as wildfires.

c. Nitrous Oxide (N_2O)

N_2O, more commonly known as "laughing gas," is produced naturally by microbial processes in soil and water. In addition to agricultural sources such as fertilizer application, some industrial processes, such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions, also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant.

d. Fluorinated Gases

HFCs, PFCs, and SF_6 are synthetic, powerful GHGs that are emitted from a variety of industrial processes, including aluminum production, semiconductor manufacturing, electric power transmission, magnesium production and processing, and the production of Chlorodifluoromethane (HCFC-22), commonly used in air conditioning applications. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances, such as CFCs, hydrochlorofluorocarbons (HCFCs), and halons. These gases are typically emitted in smaller quantities, but have higher global warming potential than other GHGs.

4.6.1.3 VWD GHG Inventories

In an effort to evaluate and reduce the potential adverse impact of global climate change, international, state, and local organizations have conducted GHG inventories to estimate their levels of GHG emissions and removals. Global, federal, state, and county GHG emission inventories are discussed in Section 4.6.1.3 of the 2011 PEIR for the 2008 Master Plan.

As discussed in the 2011 PEIR for the 2008 Master Plan, sources of GHGs from VWD include indirect emissions from the consumption of electricity (pump and lift stations, security lighting, computerized monitoring systems) and direct emissions produced on VWD

property from stationary combustion sources (emergency generators) and mobile sources (VWD owned vehicles). VWD facilities also include the district offices, which generate GHG emissions from electricity and natural gas use, and vehicle trips to and from the office. Annual VWD emissions were estimated to include 1,153 MT CO_2e (80 percent) from electricity usage, 184 MT CO_2e (13 percent) from mobile sources such as VWD vehicles, and 89 MT CO_2e (7 percent) from stationary sources such as generators.

4.6.1.4 Regional Adverse Effects of Climate Change

The San Diego Foundation's Regional Focus 2050 Working Paper and Technical Assessment explored what the San Diego region would be like in the year 2050 if current climate change trends continue. The paper projected potential adverse effects on the San Diego region related to climate, energy needs, public health, wildfires, water supply, sea level, and ecosystems (San Diego Foundation 2008). The climate model simulations exhibited warming across San Diego County, ranging from about 1.5°F to 4.5°F, particularly in inland areas. Temperature changes for areas along the coast would be moderated by the influence of the Pacific Ocean. The increase in peak demand for electricity for cooling could result in blackouts and power outages without adequate planning. With an aging population, extreme-heat conditions in the San Diego region are also a public health concern. Other health concerns include increased ozone air pollution levels due to an increase in sunny days, which can exacerbate asthma and other respiratory and cardiovascular diseases; increased fire-related injuries and death as intense wildfires occur more frequently; and coastal algal blooms, which can harbor toxic bacteria and other diseases. Drought years might occur as much as 50 percent more often and be considerably drier. Even with plans in place to conserve, recycle, and augment our available water, it is estimated San Diego County could face an 18 percent shortfall in water supply by 2050. Rising sea levels will have a major impact on the San Diego region's environment and economy, particularly in coastal areas. High tide flooding will threaten low-lying coastal communities and impact military, port and airport operations. High surf events and rising sea levels will cause even greater coastal erosion. Climate change will also add to the pressures on the variety of habitats and species in the county. The locations where environmental conditions are suitable for a particular species will shift with climate change. To survive, some animals and plants will have to relocate to find new habitat or potentially face extinction.

4.6.2 Regulatory Framework

4.6.2.1 Federal

a. U.S. Environmental Protection Agency

The U.S. EPA provides technical expertise and encourages voluntary reductions from the private sector. One of the voluntary programs applicable to the project is the Energy Star program, a joint program of U.S. EPA and the U.S. Department of Energy, which promotes energy-efficient products and practices. Tools and initiatives include the Energy Star Portfolio Manager, which helps track and assess energy and water consumption across an

entire portfolio of buildings, and the Energy Star Most Efficient, which provides information on exceptional products that represent the leading edge in energy-efficient products.

b. Corporate Average Fuel Economy Standards

The federal Corporate Average Fuel Economy (CAFE) standards determine the fuel efficiency of certain vehicle classes in the United States. Current CAFE standards require vehicle manufacturers of passenger cars and light-duty trucks to achieve an average fuel economy of 35.5 miles per gallon by 2016 and an average fuel economy of 54.5 miles per gallon by 2025. With improved gas mileage, fewer gallons of transportation fuel would be combusted to travel the same distance, thereby reducing nationwide GHG emissions associated with vehicle travel.

4.6.2.2 State

a. State GHG Emission Reduction Targets

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order (EO) S-3-05, the following GHG emission reduction targets:

1. By 2010, California shall reduce GHG emissions to 2000 levels;
2. By 2020, California shall reduce GHG emissions to 1990 levels; and
3. By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, the California State Legislature adopted Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. GHGs as defined under AB 32 include CO_2, CH_4, N_2O, HFCs, perfluorocarbons, and sulfur hexafluoride. Under AB 32, the California Air Resources Board (CARB) has the primary responsibility for reducing GHG emissions and managing the CCAT to coordinate statewide efforts and promote strategies that can be undertaken by many other California agencies. AB 32 requires the CARB to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020.

Executive Order B-30-15

On April 29, 2015, California Governor Jerry Brown announced through EO B 30 15, an Interim GHG Emissions Target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030. The Interim GHG Emission Target is intended to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050.

Senate Bill 32—California Global Warming Solutions Act of 2006

Approved in September 2016, Senate Bill (SB) 32 updates the California Global Warming Solutions Act of 2006. Under SB 32, the state would reduce its GHG emissions to 40 percent below 1990 levels by 2030. In implementing the 40 percent reduction goal, CARB is required to prioritize emissions reductions to consider the social costs of the emissions of GHGs; where "social costs" is defined as "an estimate of the economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of [GHG] emission per year."

b. Climate Change Scoping Plan

As directed by the California Global Warming Solutions Act of 2006, in 2008, CARB adopted the Climate Change Scoping Plan: A Framework for Change (Original Scoping Plan). CARB has periodically revised GHG emissions forecasts and prepared supplemental revisions to the Original Scoping Plan. The Original Scoping Plan identified focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the state's GHG emission reduction targets. The Original Scoping Plan described local jurisdictions as "essential partners" in achieving the state's emission reduction targets.

In 2014, CARB adopted the comprehensive First Update to the Climate Change Scoping Plan: Building on the Framework (First Update to the Scoping Plan). The First Update to the Scoping Plan ". . . highlights California's success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020" (CARB 2014).

In January 2017, CARB released The 2017 Climate Change Scoping Plan Update, The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target (Draft Scoping Plan). Measures under the Draft Scoping Plan Scenario build on existing programs such as Low Carbon Fuel Standard (LCFS), Advanced Clean Cars Program, Renewable Portfolio Standards (RPS), Sustainable Communities Strategy (SCS), the Short-Lived Climate Pollutant Reduction Strategy, and the Cap-and-Trade Program. Additionally, the Draft Scoping Plan proposes further strategies to reduce waste emissions through cogeneration, reduction of GHG emissions from the refinery sector by 20 percent, and new policies to address GHG emissions from natural and working lands. The Draft Scoping Plan identifies state strategy for achieving the state's 2030 Interim GHG emission reductions target codified by SB 32.

c. Assembly Bill 1493, Clean Car Standards

Known as "Pavley I," AB 1493 standards were the nation's first GHG standards for automobiles. AB 1493 requires the CARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible. Additional strengthening of the Pavley standards (referred to previously as "Pavley II," now referred to

as the "Advanced Clean Cars Program"), adopted in 2012, is applicable for vehicle model years 2017 to 2025.

d. Executive Order S-1-07, Low Carbon Fuel Standard

EO S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 and (2) that a LCFS for transportation fuels be established in California.

e. Senate Bill 375, Sustainable Communities Strategy

SB 375, the 2008 Sustainable Communities and Climate Protection Act, provides for a new planning process that coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans developed by metropolitan planning organizations (MPOs) to incorporate a SCS in their plans. The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development.

f. Renewable Portfolio Standard

The RPS requires energy providers to derive 33 percent of their electricity from qualified renewable sources by 2020 and 50 percent of their energy from qualified renewable sources by 2030. This is anticipated to lower emission factors (i.e., less GHG emissions per kilowatt-hour used) from utilities across the state.

g. California Code of Regulations Title 24, Part 6

Although it was not originally intended to reduce GHG emissions, the California Code of Regulations (CCR) Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Electricity production by fossil fuels results in GHG emissions and energy-efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

4.6.3 Master Plan Impacts and Mitigation

The following section addresses potential impacts relating to GHG that could result due to the 2018 Master Plan. Due to the nature of assessment of GHG emissions and the effects of climate change, impacts can currently only be analyzed from a cumulative context. Individual projects are generally of insufficient magnitude by themselves to influence climate change or result in a substantial contribution to the global GHG inventory. Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-

cumulative GHG emissions impacts from a climate change perspective (California Air Pollution Control Officers Association [CAPCOA] 2008). Accordingly, discussion of the 2018 Master Plan's GHG emissions and impacts on global climate are addressed in terms of the 2018 Master Plan's contributions to a cumulative impact on the global climate.

4.6.3.1 Direct and Indirect Generation of GHG and Consistency with Applicable Plans Adopted for Reducing GHG

Greenhouse Gas Emissions Cumulative Summary		
Would implementation of the 2018 Master Plan generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or that would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG?		
Cumulative Impact	**Significant?**	**2018 Master Plan Contribution**
Net increase of GHG emissions that would exceed the screening thresholds.	Yes	Not cumulatively considerable.

a. Standards of Significance

The CEQA Guidelines allow lead agencies to establish significance thresholds for their respective jurisdictions. The VWD has determined that the GHG significance thresholds of the South Coast Air Quality Management District (SCAQMD) would be appropriate for assessing climate change impacts associated with the 2018 Master Plan.

The SCAQMD's *Interim CEQA GHG Significance Thresholds* are a tiered approach (SCAQMD 2008); projects may be determined to be less than significant under each tier or require further analysis under subsequent tiers. As identified in the Working Group meeting (Meeting No. 15) in September 2010, the five tiers are:

- Tier 1 – The project is exempt from CEQA.
- Tier 2 – The project is consistent with an applicable regional GHG emissions reduction plan.
- Tier 3 – Project GHG emissions represent an incremental increase below, or mitigated to less than Significance Screening Levels, where
  - 3,000 MT CO_2e is the Residential/Commercial Screening Level
  - 10,000 MT CO_2e is the Permitted Industrial Screening Level
- Tier 4 – The project achieves performance standards, where performance standards may include:
  - Achieving a 30 percent or greater reduction under business-as-usual (BAU) methodology.
  - The project would implement substantial early implementation of measures identified the CARB's Scoping Plan.

  - The project would achieve 2020 efficiency targets of 4.8 MT CO_2e per service population for project-level analyses or 6.6 MT CO_2e per service population for plan level analyses where service population includes residential and employment populations provided by a project.

- Tier 5 – Offsets along or in combination with the above target Significance Screening Level. Offsets must be provided for a 30-year project life, unless the project life is limited by permit, lease, or other legally binding condition.

SCAQMD's Tier 1 and Tier 2 thresholds are based on planning consistency, and Tier 3 thresholds are based on market capture rates. Tier 4 and Tier 5 thresholds are intended to demonstrate project consistency with the AB 32 goal of achieving 1990 emission levels by 2020.

The 2018 Master Plan is not exempt from CEQA. There is not a regional GHG emissions reduction plan that addresses GHG emissions associated with the 2018 Master Plan. Therefore, the VWD has determined that it is appropriate to use Tier 3 thresholds to assess whether the project GHG emissions associated with the 2018 Master Plan would represent an incremental increase that is less than Significance Screening Levels, where the applicable Significance Screening Levels is a net increase of more than 3,000 MT CO_2e emissions annually over baseline conditions.

Construction emissions would cease upon completion of the CIP Master Plan projects; however, they would result in a one-time contribution to the global GHG inventory. To determine the significance of GHG emissions during construction, construction emissions would be amortized over the lifetime of the project and added to annual operational emissions. The lifetime of the project is assumed to be 30 years. This methodology and lifetime assumption is consistent with SCAQMD Guidance (SCAQMD 2009).

b. Impact Analysis

By definition, the impacts to and from climate change are cumulative. The 2018 Master Plan, including the Diamond Siphon project alternatives, would participate in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together form global climate change impacts.

An inventory of the three most common GHG emissions (CO_2, CH_4, and N_2O) likely to be emitted by VWD projects is presented below. The emissions of the individual gases were estimated and then converted to their CO_2e using the individually determined global warming potential (GWP) of each gas.

Construction Emissions

Construction of CIP projects proposed under the 2018 Master Plan would result in temporary emissions of GHG from the operation of construction equipment and from worker and building supply vendor vehicles. Equipment that would be associated with construction of the proposed CIP projects includes dozers, rollers, dewatering pumps, backhoes, loaders, delivery, and haul trucks.

The 2011 PEIR for the 2008 Master Plan estimated that GHG emissions associated with construction of all CIP projects would result in the annual emission of 239 MT CO_2e over the lifetime of the 2008 Master Plan implementation (assumed to be 30 years). The 2018 Master Plan would generally involve less construction than the 2008 Master Plan as there are fewer CIP projects proposed, the size of some projects has been reduced, and others have been deferred. Specifically, the 2018 Master Plan would include one less water storage project (R-2 removed); one less pump station project (PS-1); and the same number of sewer lift station projects (LS-1; capacity unchanged). Although the 2018 Master Plan would result a net increase of 7,520 linear feet of wastewater pipeline (due to various subproject removals/modifications/additions); the 2018 Master Plan would also result in a net reduction of 3,980 linear feet of potable water pipeline (various subproject removals/modifications/additions); and a net reduction of 6,850 linear feet of land outfall pipeline (new proposed alignment). Thus, the 2018 Master Plan would include less construction activity, which would result in less construction-related GHG emissions than were assessed in the 2011 PEIR for the 2008 Master Plan. Thus, the annual construction emissions of the 2018 Master Plan would be less than 239 MT CO_2e.

Operational Emissions

Operational GHG emissions from the CIP projects would include indirect emissions from electricity usage (reservoirs, pump and lift stations), and direct emissions from mobile (vehicle trips associated with facility maintenance) and stationary sources (fuel combustion from emergency generators). In the 2018 Master Plan, the only CIP projects that may generate stationary operational GHG emissions would be pump and lift stations. Pipeline projects, once constructed, would not require electricity, emergency generators, or any other fuel-consuming operating equipment. New reservoirs would result in new security lighting and would require some electricity to operate computerized monitoring systems. Solar panels are used to power the security lighting at some existing reservoirs and would be utilized at new reservoirs where traditional power sources are not available.

Electricity Usage. As discussed above, CIP projects that would result in a net increase of electricity usage include pump and lift station projects as well as new reservoir projects. The net increase in electricity usage from the 2018 Master Plan was estimated based on the average monthly electricity consumption of existing VWD stations (see Section 4.4, Energy), which includes operation of the pumps and other equipment at the station that requires electricity, such as lighting. As discussed in Section 4.4.3.1, implementation of the 2018 Master Plan CIP projects would result in a total estimated average monthly consumption of 619,000 kilowatt hour (kWh) of electricity. The existing pump stations and lift station that would be replaced currently consume 121,400 kWh of electricity every month; therefore, the CIP pump stations and lift station would require a net increase of 497,600 kWh annually.

The 2011 PEIR for the 2008 Master Plan estimated that electricity use GHG emissions associated with all CIP projects would result in the annual emission of 606 MT CO_2e. However, the net increase in monthly electricity usage associated with implementation of the 2018 Master Plan (497,600 kWh) is approximately 225 percent greater than the net increase that was assessed in the 2011 PEIR for the 2008 Master Plan (153,003 kWh). Electricity-

related GHG emissions estimates were updated to reflect the increased electricity usage as well as updated energy use factors that reflect SDG&E's current renewable energy mix (Appendix E).

Diesel Usage. The only source of diesel fuel usage in the 2018 Master Plan would be from emergency generators. These generators would only be used for CIP pump and lift station projects and would only be operated for regular testing or during an emergency. Emergency generators are tested by VWD approximately 20 minutes per month per generator. Additionally, once per year VWD disables all pumps on all facilities and operates pump and lift stations with emergency generators for two hours to test the emergency system functionality. The maximum capacity of the existing emergency generators is 470 horsepower, which converts to 1.12 million British thermal units. The 2018 Master Plan would result in new emergency generators: one at each new pump station (PS-2 and PS-4), at replacement pump stations (PS-3, PS-5, PS-6, PS-7, and PS-8), and at the replacement lift station (LS-1).

The 2011 PEIR for the 2008 Master Plan estimated that stationary-source GHG emissions from emergency generators would result in the annual emission of 10 MT CO_2e. The 2018 Master Plan would include one fewer non-replacement pump station project than was assessed in the 2011 PEIR for the 2008 Master Plan (PS-1 removed) and would include the same number of lift station projects. As the 2018 Master Plan would include fewer pump station projects it would be anticipated to require less diesel fuel and would be anticipated to result in less stationary source GHG emissions than were assessed in the 2011 PEIR for the 2008 Master Plan. Thus, the annual stationary source emissions of the 2018 Master Plan would be less than 10 MT CO_2e.

Mobile Sources. Mobile sources of GHG emissions for the 2018 Master Plan would be primarily associated with vehicular trips by employees. However, operation of projects proposed under the 2018 Master Plan would not generate a significant volume of new vehicle trips. The CIP projects that involve replacing existing pump stations and a lift station would not generate a net increase in new vehicle trips because these facilities currently generate maintenance trips.

The 2011 PEIR for the 2008 Master Plan estimated that mobile source GHG emissions associated with all CIP projects would result in the annual emission of 56 MT CO_2e. The 2018 Master Plan would include one fewer non-replacement pump station project than was assessed in the 2011 PEIR for the 2008 Master Plan (PS-1 removed) and would include the same number of lift station projects. As the 2018 Master Plan would include fewer pump and lift station projects it would be anticipated to require fewer maintenance trips and would be anticipated to result in less mobile source GHG emissions than were assessed in the 2011 PEIR for the 2008 Master Plan. Thus, the annual mobile source emissions of the 2018 Master Plan would be less than 56 MT CO_2e.

Combined Operational Emissions. The information in Table 4.6-1 serves as a guide for the likely net increase in annual GHG emissions of the 2018 Master Plan. However, it is possible that actual annual GHG emissions of each proposed pump or lift station may vary from this estimate once in operation. As described previously, proposed pump and lift

stations vary both in size (firm capacity) and in frequency of use. Some pump and lift stations would be in operation more than others, due to the location and the overall demand of the local customer base, which would influence the monthly electricity consumption and GHG emissions of each pump station. Using these assumptions, the estimated GHG emissions for the 2018 Master Plan pump and lift stations is 1,550 MT CO_2e.

Table 4.6-1
Estimated Annual Net Increase in VWD GHG Emissions for Proposed CIP Pump and Lift Stations

Source	Annual Emissions	
	MT CO_2e	Percent of Total Emissions
Indirect Sources		
Electricity Usage	1,245	80%
Direct Sources		
Diesel Usage (Emergency Generators)	10	1%
Mobile (Vehicular Use)	56	4%
Construction Emissions (Amortized)	239	15%
Total Indirect and Direct	**1,550**	**100%**

SOURCE: Appendix E; Vallecitos Water District 2011.
MT CO_2e = metric ton CO_2 equivalent

As shown in Table 4.6-1, the total net increase in annual direct and indirect GHG emissions from construction and operation of the CIP projects in the 2018 Master Plan is estimated to be 1,550 MT CO_2e per year. This estimate does not take into consideration any GHG-reducing project features that would be implemented in the CIP projects. The majority of the GHG emissions would be from electricity usage (80 percent). Amortized annual construction emissions account for 15 percent. GHG emissions from mobile sources and stationary sources represent about 4 percent and 1 percent. Therefore, the GHG emissions associated with the 2018 Master Plan would not exceed the applicable Significance Screening Level of 3,000 MT CO_2e being used by VWD and this impact would be less than significant.

Consistency with Applicable GHG Reduction Measures

The CCAT, established by EO S-3-05, has recommended strategies to reduce GHG emissions at a statewide level to meet the goals of the executive order. However, the majority of these measures are not applicable at the individual project level. The 2008 CAPCOA report, CEQA and Climate Change, includes numerous GHG reducing measures that can be applied to individual projects. Further, the California Attorney General's Office has also published a list of recommendations of GHG reducing measures. Currently, estimates for GHG emission reductions as a result of implementation of these measures are only available for the CAPCOA measures. CAPCOA provides some basic estimates of GHG emission reductions that may be expected with incorporation of measures listed in Appendix B, Table 16 of the January 2008 report, CEQA and Climate Change. It should be

noted that reduction estimates vary widely and not all recommended measures have reduction estimates associated with them.

Even though the project GHG emissions would not exceed the significance threshold and would not result in a significant impact related to GHG emissions, the 2018 Master Plan would also implement energy-saving project features that would reduce GHG emissions below the estimated emissions in Table 4.6-1. Table 4.6-2 includes a comparison of the consistency of the 2018 Master Plan CIP project features, listed in Section 3.3.5.5, with measures recommended by the CAPCOA, as well as the estimated emission reduction for the measure. The project features, including installation of energy-efficient appliances and lighting, would reduce GHG emissions from energy use by approximately 2 percent. Table 4.6-3 provides the approximate reduction in GHG emissions from the Master Plan associated with implementation of these project features. The measures listed in Table 4.6-2 would reduce GHG emissions by 1.6 percent, for total annual emissions of 1,525 MT CO_2e. As discussed above, the CIP projects would not generate more than the applicable Significance Screening Level of 3,000 MT CO_2e and would not result in a significant impact related to GHG emissions.

Hazards Related to Climate Change

The San Diego Foundation's Regional Focus 2050 Working Paper and Technical Assessment projected potential adverse effects on the San Diego region related to climate, energy need, public health, wildfires, water supply, sea level, and ecosystems. The following analysis discusses potential hazards related to climate change that the VWD service area may be subject to in the future.

Warming across San Diego County is projected to increase 1.5°F to 4.5°F between the years 2000 and 2050. Warmer temperatures would increase the peak demand for electricity and could result in blackouts and power outages. However, the 2018 Master Plan does not include any structures that would be used for human occupation. The proposed CIP projects would potentially result in an increase electricity usage during higher temperatures because water use rises with higher temperatures and may require an above average amount of pumping operations. However, as discussed in Section 3.3.5.5, Project Design Features, VWD would require all pumps to use high-efficiency pumps and motors that meet or exceed the energy-efficiency levels listed in the National Electric Manufacturers Associations (NEMA) MGI-1993 publication. Therefore, the CIP projects would not result in an increased number of blackouts as result of increased peak energy demand.

Table 4.6-2
GHG Emission Reductions Estimates for Master Plan CIP Project-Incorporated Measures

CAPCOA Measure	CAPCOA Estimated Reduction	Master Plan CIP Project Features that Would Implement Strategy	Project Reduction Estimate
Electricity Use Measures			
Install Energy Efficient Appliances	2-4%	CIP projects featuring electric pumps and motors, which include PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, and LS-1, will use high efficiency pumps and motors that meet or exceed the energy efficiency levels listed in the National Electric Manufacturers Associations (NEMA) MGI-1993 publication. As discussed in the 2011 PEIR for the 2008 Master Plan, energy efficient motors are 2 percent to 8 percent more efficient than standard motors.	2%
Install Higher Efficacy Public Street and Area Lighting Limit Outdoor Lighting Requirements	16-40% of emissions from electricity required for lighting	All outdoor security lighting installed at the above-ground CIP facilities (i.e., storage reservoirs/tanks and pump/lift stations) under the 2008 Master Plan will use advanced fluorescent interior lighting, high-intensity discharge outdoor lighting, and lighting controls such as timers or motion detectors. Lighting would only be used when personnel are onsite at night and lighting is required. Lighting adjacent to native vegetation communities will be of low illumination, shielded, and directed downwards and away from these areas to avoid potential impacts to nocturnal wildlife from increased predation that would occur from "spill-over" of nighttime light levels into the adjacent habitats.	2%*
Total Estimated Reduction in Electricity and Diesel Use Emissions			**2%**

SOURCE: California Air Pollution Control Officers Association 2010.
*Due to the small portion of electricity usage than can be attributed to lighting rather than operation of pumps, 2 percent is considered an appropriate reduction from total electricity emissions.

Table 4.6-3
Estimated GHG Emission Reductions with Project Features

Use	Business as Usual (BAU) Emissions (MT CO_2e)	Project Reduction Estimate[1]	Emissions with Incorporation of GHG-Reducing Features (MT CO_2e)
Electricity Use	643	2%	630
Diesel Usage (Emergency Generators)	10	0%	10
Mobile (Vehicle use)	56	0%	56
Construction	239	0%	239
Total Project Emissions	**948**	**1.4%[2]**	**935**

[1]Sum of the measures listed in Table 4.6-2.
[2]Percent change from total BAU GHG emissions to GHG emissions total with incorporation of CAPCOA measures

Regarding public health, increases in ozone air pollution levels as a result of climate change could exacerbate asthma and other respiratory and cardiovascular diseases. Fire-related injuries and death are likely to increase as intense wildfires occur more frequently. Additionally, cases of mosquito-related diseases could increase, and algal blooms with toxic bacteria could occur more frequently along the coast. As discussed in Section 4.1 (Air Quality), with implementation of mitigation measures Air-1 the 2018 Master Plan would not exceed the screening-level criteria threshold for ozone precursors (NO_x and VOCs) during construction or operation. Therefore, the 2018 Master Plan would not significantly increase exposure to health risks from ozone. Exposure to fire risk would not increase because the Master Plan does not propose any structures for occupancy and would make water sources more reliable for firefighting. The westernmost portion of the VWD service area is located more than four miles inland and would not be exposed to algal blooms in the ocean. The 2018 Master Plan would not result in an increased exposure to public health concerns.

It is estimated that San Diego County could face an 18 percent shortfall in water supply by 2050. However as discussed in Section 5.2 (Utilities and Service Systems), the 2018 Master Plan would be responding to projected growth in the region. It would not result in the need for new or expanded water and sewer supplies.

Rising sea levels have the potential to result in high tide flooding, cause even greater coastal erosion and scouring than has occurred in the past, and put pipelines at risk for saltwater intrusion. The VWD service area is located more than 4 miles inland. The westernmost CIP project, the outfall alignment, would terminate at the Encina Water Pollution Control Facility, located approximately 1,050 feet inland. At this distance from the Pacific Ocean, the outfall alignment would not be at risk for flooding, scouring, or saltwater intrusion. Therefore, the CIP projects are not at risk from rising sea level elevations.

Climate change will also add to the pressures on the variety of habitats and species in the county. As discussed in Section 4.2 (Biological Resources), the 2018 Master Plan would mitigate all of its potentially significant impacts to biological resources to a less than significant level. Therefore, the 2018 Master Plan would not result in the increased exposure of biological resources to risks from climate change.

c. Mitigation Measures

Implementation of the 2018 Master Plan would not result in GHG emissions that would result in a significant impact on the environment or conflict with an applicable plan. This impact is less than significant; therefore, no mitigation is required.

4.6.4 Cumulative Impacts

Due to the nature of assessment of GHG emissions and the effects of climate change, impacts can currently only be analyzed from a cumulative context. Therefore, the analysis provided above includes the analysis of both the 2018 Master Plan and cumulative impacts.

4.6.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

All CEQA checklist items under the category of GHG emissions were adequately addressed in this section.

4.6.6 References

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2007 Climate Action Team Proposed Early Actions to Mitigate Climate Change in California. Accessed on December 10, 2007. Available at http://www.climatechange.ca.gov/climate_action_team/reports/index.html.

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2011 Vallecitos Water District 2008 Water, Wastewater, and Recycled Water Master Plan Draft Program Environmental Impact Report. March.

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2010 Greenhouse Gas Emissions website. Updated on April 30. Accessed in May 2010. Available at http://epa.gov/climatechange/emissions/index.html#ggo.

4.7 Hydrology and Water Quality

This section of the Program Environmental Impact Report (PEIR) Supplement describes the potential physical environmental effects related to the issue of hydrology and water quality resulting from development of proposed Capital Improvement Program (CIP) projects under the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

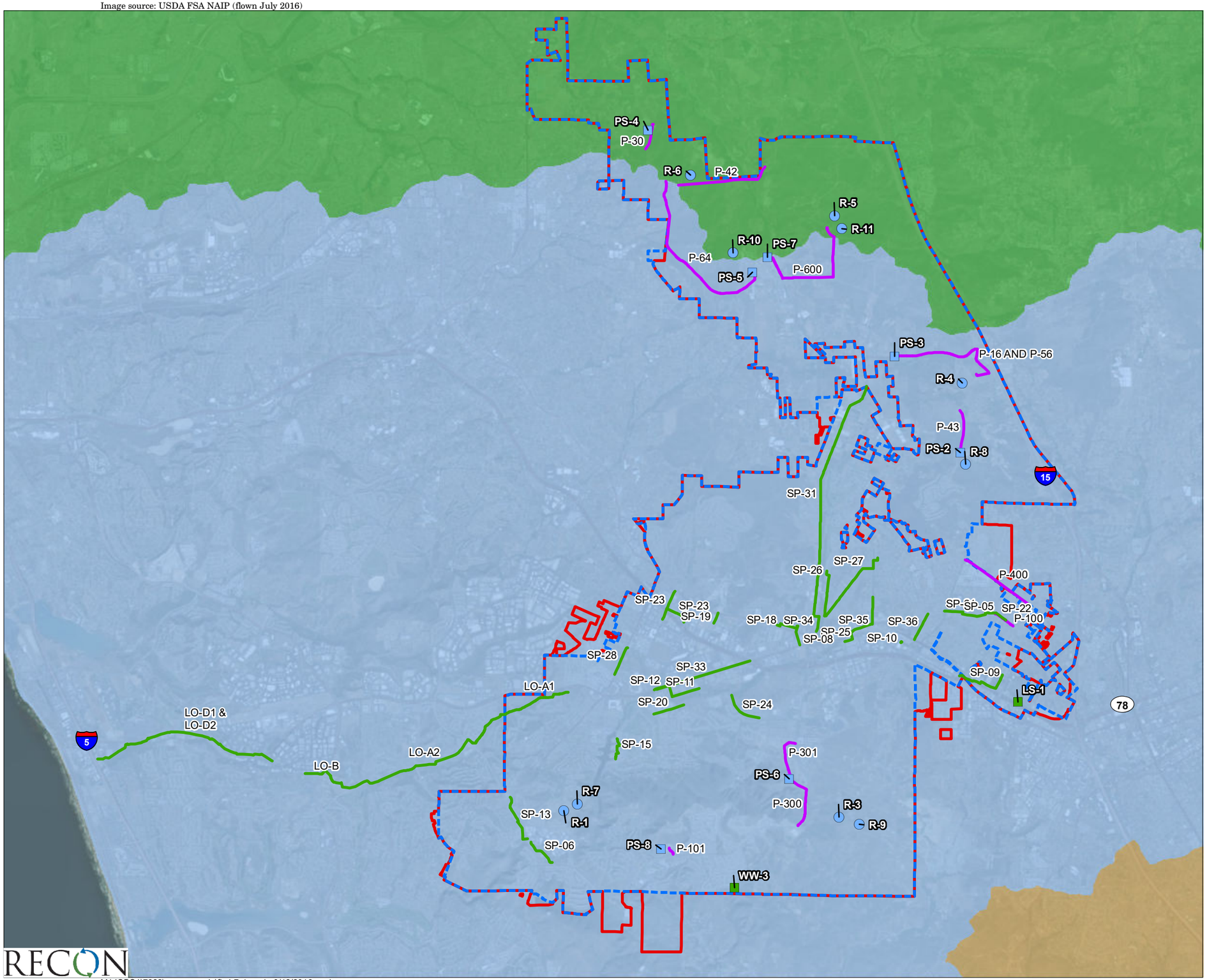
The 2011 PEIR for the VWD 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified one potentially significant impact associated with hydrology and water quality (the potential for above-ground CIP projects to sustain damage from a mudflow). The 2011 PEIR identified mitigation measure Geo-1 to reduce this impact to a less than significant level. The 2018 Master Plan update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.7.1 Environmental Setting

4.7.1.1 Hydrology

The VWD service area is located within the Carlsbad Hydrologic Unit and San Luis Rey Hydrologic Unit (Figure 4.7-1). The Carlsbad Hydrologic Unit is bound by the San Luis Rey Hydrologic Unit to the north, the San Dieguito Hydrologic Unit to the east and south, and the Pacific Ocean on the west. The San Luis Rey Hydrologic Unit is bound by the Carlsbad Hydrologic Unit and San Dieguito Unit to the south, the Anza-Borrego Hydrologic Unit to the east, the Santa Margarita Hydrologic Unit to the north, and the Santa Margarita Hydrologic Unit and Pacific Ocean to the west. A description of the Carlsbad Hydrologic Units and the San Luis Rey Hydrologic Unit is provided below.

Image source: USDA FSA NAIP (flown July 2016)



- VWD Service Area
- Vallecitos Water District
- Sewer Pump Station CIP
- Sewer Line CIP
- Water Reservoir CIP
- Water Pump Station CIP
- Water Line CIP

Hydrologic Units

- CARLSBAD
- SAN DIEGUITO
- SAN LUIS REY

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FIGURE 4.7-1
Hydrologic Units within
VWD Service Area

a. Carlsbad Hydrologic Unit

The majority of the VWD service area is located within the Carlsbad Hydrologic Unit (see Figure 4.7-1). In its entirety, the Carlsbad Hydrologic Unit covers approximately 210 square miles, and includes the cities of Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff-by-the-Sea, Vista, and Escondido. It is divided into six hydrologic areas: Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. Drainage within the Carlsbad Hydrologic Unit is generally to the west and southwest through drainage channels into lakes or lagoons, all which eventually flow into the Pacific Ocean. Major drainages of this hydrologic unit are shown in Figure 4.7-1 and include Buena Vista Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek. Major water bodies within this watershed include Lake Wohlford and Dixon Reservoir in the upper reaches of the watershed and Olivenhain Reservoir in lower portions of the watershed. The Carlsbad Hydrologic Unit also has four major coastal lagoons, including Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, and San Elijo Lagoon. Almost half of the Carlsbad Hydrologic Unit is urbanized with dominant land uses including residential, commercial, industrial, freeways and roads, agriculture, and vacant or undeveloped land. The Carlsbad Hydrologic Unit is relatively dry with annual precipitation levels ranging from approximately 10 inches within the coastal areas to 17 inches in the more mountainous inland areas (Mazor and Schiff 2007).

b. San Luis Rey Hydrologic Unit

A small northern portion of the VWD service area resides within the San Luis Rey Hydrologic Unit (see Figure 4.7-1). The San Luis Rey Hydrologic Unit spans from the Pacific Ocean in the west to central San Diego County in the east, encompassing a total area of approximately 565 square miles and including portions of Oceanside, Bonsall, Fallbrook, Valley Center, Camp Pendleton, and Pala/Pauma Valley. The San Luis Rey Hydrologic Unit is divided into three hydrologic areas: Lower San Luis, Monserate, and Warner Valley. The major drainage of this hydrologic unit is the San Luis Rey River. The San Luis Rey River is approximately 50 miles long, and is interrupted by a large dam, creating Lake Henshaw. Additional drainages in this hydrologic unit include Pala Creek, Trujillo Creek, Frey Creek, Potrero Creek, Hell Creek, Keys Creek, Gopher Canyon Creek, and Pilgrim Creek. The San Luis Rey Hydrologic Unit also contains two coastal lagoons areas, the mouth of the San Luis Rey River and Loma Alta Slough. The annual average precipitation throughout the hydrologic unit ranges from less than 12 inches near the ocean to 45 inches near Palomar Mountain in the east. Agriculture is more extensive in the San Luis Rey Hydrologic Unit than any other watershed in San Diego, with agricultural land use occupying 24 percent of the watershed area. Developed land covers another 15 percent, and the remaining 61 percent is open space (Mazor and Shiff 2008).

4.7.1.2 Water Quality

This section defines common water quality contaminants and describes existing surface water quality issues within the VWD service area.

a. Water Quality Contaminants

Metals

Metals can impact surface water quality by accumulating in sediments and fish tissues. This poses risks of toxicity such as lowering the reproductive rates and life spans of aquatic animals and animals up the food chain. Metals can also alter photosynthesis in aquatic plants and form deposits in pipes. Metals in urban runoff can result from automobile use, industrial activities, water supply infrastructure corrosion, mining, or pesticide application. Atmospheric deposition can also contribute metals to water bodies. Groundwater can be contaminated from metals from improper disposal of waste generated from small businesses such as automobile repair shops or metal parts cleaning operations.

Nutrients (Phosphorous and Nitrogen)

High levels of nitrogen and phosphorus in surface waters can produce harmful algal blooms. In turn, these blooms can produce "dead zones" in water bodies where dissolved oxygen levels are so low that most aquatic life cannot survive. Typical sources of nutrients in surface waters are improper fertilizer usage (both agricultural and residential), discharges from failing or improperly maintained septic systems, and accidental sanitary sewer overflows. Nitrate, which is composed of nitrogen and oxygen, occurs naturally in soil and water. Nitrate is an important constituent in fertilizers used for agricultural purposes and is present in human and animal wastes. Typical sources of elevated nitrates in groundwater are failing septic tanks, feed lots, or farming operations. Infants, young livestock, and pets are extremely susceptible to potential health effects from drinking water with nitrates above regulated levels and could become seriously ill. If untreated, the condition can be fatal.

Petroleum Products (Gasoline, Diesel, Oil and Grease)

Gasoline, diesel, oil, and grease are characterized as high molecular weight organic compounds. Primary sources of gasoline, diesel, oil, and grease contaminants are motor products from leaking vehicles and underground storage facilities and tanks. Petroleum hydrocarbon products commonly found in gasoline, including benzene, toluene, ethylbenzene, xylene, and Methyl tertiary butyl ether (MTBE), are considered common petroleum contaminants to surface water and groundwater. Benzene is used as a gasoline additive, industrial solvent, and in the production of drugs, plastics, rubber and dyes. Toluene is widely used as an industrial feedstock and as a solvent. Ethylbenzene is used in the production of plastic while xylene is used as a solvent in the printing, rubber, and leather industries. MTBE is a gasoline additive that has historically caused groundwater contamination from spills or leaks at gas stations. Additional sources of oil and grease include esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to water bodies is typically due to the widespread use and application of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of a water body, as well as its water quality.

Pathogens (Bacteria and Viruses)

Water contaminated with pathogens such as bacteria and viruses can introduce diseases to humans and animals. This can have significant public health implications, particularly related to water used for drinking and recreational uses such as swimming, surfing, and shellfish harvesting. Common sources of pathogens in surface water include wild and domesticated animals, urban and agricultural activities, and accidental sanitary sewer overflows. Elevated bacteria in groundwater occur primarily from human and animal wastes. Sources of bacteriological contamination include septic tanks, natural soil/plant bacteria, feed lots, pastures, and other land areas where animal wastes are deposited. Old wells with large openings, including hand dug wells and wells with inadequate seals, are most susceptible to bacteriological contamination from insects, rodents, or animals entering the well.

Pesticides and Herbicides

Pesticides and herbicides can enter surface water and groundwater from both agricultural and urban areas. Typical impacts include accumulation in sediments and bioaccumulation in the food chain. Pesticides and herbicides can be toxic to both aquatic life and humans.

Sediments

Increased sedimentation, over and above the amount that enters the water system by natural erosion, can cause many adverse impacts on aquatic organisms, water supply, and wetlands. Sedimentation can decrease transmission of light, which affects plant production and leads to loss of food and cover for aquatic organisms. It can change behavioral activities (nesting, feeding, mating), and adversely affect respiration, digestion, and reproduction. Contaminants and toxic substances can also be transported in sediments. Sediments can damage water treatment equipment, increasing treatment costs. They can reduce reservoir volume and flood storage and increase peak discharges.

Total Dissolved Solids

Total dissolved solids (TDS) refer to the total concentration of all minerals, salts, metals, cations or anions that are dissolved in water. TDS is composed of inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonate, carbonate, chloride and sulfate), and some small amounts of organic matter that are dissolved in water. The primary source of TDS in groundwater is the natural dissolution of rocks and minerals, but septic tanks, agricultural runoff, and storm water runoff also contribute. Increased salts in regional freshwater resources from mining, urban runoff, and construction can create stressful environments and even destroy habitat and food sources for wetland animals in aquatic and wetland habitats, as well as favoring salt tolerant species; reduce the quality of drinking water; and may cause skin or eye irritations in people.

Surface Water Quality

The following discussion identifies surface water quality issues facing the Carlsbad Hydrologic Unit and San Luis Rey Hydrologic Unit. Additional information, including beneficial uses, water quality objectives, implementation strategies, plans and policies, and surveillance, monitoring and assessment information, for each watershed management area (WMA) discussed below can be found by accessing the San Diego Basin Water Quality Control Plan (Basin Plan) available at the State Water Resources Control Board (SWRCB) website: http://www.swrcb.ca.gov/.

San Luis Rey Hydrologic Unit

Major impacts to the San Luis Rey Hydrologic Unit include surface water quality degradation, habitat loss, invasive species, and channel bed erosion. As shown in Table 4.7-1, five water bodies in the San Luis Rey WMA have been placed on the 2010 Clean Water Act (CWA) 303(d) list. Constituents of concern for the Hydrologic Unit include bacterial indicators along the Pacific Coast Shoreline, eutrophic conditions within Guajome Lake, selenium in Keys Creek, and several different constituents in the upper and lower portions of the San Luis Rey River. Potential sources of these contaminants are varied and include both anthropogenic and natural sources. As of September 2018, the Basin Plan amendment that would establish a Total Maximum Daily Load for bacteria in this watershed is currently in the public notice period for its triennial review. Resolution No 2015-0043 approved by the San Diego Regional Water Quality Control Board (RWQCB) on May 15, 2015 directed RWQCB staff to allocate resources to begin working on the biological objectives for the amendment. The Basin Plan amendment will require final approval from the SWRCB after initial approval from the RWQCB.

Carlsbad Hydrologic Unit

Major impacts to the Carlsbad Hydrologic Unit include surface water quality degradation, sewage spills, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Eleven water bodies in the Carlsbad Hydrologic Unit have been placed on the CWA 303(d) list, as shown in Table 4.7-1. Pollutant conditions in the Carlsbad Hydrologic Unit include bacterial indicators, eutrophic conditions, nutrients, sediments, sulfates, nitrates and phosphates. The sources of these pollutants are varied and include urban runoff, agricultural runoff, sewage spills, livestock/domestic animals, and other natural sources. Each impaired lagoon listed in Table 4.7-1 is also identified in the San Diego Regional Water Quality Control Board Investigation Order and Technical Report for Lagoons Total Maximum Daily Load Project - Order No. R9-2006-0076, which establishes monitoring requirements for dischargers (RWQCB 2017). This order required monitoring to begin during the 2007-2008 wet weather monitoring season. According to the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC Engineering and Consulting 2009), the results of the monitoring revealed that the four lagoons within the hydrologic unit all exceeded their water quality objectives for four impairment categories: bacterial indicators, nutrient/eutrophication impairment, total dissolved solids, and sediments. Bacterial

Table 4.7-1
Water Bodies Identified as Impaired under the Clean Water Act

Watershed Management Area (WMA)	Water Body Name	Pollutant/Stressor
San Luis Rey WMA	Pacific Ocean Shoreline	Enterococcus, Total Coliform
	Lower San Luis Rey River	Chloride, Enterococcus, Fecal Coliform, Phosphorus, TDS, Total Nitrogen as N, Toxicity
	Upper San Luis Rey River	Total Nitrogen as N
	Keys Creek	Selenium
	Guajome Lake	Eutrophic
Carlsbad WMA	Agua Hedionda Creek	Enterococcus, Fecal Coliform, Manganese, Phosphorus, Selenium, TDS, Total Nitrogen as N, Aquatic Toxicity
	Buena Creek	DDT, Nitrate, Nitrite
	Buena Vista Creek	Sediment Toxicity, Selenium
	Cottonwood Creek (San Marcos)	DDT, Sediment Toxicity, Selenium
	Encinitas Creek	Selenium, Toxicity
	Escondido Creek	DDT, Enterococcus, Fecal Coliform, Manganese, Phosphate, Selenium, Sulfates, TDS, Total Nitrogen as N, Toxicity
	Loma Alta Slough	Eutrophic, Indicator Bacteria
	Pacific Ocean Shoreline	Indicator Bacteria, Total Coliform
	San Elijo Lagoon	Eutrophic, Indicator Bacteria, Sedimentation/Siltation
	San Marcos Creek	DDE, Phosphorus, Sediment Toxicity, Selenium
	San Marcos Lake	Ammonia as Nitrogen, Nutrients

SOURCE: Project Clean Water 2017a and 2017b.

indicators exceeded water quality objectives within the four lagoons in the hydrologic unit that were 303(d) listed for bacteria impairments: Agua Hedionda Lagoon, Buena Vista Lagoon, Loma Alta Slough, and San Elijo Lagoon. The three lagoons that were 303(d) listed for nutrient/eutrophication impairments (Buena Vista Lagoon, Loma Alta Slough, and San Elijo Lagoon) all exceeded their respective water quality objectives. San Elijo Lagoon, the only lagoon that was 303(d) listed for total dissolved solids, exceeded its respective water quality objectives. All four lagoons were 303(d) listed for sediment impairments; however, the basin plan only specifies narrative water quality objectives for sediment.

4.7.1.3 Flood Hazards

Flooding is a general or temporary condition of partial or complete inundation of normally dry land areas near water. Flooding is associated with precipitation, development, faulty drainage facilities, dam inundation, tsunamis or seiches. These flood hazards are discussed below.

a. Precipitation Induced Flooding

Mudflows are shallow water-saturated landslides that travel rapidly down slopes carrying rocks, brush, and other debris. Mudflows are a relatively common occurrence in San Diego. A mudflow occurs naturally as a result of heavy rainfall on a slope that contains loose soil or debris. Human activity can also induce a mudslide, such as when soil becomes saturated from a broken water pipe or incorrect diversion of runoff concentrated from developed areas that saturate soil. The path of a mudflow is determined by local topography, and will typically follow existing drainage patterns. The fluidity and depth of the water/soil/debris mixture and the steepness of a channel are all variables that influence the rate of movement of a mudflow.

b. Development

The conversion of undeveloped, natural areas to urbanized uses throughout San Diego's watersheds have contributed to increased potential for flooding, by increasing the rate and amount of runoff in a watershed and altering drainage patterns. Construction of impervious surfaces such as structures, roads and driveways reduces the amount of rainfall that can infiltrate the ground surface and move to the subsurface. As a result, the volume of surface water runoff increases within a watershed; subsequently, artificial conveyances such as gutters, storm pipes and natural channel improvements to accommodate additional volume accelerate the rate of flow of water in the watershed. This faster-moving, higher volume of surface water runoff within a watershed results in a higher probability and increased severity of flooding within a watershed, if facilities are not adequately maintained or constructed to carry peak flow capacity.

Any alteration to natural drainage patterns by modifying landforms that control the conveyance of surface water can increase the potential for flooding. Grading or other modifications, including directly altering the course of a stream or river by excavation or embankment, can increase velocities of floodwaters, which increases the potential for flooding downstream of the modification. A reduction in the capacity of the watercourse can increase the potential for flooding at the site of the modification as well as upstream from the activity.

c. Faulty Drainage Facilities

Drainage facilities including storm drains, culverts, inlets, channels, or other such structures are designed to prevent flooding by collecting storm water runoff and directing flows to either the natural drainage course and/or away from urban development. The

capacity of a drainage structure can typically be adequately determined by a hydrology and drainage study; however, if drainage facilities are not adequately designed or built, or properly maintained, the facilities can overflow or fail, resulting in flooding.

d. Dam Failure

Dam failure inundation is caused by the release of impounded water from structural failure or overtopping of a dam. The failure of a dam occurs most commonly as a result of extreme rainfall, poor design, neglect, or structural damage caused by earthquakes. This event is extremely hazardous, as it will typically occur quickly and without warning. Areas directly below the dam are at the greatest risk, and as the water moves farther downstream and reduces in velocity and depth, the magnitude of the damage and potential risk to life and property decreases.

The San Diego Multi-Jurisdictional Hazard Mitigation Plan identifies dam failure risk levels (high, significant, low) based on dam inundation map data (URS Corporation 2004). A simple way to define high risk of dam failure is if failure of the dam is likely to result in loss of human life. Most dams in San Diego County are greater than 50 years old and are characterized by increased hazard potential due to downstream development and increased risk due to structural deterioration and inadequate spillway capacity. Dam inundation areas potentially affecting the VWD service area and CIP facilities surround the San Marcos Dam, Stanley A. Mahr Reservoir, and Dixon Dam. According to the San Diego Multi-Jurisdictional Hazard Mitigation Plan, the San Marcos Dam and the Stanley A. Mahr Reservoir dam both have a "significant" potential for hazards related to dam failure while Dixon Dam has a "high" potential for hazards related to dam failure (County San Diego Office of Emergency Services 2010).

e. Tsunamis

Tsunamis are long-wavelength, long-period sea waves generated by an abrupt movement of large volumes of water. These waves can be caused by underwater earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failures. In San Diego, wave heights and run-up elevations from tsunamis have historically fallen within the normal range of tides. Table 4.7-2 gives the years and heights of the largest tsunami events in San Diego. Areas along the coast of San Diego are the most susceptible to potential damage from tsunamis (County of San Diego Office of Emergency Services 2010).

Table 4.7-2
Tsunami Heights in San Diego

Year	Height (feet)
1952	2.3
1957	1.5
1960	2.1
1964	3.7

SOURCE: County of San Diego Office of Emergency Services 2010.

f. Seiches

A seiche is a standing wave in a completely or partially enclosed body of water. Areas located along the shoreline of a large lake or reservoir are susceptible to inundation by a seiche. High winds, seismic activity, or changes in atmospheric pressure are typical causes of seiches. The size of a seiche and the affected inundation area is dependent on different factors including size and depth of the water body, elevation, source, and if human made, the structural condition of the body of water in which the seiche occurs.

g. Flood Mapping

The Federal Insurance Rate Map (FIRM) is the official map created and distributed by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP) that delineates the special flood hazard areas and those areas subject to inundation by the base flood, for every county and community that participates in the NFIP. FEMA's floodplain maps contain flood risk information based on historic, meteorological, hydrologic, and hydraulic data, as well as open space conditions, flood control works, and development. Figure 4.7-2 shows FEMA floodway and floodplain areas for the VWD service area. As shown in this figure, portions of the VWD service area are located within a 100-year floodplain or floodway.

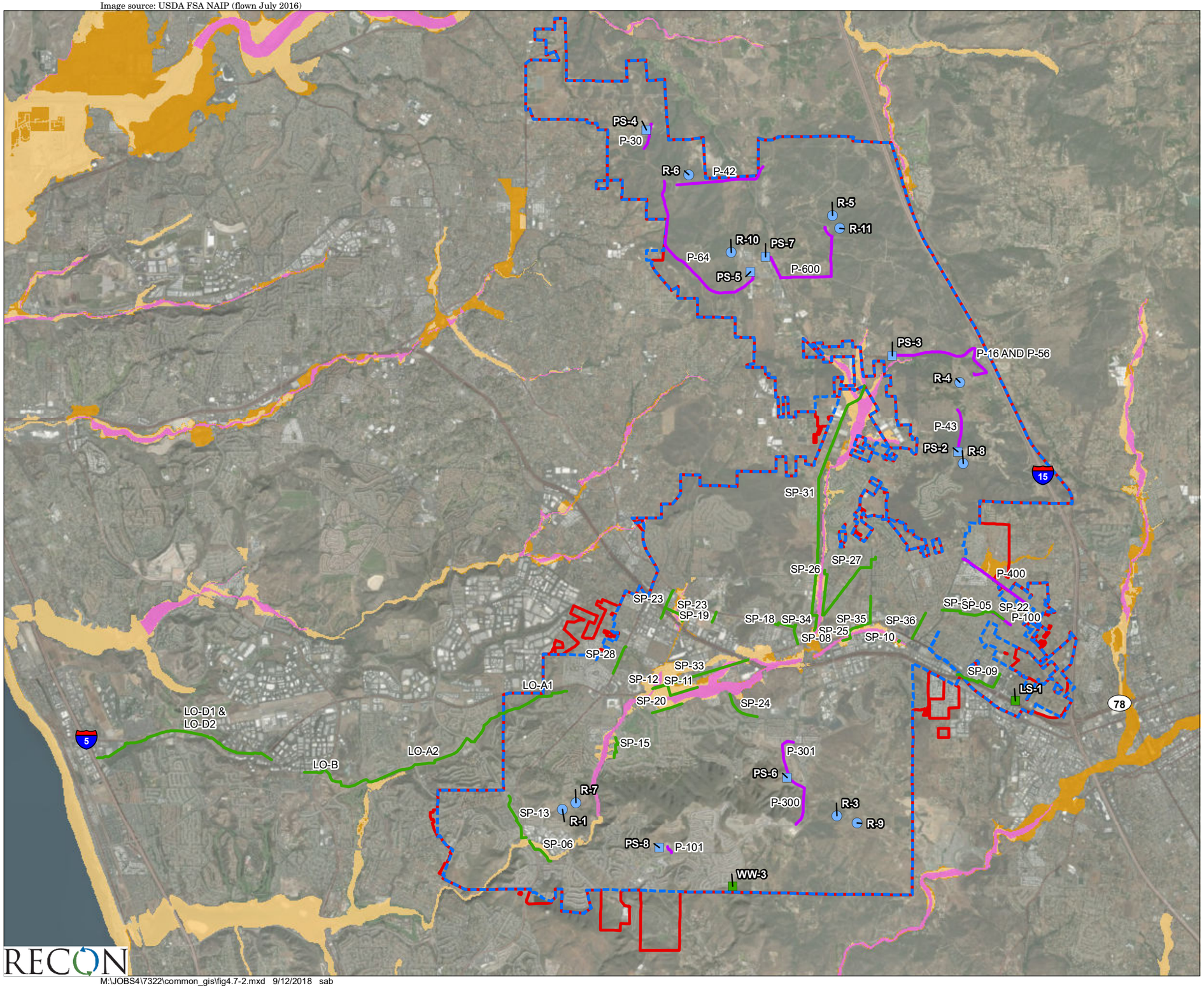
4.7.2 Regulatory Framework

4.7.2.1 Federal

a. Clean Water Act

The 1972 CWA was designed to restore and maintain the chemical, physical, and biological integrity of the waters of the U.S. The CWA also directs states to establish water quality standards for all waters of the U.S. and to review and update such standards on a triennial basis. The U.S. Environmental Protection Agency (U.S. EPA) has delegated responsibility for implementation of portions of the federal CWA in California to the SWRCB and RWQCBs. This includes water quality control planning and programs such as the National Pollutant Discharge Elimination System (NPDES) for post-construction stormwater management (U.S. EPA 2017), which seeks to protect water quality through the issuance of permits regulating the discharge of pollutants into waters of the U.S. Section 303 of the CWA requires states to adopt water quality standards for all intrastate waters of the U.S.

Image source: USDA FSA NAIP (flown July 2016)



VWD Service Area

Vallecitos Water District

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

FEMA Flood Zones

100-year Flood Way

100-year Flood Zone

500-year Flood Zone

0 Miles 1.2

RECON

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FIGURE 4.7-2

FEMA Floodplains/Floodways

b. National Flood Insurance Act

The National Flood Insurance Act of 1968 established the NFIP to provide flood insurance within communities that were willing to adopt floodplain management programs to mitigate future flood losses. The act also required the identification of floodplain areas within the U.S. and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing FIRMs that delineate the areas of known flood hazards and their risk applicable to the community.

c. National Flood Insurance Reform Act

The National Flood Insurance Reform Act of 1994 resulted in major changes in the NFIP. The act, which amended the Flood Disaster Protection Act of 1973, provided tools to make NFIP more effective in achieving its goals of reducing the risk of flood damage to properties and reducing federal expenditures for uninsured properties that are damaged by flood. The Act required mitigation insurance and established a grant program for state and community flood mitigation planning projects.

4.7.2.2 State

a. Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, enacted in 1972, authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and ground waters), and directs the RWQCBs to develop region-specific Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The purpose of these plans is to designate beneficial uses of the region's surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

b. Cobey-Alquist Floodplain Management Act of 1965

Under the Cobey-Alquist Floodplain Management Act, local governments are encouraged to plan, adopt, and enforce land use regulations for floodplain management, in order to protect people and property from flooding hazards. This act also identifies requirements that jurisdictions must meet in order to receive state financial assistance for flood control. The Act supports restrictive general plan policies and zoning provisions with respect to floodplain management. Policies and programs providing for protection and prevention of community flood hazards should be incorporated into the safety element of the jurisdiction's general plan. Further, floodways and floodplain boundaries should be designated, and a consistent land use designation given to affected lands in the land use element (including its diagram) of the jurisdiction's general plan.

c. NPDES Permits

In California, the SWRCB and its RWQCBs administer the NPDES permit program. The NPDES permit system was established in the federal and California CWA to regulate both point-source discharges and nonpoint-source discharges to surface waters of the U.S. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive storm water management program. Construction and industrial activities are typically regulated under statewide general permits that are issued by the SWRCB. The RWQCB also issues Waste Discharge Requirements that also serve as NPDES permits under the authority delegated to the RWQCBs, under the CWA. In November 1990, under Phase I of the urban runoff management strategy, the U.S. EPA published NPDES permit application requirements for municipal, industrial, and construction storm water discharges. With regard to municipalities, the permit application requirements were directed at jurisdictions owning or operating municipal separate storm sewer systems (MS4s) serving populations of 100,000 or more, or contributing significant pollutants to waters of the U.S. Such municipalities were required to obtain coverage under an NPDES municipal storm water permit, as well as to develop and implement an urban runoff management program to reduce pollutants in urban runoff and storm water discharges.

d. Construction Storm Water Permits

In California, storm water runoff from construction activities that result in soil disturbances of one or more acres (and projects that meet other specific criteria) is governed by the SWRCB under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground. The San Diego RWQCB enforces the Construction General Permit for projects located within incorporated and unincorporated areas of San Diego County. VWD is required to obtain coverage under the Construction General Permit prior to commencement of construction activities for CIP projects that would disturb one or more acres. The Construction General Permit outlines the requirements for preparation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) and monitoring programs if there is a failure of BMPs or if the site discharges directly to a water body on the 303(d) list for sediment. The approved SWPPP must address erosion-control BMPs for both construction and long-term operations on each development site, as required by the Construction General Permit. Such BMPs include, but are not limited to, the following actions:

- Minimize disturbance to existing vegetation and slopes.
- Provide temporary hydroseeding of cleared vegetation and graded slopes as soon as possible following grading activities for areas that will remain in disturbed condition (but will not be subject to further construction activities) for a period greater than two weeks during the construction phase.
- Construct drainage control devices (e.g., storm drains, brow ditches, subdrains) to direct surface water runoff away from slopes and other graded areas.

- Remove sediment from surface runoff before it leaves the construction site through the use of silt fences or other similar devices around the site perimeter.
- Protect storm drain inlets downstream of the construction site to eliminate entry of sediment.
- Prevent off-site tracking of soil through the use of gravel strips or wash facilities at exit areas.
- Protect or stabilize stockpiled soils.
- Implement proper storage, use, and disposal of construction materials.
- Continually inspect and maintain BMPs through the duration of construction.

4.7.2.3 Local

a. San Diego Basin Plan

The San Diego Basin Plan, most recently amended in 2016, is intended to enhance and preserve water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan is designed to accomplish the following: (1) designate beneficial uses for surface and ground waters; (2) set the narrative and numerical water quality objectives that must be attained or maintained to reasonably protect the designated beneficial uses and conform to the state's anti-degradation policy; (3) describe implementation programs to protect the beneficial uses of all waters within the region; and (4) describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable SWRCB and RWQCB water quality control plans and policies.

4.7.3 Master Plan Impacts and Mitigation

4.7.3.1 Issue 1 – Water Quality

Hydrology and Water Quality Issue 1 Summary	
Would the 2018 Master Plan violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality?	
Impact: Compliance with the Construction General Permit Order 2009-0009-DWQ, including the preparation of a SWPPP and implementation of applicable BMPs, would reduce the potential increase in pollutants associated with construction of the Master Plan CIP projects. The MS4 permit, required by NPDES, requires the development of a hydromodification management plan (HMP), which would ensure that operation of the CIP projects would not result in a violation of water quality standards or the degradation of water quality.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it violates any water quality standards or waste discharge requirements, or otherwise substantially degrades water quality.

b. Impact Analysis

The 2018 Master Plan, including the Diamond Siphon project alternatives, would have the potential to contribute to a violation of water quality standards or the degradation of surface water quality from construction activities and from activities following construction. Table 4.7-1 identifies water bodies in the San Luis Rey WMA and Carlsbad WMA that are identified as impaired under the Clean Water Act. This table also shows the pollutant(s) underlying such impairment.

Construction Activities

The construction of the 2018 Master Plan CIP projects, including the Diamond Siphon project alternatives, would have the potential to result in substantial additional sources of polluted runoff which would have short-term impacts on surface water quality through

activities such as demolition, clearing and grading, excavation of undocumented fill materials, stockpiling of soils and materials, concrete pouring and painting. Typically, construction activities involve various types of equipment such as dozers, scrapers, graders, loaders, compactors, dump trucks, water trucks, and concrete mixers. Additionally, soils are typically stockpiled outdoors, in addition to other construction materials that would be used later during construction. Pollutants associated with these construction activities that would substantially degrade water quality include soils, debris, other materials generated during demolition and clearing, fuels and other fluids associated with the equipment used for construction, paints, other hazardous materials, concrete slurries, and asphalt materials.

Pollutants associated with construction activities would degrade water quality if they are washed by storm water or non-storm water into surface waters. Sediment is often the most common pollutant associated with construction sites because of the associated earth-moving activities and areas of exposed soil. Sediment that is washed off-site can result in turbidity in surface waters, which can impact aquatic species. In addition, when sediment is deposited into receiving water it can smother species, alter the substrate and habitat, and alter the drainage course. Hydrocarbons such as fuels, asphalt materials, oils, and hazardous materials such as paints and concrete slurries discharged from construction sites could also impact aquatic plants and animals downstream. Debris and trash could be washed into existing storm drainage channels to downstream surface waters and could impact wildlife as well as aesthetic value. The potential increase in pollutants associated with construction activities could result in a violation in water quality standards or a substantial degradation of water quality.

Under the SWRCB's General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ, construction activity, such as clearing, grading, and disturbances to the ground, requires SWPPPs to be prepared for covered construction activities. Construction activities that are required to be covered under the General Permit include:

1. Construction activity, such as, excavation, or any other activity that results in a land disturbance of equal to or greater than one acre.
2. Construction activity that results in land surface disturbances of less than one acre if the construction activity is part of a larger common plan of development or sale of one or more acres of disturbed land surface.
3. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to USEPA regulations, such as dairy barns or food processing facilities.
4. Construction activity associated with Linear Underground/Overhead Projects (LUPs) including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal,

trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations, resulting in land disturbances of greater than one acre.

5. Discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities.
6. Storm water discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit.

The SWPPP includes BMPs to be implemented to reduce the occurrence of pollutants in surface water. In compliance with applicable construction permits, the proposed CIP projects would implement BMPs that minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff, such as the following:

- Minimizing disturbed areas. Clearing of land is limited to that which will be actively under construction in the near term, new land disturbance during the rainy season is minimized, and disturbance to sensitive areas or areas that would not be affected by construction is minimized.
- Stabilizing disturbed areas. Temporary stabilization of disturbed soils is provided whenever active construction is not occurring on a portion of the site, and permanent stabilization is provided by finish grading and permanent landscaping.
- Protecting slopes and channels. Outside of the approved grading plan area, disturbance of natural channels is avoided, slopes and crossings are stabilized, and increases in runoff velocity caused by the project is managed to avoid erosion to slopes and channels.
- Controlling the site perimeter. Upstream runoff is diverted around or safely conveyed through the project and is kept free of excessive sediment and other constituents.
- Controlling internal erosion. Sediment-laden waters from disturbed, active areas within the site are detained.

Compliance with the Storm Water General Permit, including the preparation of a SWPPP and implementation of applicable BMPs, would reduce the potential increase in pollutants associated with construction activities to a less than significant level. Therefore, the 2018 Master Plan would comply with the General Permit and other applicable water quality standards during construction and impacts would be less than significant.

Operational Activities

Equipment and hazardous materials associated with construction operations would be removed from construction sites after development of a proposed CIP project is complete,

which would reduce the potential for pollutants to be discharged. Additionally, the 2018 Master Plan would comply with the requirements of the Municipal Separate Storm Sewer System (MS4) permit. An MS4 is a system of conveyances designed or used for collecting or conveying storm water that is not a combined sewer or part of a publicly owned treatment works. It includes roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains. These drainage systems typically dump their water (and any associated pollutants) directly into streams, bays, and/or the ocean. The RWQCB issues an MS4 permit to the public agencies which own and operate MS4s in order to establish the conditions under which pollutants can be discharged from the storm drain system to local streams, coastal lagoons, and the Ocean. The MS4 permit implements requirements of the Clean Water Act and Federal NPDES storm water regulations. Since 1990, permits have been issued to municipalities based on their county location. The MS4 permit requires the County and the municipalities to adopt and enforce storm water management programs and measures to:

1. Identify major outfalls and pollutant loadings (e.g., determine through testing and other methods where pollutants entering the MS4 are coming from);
2. Detect and eliminate all non-storm water discharges to the system, except as specifically exempted (e.g., this is accomplished through the enforcement of ordinances adopted to prohibit non-storm water discharges to the system);
3. Prevent and reduce pollutants in runoff from industrial, commercial, and residential areas through the implementation of BMPs (e.g., BMPs prescribed by ordinances);
4. Control storm water discharges from new development and redevelopment (e.g., through ordinances and by RWQCB under the Construction Storm Water General Permit);
5. Inspect industrial, commercial, and construction activities;
6. Provide pertinent education and promote public reporting of pollution;
7. Monitor discharges and impacts on receiving waters.

The MS4 permit covering the local jurisdictions in which portions of the VWD service area are located, require the development of a HMP. Pursuant to RWQCB Order R9-2013-0001, provision E.3.c.(2), HMPs must be prepared with the purpose of managing increases in runoff discharge rates and durations from specific projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. Additionally, processes developed by the SWRCB and the RWQCB to improve water quality, such as storm water permits for construction, would be required during CIP project construction. For example, the 2018 Master Plan would be required to comply with the General Construction Storm Water Permits, which regulate the discharge of polluted runoff during construction. Refer to the Construction Activities discussion above for details on the NPDES permit program, SWPPPs and BMPs.

Construction of CIP projects proposed in the 2018 Master Plan would be constructed to ensure VWD facilities meet existing and projected future demand in a reliable manner,

including the installation of adequate capacity to avoid or minimize sanitary sewer overflow events and the availability of adequate wastewater treatment capacity to ensure NPDES and waste discharge requirements are met. And construction activities for the proposed CIP projects would comply with the Construction Storm Water General Permit and the requirements by the MS4 permittees, and as a result these activities would not violate any applicable water quality standards during construction or operation and impacts would be less than significant.

Therefore, the 2018 Master Plan would not result in a violation of waste discharge requirements from operation and impacts would be less than significant.

c. Mitigation Measures

Compliance with the Construction Storm Water general permit and the requirements of the local MS4 jurisdictions affecting storm water discharges would ensure that the proposed Master Plan CIP projects would not result in significant impacts related to violations of water quality standards and surface water quality degradation. Therefore, no mitigation is required.

4.7.3.2 Issue 2 – Alteration of Drainage Patterns

Hydrology and Water Quality Issue 2 Summary	
Would the 2018 Master Plan substantially alter existing drainage patterns, including the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would provide substantial additional sources of polluted runoff (including erosion/siltation); result in flooding (and exposure of people or structures to a significant risk of loss, injury or death); or exceed the capacity of storm water drainage systems?	
Impact: Construction and operation of CIP projects and any associated access roads would comply with the Construction Storm Water General Permit and would not result in the alteration in drainage patterns, increased polluted runoff, flooding and an exceedance in the capacity of a storm water drainage facility.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, the 2018 Master Plan would have a significant impact if it would substantially alter existing drainage patterns, including the alteration of the course of a stream or river, or substantially increase the rate or amount of

surface runoff in a manner which would provide substantial additional sources of polluted runoff (including erosion/siltation); result in flooding (and exposure of people or structures to a significant risk of loss, injury or death); or exceed the capacity of storm water drainage systems.

b. Impact Analysis

Additional Sources of Polluted Runoff/Erosion/Siltation

Land-disturbing construction activities associated with proposed 2018 Master Plan CIP projects, such as grading, trenching, excavation, or the construction of access roads, have the potential to result in localized temporary or permanent alteration of drainage patterns. This can lead to indirect effects on sensitive biological resources downstream of the proposed CIP project sites including the deposition of pollutants and sediment to the watershed outlets, an increase in polluted runoff to surface receiving bodies, and an increase in the flood potential downstream. Upon completion of new CIP reservoirs, pump stations, lift stations, and access roads along pipelines, a permanent increase in impervious surface would occur on each proposed project site. CIP pipeline projects that would require the construction of a permanent access road include: LO-A2, LO-B, LO-D1, LO-D2, P-43, P-30, P-64, P-42, SP-5, SP-11, and SP-25. Permanent access roads for these pipelines would be approximately 10 to 12 feet wide and may have either a concrete or decomposed granite road surface. The increase in impervious surfaces from reservoirs, pump stations, lift stations, and access roads could increase runoff and potentially result in new erosion problems or the worsening of existing erosion problems.

The Construction Storm Water General Permit requires SWPPPs to be prepared for construction sites greater than one acre. Local MS4 jurisdictions have adopted ordinances covering all other construction sites (i.e., sites of less than one acre). In compliance with the SWPPP, the proposed CIP projects would implement BMPs that minimize disturbance, protect slopes, and reduce erosion, as discussed above in Issue 1. Additionally, the Construction Storm Water General Permit requires post-construction storm water management BMPs, under the MS4 program, for projects that disturb more than one acre, such as the following:

- Pervious Concrete Pavement. Pervious concrete, also known as porous, gap-graded, or enhanced porosity concrete, is concrete with reduced sand or fines and allows water to drain through it. Pervious concrete over an aggregate storage bed will reduce storm water runoff volume, rate, and pollutants. The reduced fines leave stable air pockets in the concrete and a total void space of between 15 and 35 percent, with an average of 20 percent. The void space allows storm water to flow through the concrete and enter a crushed stone aggregate bedding layer and base that supports the concrete while providing storage and runoff treatment. When properly constructed, pervious concrete is durable, low maintenance, and has a low life cycle cost.

- Porous Asphalt Pavement. Porous asphalt, also known as pervious, permeable, "popcorn," or open-graded asphalt, is standard hot-mix asphalt with reduced sand or

fines and allows water to drain through it. Porous asphalt over an aggregate storage bed will reduce storm water runoff volume, rate, and pollutants. The reduced fines leave stable air pockets in the asphalt. The interconnected void space allows storm water to flow through the asphalt and enter a crushed stone aggregate bedding layer and base that supports the asphalt while providing storage and runoff treatment. When properly constructed, porous asphalt is a durable and cost competitive alternative to conventional asphalt.

- Grassed Swales. In the context of BMPs to improve water quality, the term swale (also known as grassed channel, dry swale, wet swale, biofilter, or bioswale) refers to a vegetated, open-channel management practices designed specifically to treat and attenuate storm water runoff. As storm water runoff flows along these channels, it is treated through vegetation slowing the water to allow sedimentation, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Variations of the grassed swale include the grassed channel, dry swale, and wet swale. The specific design features and methods of treatment differ in each of these designs, but all are improvements on the traditional drainage ditch. These designs incorporate modified geometry and other features for use of the swale as a treatment and conveyance practice.

- Sand and Organic Filters. Sand filters are usually designed as two-chambered storm water practices; the first is a settling chamber, and the second is a filter bed filled with sand or another filtering media. As storm water flows into the first chamber, large particles settle out, and then finer particles and other pollutants are removed as storm water flows through the filtering medium. There are several modifications of the basic sand filter design, including the surface sand filter, underground sand filter, perimeter sand filter, organic media filter, and Multi-Chamber Treatment Train. All of these filtering practices operate on the same basic principle. Modifications to the traditional surface sand filter were made primarily to fit sand filters into more challenging design sites (e.g., underground and perimeter filters) or to improve pollutant removal (e.g., organic media filter) (EPA 2011).

Compliance with the Construction Storm Water General Permit, including the implementation of applicable construction and post-construction BMPs, would reduce the potential increase in polluted runoff, erosion, and siltation associated with the increase in impervious surfaces to a less than significant level. Therefore, construction and operation activities associated with implementation of the 2018 Master Plan would not alter drainage patterns and would not increase erosion and siltation. Impacts would be less than significant.

Flooding

Land-disturbing construction activities, such as grading, excavation, and the construction of access roads, could result in the localized alteration of drainage patterns. Temporary ponding and/or flooding could result from such activities, from temporary alterations of the drainage system (reducing its capacity of carrying runoff), or from the temporary creation of a sump condition due to grading. The construction of new CIP facilities and access roads on previously undeveloped areas would also result in increased impermeable surfaces, which

have the potential to create a diversion from the natural runoff pattern in a manner that would have the potential to result in flooding. Under the Construction Storm Water General Permit, SWPPPs are prepared and BMPs identified in the SWPPPs are implemented for construction sites greater than one acre, which reduce the likelihood of alterations in drainage to result in flooding impacts, such as those listed above in Issue 1. The Construction Storm Water General Permit also requires post-construction storm water management BMPs, under the MS4 program, for projects that disturb more than one acre, such as those listed above under Additional Sources of Polluted Runoff/Erosion/Siltation. Through compliance with the Construction Storm Water General Permit, including implementation of construction and post-construction BMPs, construction and operational activities associated with 2018 Master Plan CIP projects would not increase the rate and amount of surface runoff to streams and rivers in a manner which would result in flooding on or off site, and would not expose CIP facilities to a significant risk of damage.

Exceeding the Capacity of Storm Water Drainage Systems

Drainage facilities including storm drains, culverts, inlets, channels, curbs, roads, or other such structures are designed to prevent flooding by collecting storm water runoff and directing flows to either the natural drainage course and/or away from development. If drainage facilities are not adequately designed, built, or properly maintained, the capacity of the existing facilities can be exceeded resulting in flooding and increased sources of polluted runoff. As stated above, the 2018 Master Plan has the potential to result in alterations of drainage patterns during construction and post-construction due to an increase in the rate or amount of surface runoff. This alteration in drainage patterns and increase in runoff could exceed the capacity of existing or planned on-site and off-site storm water drainage systems. Storm water discharges are generated by precipitation and runoff from land, structures, and other surfaces. Storm water runoff accumulates pollutants such as oil and grease, chemicals, nutrients, metals, and bacteria as it travels across land. Substantial increased runoff volumes would have the potential to overload existing drainage facilities and increase flows and velocity which could result in flooding, increased erosion, and impacts to downstream receiving waters and habitat integrity. The 2018 Master Plan CIP projects have relatively small development footprints and would not result in a net increase in runoff in a manner that would exceed the storm drainage capacity. Under the Construction Storm Water General Permit, SWPPPs are prepared and BMPs identified in the SWPPPs are implemented for construction sites greater than one acre, which reduce the likelihood of runoff exceeding the capacity of an existing storm water drainage system. The Construction Storm Water General Permit also requires post-construction storm water management BMPs for projects that disturb more than one acre. Local MS4 jurisdictions have adopted ordinances covering all other construction sites (i.e., sites of less than one acre). Additionally, at the time of CIP project design, VWD will implement the relevant requirements of the most up-to-date version of the California Building Code (CBC) for all above-ground CIP projects (reservoirs, pump stations, lift stations), including the design of appropriately sized drainage facilities, where necessary, to capture runoff from each project site in a manner that would minimize flooding. Therefore, though compliance with the Construction Storm Water General Permit, the CBC, and local policies and ordinances, the 2018 Master Plan would not increase runoff in volumes that

would exceed pre-project site conditions and would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

c. Mitigation Measures

Through compliance with the CBC, the Construction Storm Water General Permit, and local policies and ordinances, including the implementation of construction and post-construction BMPs, the 2018 Master Plan, including the Diamond Siphon project alternatives, would result in less than significant impacts related to additional sources of polluted runoff, flooding or exceeding the capacity of storm water drainage systems. Therefore, no mitigation is required.

4.7.3.3 Issue 3 – Mudflows, Dam Inundation, Tsunamis and Seiches

Hydrology and Water Quality Issue 3 Summary	
Would any of the CIP projects under the 2018 Master Plan be exposed to a significant risk of loss by a mudflow, tsunami, seiche, or flooding due to dam inundation or result in flooding due to facility failure?	
Impact: Above-ground 2018 Master Plan CIP projects (reservoirs, pump and lift stations) could be subject to potential damage by a mudflow.	**Mitigation:** Site-specific Geotechnical Investigations (Geo-1).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, the 2018 Master Plan would have a significant impact if it would expose above-ground CIP structures to a significant risk of loss involving inundation by mudflow, tsunami, seiche or dam failure.

b. Impact Analysis

Mudflow

Debris flows, also known as mudflows, are shallow water-saturated landslides that travel rapidly down slopes carrying rocks, brush, and other debris. The VWD service area contains many areas with steep slopes, or mountainous areas, that would be subject to mudflows in the event of large amounts or precipitation. The 2018 Master Plan involves no housing or human occupancy; therefore, life loss would not occur in the event of a mudflow. However, in the event of a mudflow CIP project that includes above-ground facilities such as reservoirs, lift and pump stations would have the potential to be at risk of structure loss. However, mitigation measure Geo-1 would require the completion of a geotechnical study prior to construction of CIP projects. The geotechnical study would adequately assess

geotechnical issues, including mudflow potential and would include sampling of subsurface earth materials. If such materials are found to be susceptible to mudflows, then appropriate techniques to minimize this potential would be designed and implemented, including but not limited to, remedial grading, slope stabilization in areas of proposed development, or construction of buttress fills to remediate the potential for instability of cut slopes. Therefore, implementation of Geo-1 would reduce the exposure of CIP facilities to substantial adverse effects associated with potential mudflows to a less than significant level.

Flooding from Dam Inundation

Dam inundation areas potentially affecting the VWD service area surround the San Marcos Dam, Stanley A. Mahr Reservoir, and Dixon Dam. All dams have dam inundation area maps and emergency plans for areas within inundation areas. In the event of a dam failure, certain proposed CIP facilities would be exposed to the risk of flooding which could result in facility failure. Impacts related to facility failure are discussed below. Due to the dispersed location of each CIP facility, a dam inundation event would likely impact only individual CIP facilities and would not result in a substantial loss of 2018 Master Plan structures or facilities. Further, VWD water storage reservoirs are generally located at higher elevations and would not be subject to flooding from dam inundation. Additionally, no 2018 Master Plan CIP project involves housing or human occupancy. Therefore, a dam inundation event would not result in injury or death related to proposed CIP projects. This impact would be less than significant.

Flooding from Facility Failure

The failure of a proposed CIP project could occur as a result of structural damage caused by a natural event, such as earthquakes or flooding, or equipment failure from age or material defect. Water storage reservoirs are equipped with regularly-inspected overflow devices that allow the reservoir to safely dewater if filled beyond an established capacity, therefore, making reservoir failure unlikely, facility failure could result in flooding caused by the release of impounded water in water storage reservoirs, pump stations, lift stations or pipelines. The failure of a CIP reservoir, pump station, lift station, or pipeline could be extremely hazardous, as it would occur quickly and without warning. Areas directly surrounding the facility would be at the greatest risk. Flooding from facility failure could discharge raw sewage, inundate and cause water damage to structures, bury structures, knock structures off their foundations, or completely destroy structures by the impact of high velocity water and debris, which could include sizable boulders. Impacts resulting from flooding could include the loss of life and/or property; health and safety hazards; disruption of commerce, water, power, and telecommunications services; loss of agricultural lands; and infrastructure damage.

VWD maintains a Sewer System Management Plan to prevent facility failure and overflow response programs to respond to facility failures. Measures outlined in the Sewer System Management Plan include cleaning and monitoring schedules for pipelines through closed circuit viewing systems, and instructions for visual inspections and maintenance of pipeline and lift station facilities. Measures outlined in the overflow response programs include

instructions on response coordination, determining the cause of an overflow, clean-up, sampling and reporting. Implementation of these programs reduces the risk associated with facility failure to a level below significance.

Tsunami

A tsunami is a very large ocean wave caused by an underwater earthquake or volcanic eruption. Tsunamis can cause flooding to coastlines and inland areas less than 50 feet above sea level and within one mile of the shoreline. The only 2018 Master Plan CIP project that is located within a coastal area is the parallel outfall project. All other CIP projects would be located over two miles from the Pacific Ocean and are not subject to tsunami events. As shown in Table 4.7-2, tsunamis have historically been infrequent and low in height in the vicinity of San Diego County. Four tsunamis have been reported since 1952, none more than five feet in height. Therefore, due to the location of the majority of CIP projects, the surface elevation of the VWD service area, which ranges from 250 feet above sea level to 1,600 feet above sea level, and the fact that past historical tsunami events have been slight, potential impacts to the 2018 Master Plan from a tsunami would not be considered significant.

Seiche

A seiche is a standing wave in a completely or partially enclosed body of water. Although water bodies exist within the VWD service area, such as San Marcos and South Lake, these are not large enough to be subject to seiches. Additionally, no 2018 Master Plan CIP project is located adjacent to a water body and would, therefore, not be subject the effects of a seiche. Impacts related to seiches are considered less than significant.

c. Mitigation Measures

Implementation of Geo-1 (described in Section 4.5, Geology, Soils, and Paleontology) would reduce the exposure of above-ground CIP facilities to substantial adverse effects associated with mudflows to a less than significant level; therefore, no additional mitigation is required. CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-11, and SP-12; therefore, these projects are not subject to mitigation measure Geo-1.

4.7.4 Cumulative Impacts

Hydrology and Water Quality Cumulative Issue Summary		
Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative Hydrology and Water Quality impact considering past, present, and probable future projects?		
Cumulative Impact	**Significant?**	**Proposed Master Plan Contribution**
Regional increase in pollutant sources that could adversely affect water quality standards.	Yes	Not cumulatively considerable.
Regional impacts to alteration of localized drainage patterns that can result in increased polluted runoff, flooding, and exceedance of capacity of storm water drainage facilities due to alteration of localized drainage patterns.	Yes	Not cumulatively considerable.

Impacts relative to mudflows are generally specific to a project site; therefore, this issue is not subject to a cumulative impact analysis, and is not addressed in this section.

4.7.4.1 Water Quality

The geographic context for the analysis of cumulative impacts relative to water quality standards encompasses the portions of the Carlsbad and San Luis Rey watersheds directly downstream from the CIP project locations. Land disturbance and development activities are expected to continue in the vicinity of these watersheds. Even with the promulgation of storm water regulations, land disturbance and development activities throughout these watersheds continue to contribute to the overall water quality problems observed in runoff flows that discharge into watercourses, lagoons, and eventually the Pacific Ocean. Additionally, sewer system overflows from past cumulative projects exacerbate water quality issues in the Carlsbad and San Luis Rey watersheds. As shown in Table 4.7-1, five water bodies in the San Luis Rey Watershed and eleven water bodies in the Carlsbad Watershed have been placed on the CWA 303(d) list. As indicated by their 303(d) list status, a significant cumulative impact to the Carlsbad and San Luis Rey watersheds (i.e., regional cumulative impact area) has already occurred as a result of development of past cumulative projects and other factors such as climate change, agricultural runoff, and unauthorized discharges of contaminates. Based upon the existing impaired status of these water bodies, future cumulative projects have the potential to worsen this cumulative impact. As discussed above in Section 4.7.3.1, the 2018 Master Plan would comply with the Construction General Permit Order 2009-0009-DWQ, which would ensure that the proposed CIP projects associated with the 2018 Master Plan would not contribute to the further degradation of water quality from increased runoff, sedimentation, or unauthorized pollutant releases. Additionally, implementation of VWD's Sewer System Management

Plan has and would continue to reduce CIP project impacts related to sewer system overflows to a level below significance. Therefore, construction and operation activities associated with the CIP projects, including the Diamond Siphon project alternatives, would not result in a cumulatively considerable contribution to the cumulatively significant increase in downstream water pollution effects within the regional area.

4.7.4.2 Alteration of Drainage Patterns

The geographic context for the analysis of various cumulative water quality and hydrological impacts relative to localized alteration of drainage patterns encompasses the portions of Carlsbad and San Luis Rey watersheds directly downstream from the proposed CIP projects. Land disturbance and development activities are expected to continue in the vicinity of these watersheds and basins. Even with the promulgation of storm water regulations, land disturbance and development activities throughout these watersheds and basins continue to contribute to the overall surface quality and flooding problems in the service area and in the downstream watercourses and lagoons leading to the Pacific Ocean. Therefore, the baseline cumulative impact to the Carlsbad and San Luis Rey watersheds due to water quality and flooding effects from discharges of storm water associated with alterations of drainage patterns is significant. As discussed in Section 4.7.3.2 above, the 2018 Master Plan would comply with the Construction Storm Water General Permit, which would reduce impacts related to drainage alteration, flooding, and exceedance of capacity of storm water drainage facilities to a level below significance. Therefore, the 2018 Master Plan, including the Diamond Siphon project alternatives, would not result in a cumulatively considerable contribution to the cumulatively significant regional alteration of drainage patterns.

4.7.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would the 2018 Master Plan 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?

Figure 4.7-2 shows FEMA floodway and floodplain areas for the VWD service area. As shown in this figure, portions of the VWD service area are located within a 100-year floodplain or floodway. However, the 2018 Master Plan includes only un-manned water and wastewater storage reservoirs, pump/lift stations, and pipelines. The 2018 Master Plan does not include the provision of any housing or structures that would require human occupancy. Therefore, the 2018 Master Plan, including the Diamond Siphon project alternatives, would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map. No impact would occur and no further analysis is required.

Would the 2018 Master Plan substantially degrade groundwater quality, or interfere substantially with groundwater supplies or recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table?

Although some 2018 Master Plan CIP projects may be constructed above or adjacent to groundwater basins, these projects would not negatively affect groundwater recharge because they would not involve the extraction or use of groundwater supplies. Therefore, groundwater supplies would not be substantially depleted by implementation of the 2018 Master Plan, including the Diamond Siphon project alternatives. Further, each proposed CIP project would comply with the Construction Storm Water General Permit which requires the implementation of construction and post construction BMPs, such as those listed above in Issue 1 and Issue 2. Compliance with the Construction Storm Water General Permit would reduce the potential for the 2018 Master Plan to substantially interfere with groundwater supplies and recharge to a less than significant level. Further, the majority of proposed CIP projects has a relatively small sized footprint and would not interfere with groundwater recharge in a manner that would result in a net deficit in aquifer volume or a lowering of the local groundwater table level. A less than significant impact would occur and no further analysis is required.

4.7.6 References

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4.8 Landform Alteration and Aesthetics

This section of the Program Environmental Impact Report (PEIR) Supplement describes the potential environmental effects related to temporary and permanent impacts to landform alteration and aesthetics, including visual character, scenic vistas, lighting, and glare effects, from construction and operation of the proposed Capital Improvement Program (CIP) projects within the Vallecitos Water District (VWD or District) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

The 2011 PEIR for the 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified three potentially significant impacts associated with landform alteration and aesthetics (degradation of existing visual character during construction, potentially adverse impact to scenic views from CIP project R-11, and glare impacts from aboveground CIP facilities). The 2011 PEIR identified mitigation measures Aes-1, Aes-2, and Aes-3 to reduce these impacts to a less than significant level. The 2018 Master Plan update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.8.1 Environmental Setting

The VWD service area spans 45 square miles including areas within the unincorporated areas of San Diego County, and the cities of San Marcos, Carlsbad, Escondido, and Vista. A discussion of the visual characteristics for each of the five jurisdictional areas covering the VWD service area is provided below.

4.8.1.1 County of San Diego

The landscape within the unincorporated areas of San Diego County is rich in natural open space, unique topographic resources, and scenic vistas. These natural features contribute to the overall quality of the existing visual setting experienced by viewers within the county. Almost half of the VWD service area is located in the low-lying coastal plain region within the unincorporated areas of San Diego County. Portions of the VWD service area are within the North County metropolitan subregion, Bonsall community planning area (CPA), and the San Dieguito CPA.

The North County metropolitan subregion is characterized by a mixture of steep, rugged terrain, rolling hills and valleys, and level farmland. The Bonsall CPA is characterized by

low-density residential development with lots ranging from one to ten acres and agricultural uses. The San Marcos Mountains and Merriam Mountains are important visual landmarks for residents of the North County metropolitan subregion and the Bonsall CPA and are especially significant because they contain rare and endangered plant species such as Cleveland sage and southern mountain misery. The San Dieguito CPA is characterized by a distinctive town center with concentrated commercial uses known as the Rancho Santa Fe Village. San Elijo Lagoon and Batiquitos Lagoon are important scenic areas within the San Dieguito CPA, valued for their sandstone bluff formations and plant and animal species (County of San Diego 2014).

4.8.1.2 City of San Marcos

A majority of the VWD service area covers land within the city of San Marcos. San Marcos is considered one of the most picturesque areas of San Diego County and landforms such as the mountain ranges in the northern and southern portions of San Marcos contribute to its scenic corridors. Biological habitats and water resources, such as riparian areas along San Marcos Creek and its tributaries, provide a diverse environment of plant and animal habitats. The principal visual resources in San Marcos are the vistas of the foothills and mountain ranges from the communities of Twin Oaks Valley, Questhaven/La Costa Meadows, Barham/Discovery, and other scattered areas throughout San Marcos. The most prominent landforms are the mountain ranges, which include of the following: Merriam Mountains and San Marcos Mountains in the northern portions of Twin Oaks Valley; Cerro de las Posas, Double Peak, Franks Peak, and Mt. Whitney in the southern portions of the Questhaven/La Costa Meadows area; and Owen Mountain in Twin Oaks Valley and the College area community. San Marcos Creek and its tributaries also contribute to the scenic corridors and open space areas that provide outdoor recreational opportunities (City of San Marcos 2013).

The City of San Marcos has a Ridgeline Protection and Management Overlay Zone set forth in Ordinance Section 20.131 to minimize visual impacts to primary and secondary ridgelines. Identified in the Overlay Zone are major thoroughfares and selected public vantage points located throughout the city for their visual significance of primary and secondary ridgelines.

4.8.1.3 City of Escondido

A small portion of the VWD service area near the eastern boundary is located within the city of Escondido. One of the characteristics that distinguish Escondido from other communities in the region is its location in a series of valleys that are surrounded by visually distinctive hillsides and ridgelines. The ridges and varied topography have been identified by residents as one of Escondido's most important assets and one that has helped create a distinct identity for the city. The natural setting of the Escondido area provides many opportunities for views from surrounding higher elevations (City of Escondido 2012).

4.8.1.4 City of Vista

The northwestern corner of the VWD service area includes an area within the city limits of Vista. Within the city, the VWD service area covers portions of East Vista and Mar Vista/Sunset/Carriage Hills. East Vista has a semi-rural character with narrow, winding and scenic roadways. The Mar Vista/Sunset/Carriage Hills planning area has a semi-rural character with a diversity of housing types, narrow, winding streets with mature landscaping and large trees, and large lot developments on open hillsides (City of Vista 2012).

4.8.1.5 City of Carlsbad

The southwestern corner of the VWD service area and the location for the proposed outfall is within the city limits of Carlsbad and contains a variety of natural and man-made resources which include scenic resources, views of the Pacific Ocean, unique historic cultural, archaeological, paleontological and educational resources, and a variety of sensitive plant and animal species. Agriculture is an important resource in Carlsbad. Carlsbad's native landform, like much of the southern California coastal area, consists of an uplifted coastal plain across which east-west trending drainages have cut systems of alternating mesas separated by riparian valleys and canyons. At the ocean, the mesas terminate in coastal bluffs and the major drainages have formed lagoons. The low areas and mesa slopes offer many constraints to development, arising not only from the frequently difficult soils and steep topography, but also from the presence of wetland and riparian habitats, which provide homes to a range of sensitive plant and animal species. Two of the lagoons, Buena Vista and Batiquitos and their associated east-west trending drainages, form the northerly and southerly boundaries, respectively, of the city. The third lagoon, Agua Hedionda, effectively divides Carlsbad into north and south sectors (City of Carlsbad 2015).

4.8.2 Regulatory Framework

4.8.2.1 State

a. California Scenic Highways Program

The California Scenic Highways Program was created by the California Scenic Highway Law in 1963 with the purpose of preserving and protecting scenic highway corridors from any change that would diminish the aesthetic value of lands adjacent to highways. California scenic highways are those highways that are either officially designated by Caltrans or are eligible for designation. A highway's "scenic corridor" status changes from "eligible" to "officially designated" when the local jurisdiction adopts a Scenic Corridor Protection Program; applies to Caltrans for scenic highway approval; and receives notification from Caltrans that the highway has been designated as an official state scenic highway. Once a scenic highway is designated as such, the responsibility lies with the local jurisdiction to regulate development within the scenic highway corridor. This applies only

to areas where the local agency has land use jurisdiction. Scenic highway nominations are evaluated using the following criteria:

- The proposed scenic highway is principally within an unspoiled native habitat, and showcases the unique aspects of the landscape, agriculture, or water features;
- Existing visual intrusions do not significantly impact the scenic corridor;
- Strong local support for the proposed scenic highway designation is demonstrated; and
- The length of the proposed scenic highway is not short or segmented.

4.8.2.2 Local

a. Local Policies and Ordinances

The VWD is a member agency of the San Diego County Water Authority (SDCWA), which is governed primarily by the County Water Authority Act (Stats. 1943, c. 545). This act mandates the SDCWA to provide water to meet the needs of member agencies in its service area. As a district, VWD may acquire, construct, own, operate, control, or use works for supplying the inhabitants of its district with water or the means for the collection, treatment, or disposition of sewage; and may construct such works across or along any street or public highway, with the same rights and privileges appertaining thereto as are granted to municipalities, such as, the cities of San Marcos, Escondido, Vista and Carlsbad (see California Public Utilities Code Sections 12801 and 12808). Under Section 53091(d) and (e) of the California Government Code, building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water or wastewater, and zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by VWD. In addition, under Section 53096 of the Government Code, VWD, by a four-fifths (4/5) vote of its members, may render a city or county zoning ordinance inapplicable to a proposed use of the property, related to the storage or transmission of water if VWD determines by resolution at a public hearing that there is no feasible alternative to its proposal. This determination may be made at the time VWD approves the Environmental Impact Report. Consequently, zoning regulations only apply to wastewater in the 2018 Master Plan. However, for the purposes of California Environmental Quality Act (CEQA) analysis, local land use planning documents are discussed in this PEIR Supplement.

The VWD service area spans five different land use jurisdictions: San Diego County and the cities of San Marcos, Vista, Escondido, and Carlsbad. All of these agencies have adopted general plans that identify scenic resources and vistas within their respective jurisdiction. The general plan-designated scenic resources and vistas within the planning area are described below.

County of San Diego General Plan

The County of San Diego General Plan identifies long-range goals and policies for the comprehensive development of land within its jurisdiction. The Land Use Element establishes Resource Conservation Areas which protect environmental and scenic resources throughout the unincorporated county. The Open Space Element details plans and measures for preserving open space and natural resources and the managed production of resources. The Scenic Highway Element establishes a Scenic Highway Program to protect and enhance the county's scenic, historic, and recreational resources within a network of scenic highway corridors.

City of San Marcos General Plan

The Conservation Element within the San Marcos General Plan establishes conservation and open space goals, policies, and implementing strategies that protect the visual character of the community. This element establishes goals and polices to preserve prominent landforms, such as Merriam Mountains, San Marcos Mountains, Cerro de las Posas, Mt. Whitney, Double Peak, Ranks Peak, Owen Peak, the canyon areas, and the 100-year floodplain. This element also establishes standards for preservation of prominent landforms; requires hillside review for projects located within the Hillside Review Overlay Zone; encourages the preservation of natural landforms, canyon areas and prominent ridgelines; requires vegetative screening, and prohibits highly visible cut and fill slopes on hillside areas visible from points within San Marcos.

The San Marcos General Plan addresses aesthetic resources in Section 1.1.2 in the Circulation Element, Landforms and Other Visual Resources. The General Plan identifies the landforms in the city, such as the mountain ranges in the northern and southern portions of the city, as contributing to scenic corridors in the city. Vistas of the mountain ranges are considered the principal visual resource from views in the community. The following goal and its supporting policy in the General Plan pertain to visual resources:

- **Goal 1**: To preserve the natural resources of the planning area, including dominant landforms, plant and animal habitats, and water courses.

- **Policy 1**: Preserve prominent landforms, such as the Merriam Mountains, San Marcos Mountains, Cerro de las Posas, Mt. Whitney, Double Peak, Franks Peak, Owens Peak, the canyon areas, and the 100-year floodplain, by conservation and management policies.

City of San Marcos Ridgeline Protection and Management Overlay Zone Chapter 20.131

The City of San Marcos has acted to preserve Primary Ridgelines in their natural state and minimize visual impact to Secondary Ridgelines through the adoption of a "Ridgeline Overlay Zone" that protects natural view sheds, unique natural resources, minimizes the physical impacts to ridgelines, and establishes innovative site and architectural design standards.

City of Vista General Plan

The Community Identity and Scenic Highways Element of the Vista General Plan establishes goals and polices to preserve the semi-rural legacy of historic Vista by: (1) protecting Vista's unique neighborhoods; (2) maintaining and enhancing the natural and scenic resources; and (3) preserving the community's cultural and historical heritage while promoting responsible economic development which includes the revitalization of the downtown Village. In order to accomplish this goal, Vista has defined eight planning areas that recognize distinct neighborhood characteristics and objectives. Planning Areas within Vista include: West Vista; Southwest Vista; Shadowridge; Vista Business and Technology Park; East Vista; North Vista; Vista Village; Mar Vista/Sunset/Carriage Hills.

City of Escondido General Plan

The Community Open Space and Conservation Element of the Escondido General Plan establishes goals and polices for community design, ridgeline and hillside conservation, and view protection. The community design section of the General Plan provides a means of ensuring that the unique character imparted to Escondido by the combination of its topography, vegetation, and man-made structures is both protected and utilized to the benefit of the community. The ridgeline and hillside conservation section established policies geared towards controlling development on the hillsides and along ridgelines. The viewshed protection section has an objective to preserve and protect existing internal and external view corridors in Escondido, with particular emphasis on ridgelines, unique landforms and visual gateways, and edges of the community.

City of Carlsbad General Plan

The Open Space and Conservation Element of the Carlsbad General Plan contains policies for the development of a comprehensive, connected open space system, and for the protection and conservation of Carlsbad's natural and historic resources. The intent of this element is to establish goals and policies that realize the social, economic, aesthetic, and environmental benefits which accrue from the preservation of open space within an urban environment. The Open Space and Conservation Element addresses eight topics: Open Space Planning and Protection; Obtaining Open Space; Special Resource Protection; Trails/Greenway System; Promotion of Agriculture; Air Quality Preservation; Water Quality Protection; and Historic and Cultural Preservation.

4.8.3 Master Plan Impacts and Mitigation

4.8.3.1 Issue 1 – Visual Character and Quality

Landform Alteration and Aesthetics Issue 1 Summary	
Would any of the CIP projects under the 2018 Master Plan substantially degrade the existing visual character or quality of the project sites and their surroundings?	
Impact: Construction of CIP projects and access roads could both temporarily and permanently degrade the existing visual character of project sites and their surroundings during construction and in areas without existing VWD facilities.	**Mitigation**: Landscaping Measures (Aes-1); Visually Compatible Design (Aes-2).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if any of the proposed CIP projects would substantially degrade the existing visual character or quality of the project sites and their surroundings.

b. Impact Analysis

Implementation of certain proposed CIP projects included within the 2018 Master Plan could result in temporary and permanent visual impacts. Temporary visual impacts would occur from construction of all types of CIP projects, including the Diamond Siphon project alternatives and other wastewater pipeline projects, water storage reservoirs, pump/lift stations, and pipeline access roads primarily through the removal or alteration of existing vegetation. Construction of proposed CIP projects would involve the disturbance of ground cover, grading, excavation, material stockpiles, and the presence of construction equipment, all of which would temporarily degrade the pre-existing visual character at the CIP construction site and its surroundings. Short-term impacts associated with visual character would be potentially significant due to the change in existing visual character from ground disturbing construction activities on a CIP site. Short-term construction impacts would remain significant unless disturbed areas were re-vegetated to ensure that all disturbed areas of the construction site return to pre-existing visual character conditions, to the extent feasible, after completion of construction.

Certain aboveground CIP projects (i.e., reservoirs, pump stations, lift stations and pipeline access roads) have the potential to result in varying degrees of long-term, permanent visual impacts, as discussed below.

CIP Reservoir Projects

Water storage reservoirs would typically be the most visible of the proposed CIP projects because the function of these facilities requires them to be located at higher elevations, often on hillsides, hilltops, or ridges. The visual impacts of CIP reservoir projects would vary depending on the setting, visibility of the proposed project site, the degree of landform alteration required, the size, color, and prominence of the reservoir, and the surrounding existing vegetation or landscaping. Reservoir projects may also feature fencing, access roads, and/or other aboveground appurtenances. In undeveloped areas, the steel or concrete material of the new reservoir can substantially alter the visual character of the existing natural setting.

Of the ten proposed CIP reservoir projects, nine (R-1, R-3, R-4, R-5, R-6, R-7, R-8, R-9, and R-10) would replace/upgrade/rehabilitate existing reservoirs or occur adjacent to existing reservoir facilities. Because viewers are already familiar with the existing structures within the natural landscape and these reservoirs would be consistent with the existing visual character of the site, the visual impacts of these CIP projects would be considered less than significant. Figure 4.8-1 provides representative photos of existing reservoir facilities within the VWD service area.

The one remaining CIP reservoir project proposed, R-11, would be constructed in an area that is currently undeveloped and characterized by chaparral habitat. Proposed CIP project R-11, the Coggan #3 reservoir project, would be located in an unincorporated area within San Diego County. Lands adjacent to and surrounding the site are also primarily undeveloped, although some scattered rural residences are located approximately 2,000 feet to the south. The construction of CIP project R-11 would place aboveground facilities in an undeveloped area, which would alter the visual character of the existing natural setting. This could be considered a significant impact and mitigation would be required to ensure that the reservoirs are compatible with the surrounding natural environment.

CIP Pump and Lift Station Projects

Similar to the CIP reservoir projects evaluated above, potential visual impacts associated with pump and lift station projects would vary depending on the setting, visibility of the project site, the degree of landform alteration required, the size of the pump station, and the existing vegetation or landscaping. Generally, pump and lift stations are housed within a relatively small structure that are one story in size and designed to look like a small residence. Representative photos of pump and lift stations are shown in Figure 4.8-2.

Map Source: PBS&J

FIGURE 4.8-1
Representative Views of VWD Reservoirs

RECON

Map Source: PBS&J

Pump Station

Lift Station

FIGURE 4.8-2

Representative Views of VWD Lift and Pump Stations

RECON

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Of the eight proposed CIP pump station projects, five (PS-3, PS-5, PS-6, PS-7, and PS-8) would replace existing pump stations and one (PS-4) would be located on a site with an existing VWD reservoir. The one proposed CIP lift station project (LS-1), the Montiel Lift Station Replacement, would replace an existing lift station. Provided that the design of these facilities use materials that are compatible with the surrounding setting, the visual impacts of the pump stations and lift station would be considered less than significant because viewers are already familiar with the existing structures within the natural landscape and these pump stations and lift station would be consistent with the existing visual character of the site.

One proposed CIP pump station project (PS-2) would be constructed in an area that does not currently have a pump station facility on-site. CIP project PS-2, High Point Hydro, is located in Escondido and would construct a new pump station on a site that is already graded with building pads for future residential development. The project site is currently surrounded by residences and open space. Due to the relatively small size of the proposed pump station, the surrounding visual character of the proposed site (residential development which includes utility structures), and VWD's intent to design the facility so that the external appearance is compatible with the surrounding setting, the construction of CIP project PS-2 would not represent a significant impact to existing visual character.

CIP Pipeline Access Roads

The majority of proposed CIP pipeline projects would not result in long-term, permanent aesthetic impacts, as they would be placed underground within existing road rights-of-way and would not be visible from the surface. However, 4 of the 11 proposed potable water pipeline projects and 3 of the 24 proposed sewer pipeline projects would require the construction of an aboveground, permanent access road. Permanent access roads for these pipelines would have either a semi-permeable concrete or decomposed granite surface, be approximately 10 to 12 feet wide, and would be located within an approximately 20-foot-wide VWD easement. Proposed CIP pipeline projects requiring access roads include P-30, P-42, P-43, P-64, P-301, SP-5, SP-11, and SP-25. The construction of these access roads has the potential to affect the existing visual character of the surrounding environment, as discussed below. The remaining 28 proposed CIP water and sewer pipeline projects either already have access roads or would use existing public rights-of-way and would not result in significant permanent visual impacts associated with the access roads.

The construction of a CIP pipeline access road would result in a significant visual impact if it would be constructed in an undeveloped, vegetated area. Typically, access roads are equipped with lighting fixtures, signage, guard rails, walls, fences, curbing, pavement marking, or other service structures or appurtenances, and may incorporate high-contrast or highly reflective surface coatings. In addition, construction of roads may require grading that alters the natural contour of the surrounding landscape. The existing visual character of the proposed CIP project sites for P-30, P-42, P-43, P-64, SP-2, SP-5, SP-11, SP-25, and SP-30 includes a variety of natural habitats, including but not limited to: coastal sage scrub habitat; chaparral, agricultural land, and riparian habitat. Refer to Section 4.2, Biological Resources, and Section 4.9, Land Use and Planning, of this PEIR Supplement for a full

description of the existing vegetation and surrounding development in each of these proposed CIP sites. Upon completion of the abovementioned CIP pipeline projects, the only noticeable visual component would be the access road and supporting features, since the pipelines would be located underground and not be visible from the surface. The construction of a man-made road, in addition to supporting features and high-contrast or highly reflective coatings, through the VWD open easement within an area where the existing visual character is primarily undeveloped would permanently alter the color, texture, and pattern of the naturally vegetated landscape. This change in visual character is considered a potentially significant impact.

c. Mitigation Measures

Implementation of the following mitigation measures would reduce impacts associated with incompatible visual character to a less than significant level. CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-11, and SP-12; therefore, these projects are not subject to the mitigation measures identified below.

Aes-1 **Landscaping Measures.** The following landscaping measures shall be implemented for all CIP projects:

1. For proposed pipeline projects and access roads installed in naturally vegetated areas, the short-term disturbance footprints associated with construction for the pipeline corridor and associated staging areas (with the exception of the drivable pathway, which will remain clear) shall be hydroseeded, following backfilling and recontouring, using a non-irrigated native plant mix consistent with original site conditions and surrounding vegetation.
2. For proposed CIP reservoirs, pump stations, lift stations, and access roads in naturally vegetated settings, any disturbed unpaved areas following construction that are not designated for vehicular or pedestrian access shall be revegetated (hydroseeding and/or plantings) using native plant materials consistent with original site conditions and surrounding vegetation. A temporary irrigation system will be installed and maintained by VWD, or watering trucks will be used at a frequency to be determined by VWD to maintain successful plant growth. Temporary irrigation shall be discontinued upon VWD's determination that the landscaping has permanently established, without the need for supplemental watering.
3. For proposed CIP reservoirs, pump stations and lift stations in urban settings, any disturbed unpaved areas following construction that are not designated for vehicular or pedestrian access shall be landscaped using plant materials consistent with original site conditions and/or surrounding ornamental vegetation in order to return the disturbed area to its existing visual character.
4. The landscaping plan for CIP reservoirs, pump stations, and lift stations shall include the planting of large trees and/or shrubs in addition to native

vegetation, where appropriate, to adequate provide screening of the proposed structures.

Aes-2 Visually Compatible Design. The following design measures shall be implemented for all CIP projects that include aboveground facilities (including access roads):

1. Reservoirs and access roads shall use appropriate building materials and color palettes that are visually consistent with the surrounding natural vegetation and/or built environment.
2. Reservoirs, pump station buildings, access roads and lift station buildings shall use low-reflective low-glare paint and materials unless required for safety or by law.
3. Access roads shall be designed to minimize grading, slope ratios and the blockage of existing views when possible. Access roads will not contain features such as asphalt coating, lighting fixtures, signage, guard rails, walls, fences, curbing, pavement marking, or other service structures or appurtenances unless required for safety or by law.
4. Areas of temporary disturbance will be revegetated to minimize visual incongruity with the surrounding landscape.

4.8.3.2 Issue 2 – Scenic Vistas

Landform Alteration and Aesthetics Issue 2 Summary	
Would any of the CIP projects under the 2018 Master Plan have a substantial adverse effect on a scenic vista?	
Impact: CIP project R-11 would be located on an undeveloped hillside within the Merriam Mountains Resource Conservation Area and construction of the proposed reservoir has the potential to adversely impact scenic views.	**Mitigation**: Visual Resources Report (Aes-3).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if any of the CIP projects would have a substantial adverse effect on a scenic vista. For the purposes of this analysis, scenic vistas include any area designated as a Resource Conservation Area by the County of San Diego General Plan, or vistas that include the resources designated as scenic by the cities of Vista, Carlsbad, Escondido, or San Marcos.

b. Impact Analysis

As discussed above in Issue 1, permanent visual impacts related to proposed CIP projects proposed under the 2018 Master Plan would only occur from aboveground facilities, including reservoirs, pump stations, lift stations, and pipeline access roads. The Diamond Siphon project alternatives would be located underground and would therefore not have a substantial adverse impact on a scenic vista.

CIP projects R-4, R-5, R-6, and R-7 would demolish existing VWD reservoirs and construct slightly larger reservoirs on the same site. CIP project R-8 would rehabilitate an existing reservoir on the same site and CIP projects R-1, R-3, R-9 and R-10 would construct reservoirs adjacent to existing reservoir facilities. The existing visual character of these proposed CIP project sites is described below.

R-1 (Proposed Meadowlark #3) and R-7 (Proposed Meadowlark #4, and demolition of Meadowlark #1). The existing visual character of the site for CIP R-1 and R-7 contains two existing VWD painted green reservoir tanks (Meadowlark #1 and Meadowlark #2), a pump station building, a semi-permeable asphalt access road, fencing, and some vegetation. This CIP site is surrounded by residential housing to the north and undeveloped land to the east, south, and west.

R-3 (Proposed Coronado Hills #2). The existing visual character of the CIP R-3 site contains an existing VWD painted green reservoir tank (Coronado Hills #1), a semi-permeable asphalt access road, fencing and some non-native vegetation. This site is surrounded by off-site residential development to the east and undeveloped land to the north, south and west.

R-4 (Proposed Deer Springs #2, and demolition of Deer Springs #1). The existing visual character of the CIP R-4 site contains an existing VWD painted green reservoir tank (Deer Springs #1), an asphalt access road, fencing and some vegetation. This site is surrounded by undeveloped land, with some agricultural land and Interstate 15 located to the east.

R-5 (Proposed Coggan #2, demolition of Coggan #1). The existing visual character of the CIP R-5 site contains an existing VWD painted green reservoir tank (Coggan #1), an asphalt access road, fencing and some vegetation. This site is surrounded by undeveloped land.

R-6 (Proposed North Twin Oaks #3, demolition of North Twin Oaks #1). The existing visual character of the CIP R-6 site contains an existing VWD painted green reservoir tank (North Twin Oaks #1), an asphalt access road, fencing and some vegetation. Areas adjacent to and surrounding the project site are undeveloped.

R-8 (Proposed Palos Vista Rehabilitation and Expansion). The existing visual character of the CIP R-8 site contains an existing VWD painted green reservoir tank (Palos Vista), an asphalt access road, fencing and some non-native vegetation. Residential development intermixed with open space surrounds this site.

R-9 (Proposed Coronado Hills #3). The existing visual character of the CIP R-9 site contains an existing VWD painted green reservoir tank (Coronado Hills #1), an asphalt access road, fencing, and some vegetation. Undeveloped land surrounds the site on all sides with some residential development located to the east.

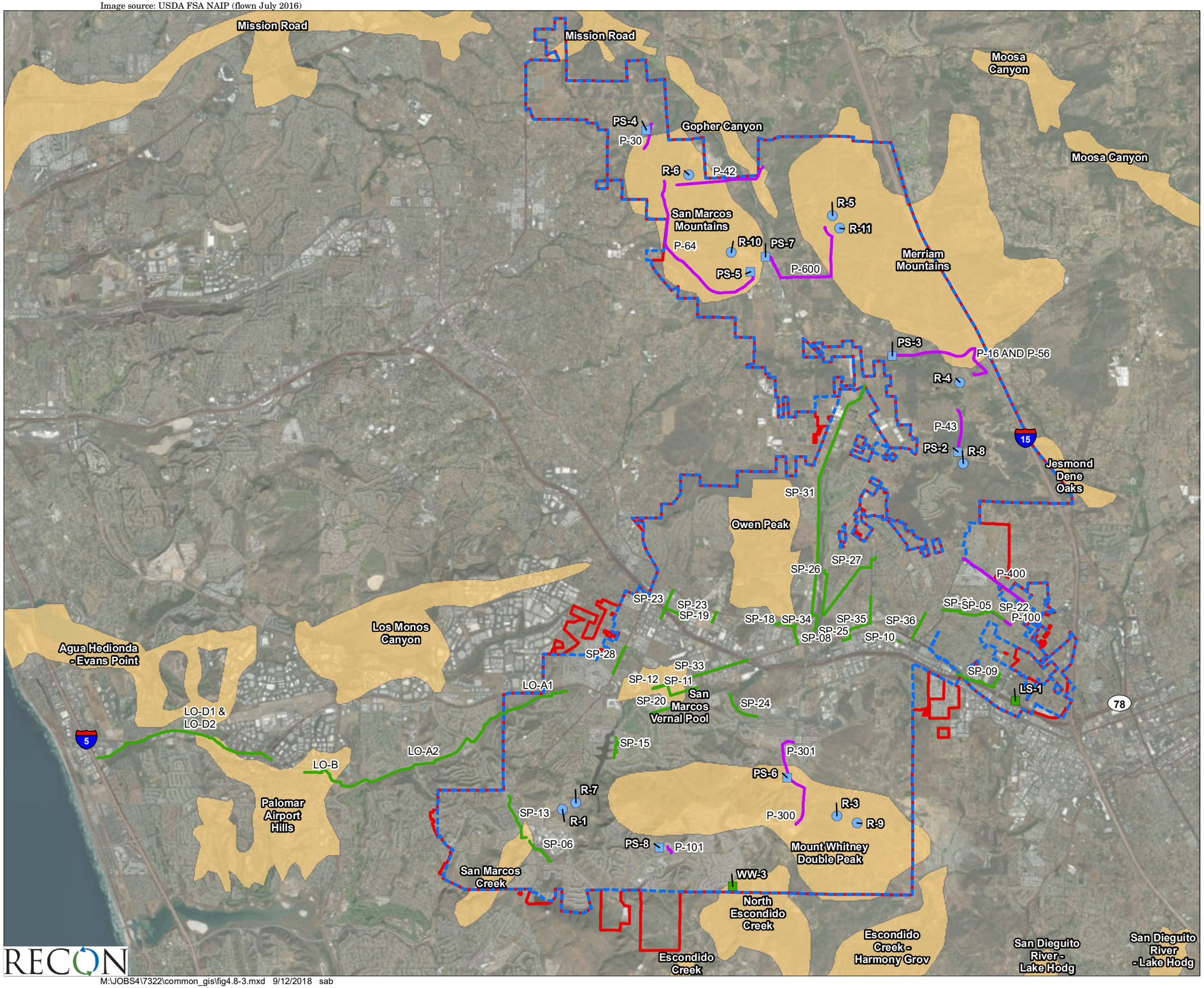
R-10 (Proposed Twin Oaks #3). The existing visual character of the CIP R-10 site contains two existing VWD reservoir tanks (Twin Oaks #1 and Twin Oaks #2). The tanks are buried underground, with graded, terraced slopes and drainage channels to the west and south. The site also features paved access roads surrounding the tanks, fencing and some vegetation. Areas to the north include SDCWA facilities; areas to the east consist of agricultural lands; areas to the west are undeveloped and areas to the south contain rural single family homes.

Proposed CIP projects that would replace/rehabilitate existing VWD facilities or occur adjacent to existing VWD facilities (R-1, R-3, R-4, R-5, R-6, R-7, R-8, R-9, and R-10) would not significantly impact scenic vistas because upon completion of construction, the viewshed of these areas would not dramatically differ from existing conditions or significantly obstruct existing views. Viewers are already familiar with the existing structures within the natural landscape and the new and additional reservoirs would be consistent with the existing visual character of the site. Therefore, the above-mentioned CIP projects would not substantially adversely affect a scenic vista and impacts for these projects would be considered less than significant.

Of the ten proposed CIP reservoir projects, one reservoir (Coggan III, project R-11) would be constructed in an area that does not currently have reservoir facilities on-site. Of the seven proposed CIP pump station projects, one pump station (High Point Hydro, project PS-2) would be constructed in an area that does not currently have a pump station or reservoir facility on-site. Additionally, CIP project LS-1, the Montiel Lift Station replacement, would replace an underground lift station with an aboveground lift station. The potential for these facilities to impact scenic vistas is discussed below.

PS-2. CIP project PS-2, High Point Hydro, is located within the unincorporated county of San Diego but, as shown in Figure 4.8-3, CIP project PS-2 is not located within a Resource Conservation Area. Because CIP project PS-2 is not located within an area designated as requiring special attention in order to conserve resources, including scenic vistas, scenic natural resources and astronomical dark skies, construction of this CIP project does not have the potential to significantly impact scenic vistas.

Image source: USDA FSA NAIP (flown July 2016)



VWD Service Area

Vallecitos Water District

Sewer Pump Station CIP

Sewer Line CIP

Water Reservoir CIP

Water Pump Station CIP

Water Line CIP

Resource Conservation Areas

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FIGURE 4.8-3

Resource Conservation Areas

R-11. CIP project R-11, Coggan III Reservoir, is located within the unincorporated county of San Diego, and is located within the Merriam Mountains Resource Conservation Area, as shown in Figure 4.8-3. The proposed location for CIP project R-11 is on an undeveloped hillside within the Merriam Mountains Resource Conservation Area. The elevation for this CIP project would be at approximately 1,700 feet above mean sea level (AMSL). The peak of the hill is approximately 50 feet to the west, and the summit is approximately 1,800 AMSL. The hill proposed for CIP project R-11 is the highest landform within a 2,000-foot radius of CIP project R-11 and would be visible from lower elevations to the north, east, and south, which are currently undeveloped land characterized by chaparral habitat. Some rural residential development is located to the southwest of this CIP site, along Twin Oaks Crest Drive and at elevations approximately 1,000 feet AMSL in height. The view of the proposed reservoir from these residences would be obscured by the higher elevation hilltop. Because CIP project R-11 is located within the Merriam Mountains Resource Conservation Area, an area designated as requiring special attention in order to conserve resources, including scenic vistas, scenic natural resources, and astronomical dark skies, construction of this CIP project has the potential to impact scenic vistas.

LS-1. CIP project LS-1, Montiel Lift Station Replacement, is located in the city of San Marcos. The San Marcos General Plan identifies the landforms in the city, such as the mountain ranges in the northern and southern portions of the city, as contributing to scenic corridors in the city. Vistas and mountain ranges are considered the principal visual resource from views in the community. Additionally, the City of San Marcos has a Ridgeline Protection and Management Overlay Zone, set forth in Ordinance Section 20.131, to minimize visual impacts to primary and secondary ridgelines. Identified in the Overlay Zone are major thoroughfares and selected public vantage points located throughout the city for their visual significance of primary and secondary ridgelines. The Ordinance established Primary and Secondary Ridgelines in three areas of the city: (1) North City Area #1, located in the College Area Community Plan and Twin Oaks Valley community; (2) South, East, and West City Area #2, located in the Questhaven/La Costa Meadows Community Plan; and (3) Southern City Area #3, located in the Questhaven/La Costa Meadows Community Plan.

CIP project LS-1 would not impact ridgelines or scenic vistas within the city of San Marcos for a number of reasons. First, LS-1 is located in the Richland CPA and is not located in an area with a Ridgeline Protection and Management Overlay Zone. Second, LS-1 is located on a topographically flat site and is not located on a hillside or ridgeline. Additionally, LS-1 would be located on a site that is surrounded by residential and commercial development. Therefore, this project would blend in with the existing visual character of the area and implementation of LS-1 would not significantly impact a scenic vista.

c. Mitigation Measures

Implementation of the following mitigation measure would reduce scenic vista impacts from CIP project R-11 to a less than significant level.

Aes-3 **Visual Resources Report.** Prior to construction of proposed CIP Project R-11, a Visual Resources Report shall be prepared. The Visual Resources Report shall analyze the compatibility of the proposed reservoir with the existing aesthetic character of the surrounding area; assess the potential effect to the visual resources within the Resource Conservation Area, and determine whether any proposed security or emergency lighting would be detrimental to adjacent residential uses and/or wildlife.

4.8.3.3 Issue 3 – Lighting and Glare

Landform Alteration and Aesthetics Issue 3 Summary	
Would any of the CIP projects under the 2018 Master Plan create a new source of substantial light or glare which would adversely affect day or nighttime views in the immediate vicinity of the CIP projects?	
Impact: Lighting associated with CIP projects would be limited to emergency lighting and temporary security lighting and would not create a substantial new lighting source. Glare impacts could occur from sunlight reflecting off of aboveground CIP facilities.	**Mitigation**: Landscaping Measures (Aes-1); Visually Compatible Design (Aes-2).
Significance Before Mitigation: Potentially significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if any of the CIP projects would create a new source of substantial light or glare that would adversely affect day or nighttime views in the immediate vicinity of the CIP projects. Impacts of lighting on biological resources are discussed in Section 4.2, Biological Resources, of this PEIR Supplement.

b. Impact Analysis

Nighttime lighting associated with reservoirs, pump stations, or lift stations would be limited to emergency lighting and security lighting. Emergency lighting would typically be activated only in emergency situations, such as the repair of a leak that occurs at night. Security lighting would be installed at each VWD reservoir, pump station and lift station for security purposes. As a project design feature, all proposed VWD CIP projects would require all security lighting to be utilized only when VWD personnel are on-site and require lighting (see Chapter 3, Project Description). Additionally, all emergency and security lighting would be low illumination, shielded, and directed downwards and away from these areas to avoid potential impacts to neighboring properties and nocturnal wildlife. As required by mitigation measure Aes-2, proposed access roads would not contribute to night lighting impacts because the installation of new lighting fixtures on the access roads would be restricted. Therefore, none of the aboveground proposed CIP projects under the 2018

Master Plan are expected to create a new source of substantial nighttime lighting that would adversely affect nighttime views. The Diamond Siphon project alternatives would be located underground and would not create any new sources of substantial light or glare.

Potential impacts from glare would primarily occur from the sunlight reflecting from the proposed reservoirs, pump station building surfaces, lift station building surfaces or access roads. However, implementation of landscape screening (Aes-1) and visually compatible design (Aes-2), which requires the use of low-reflective glare resistant paint and materials, would reduce any potential glare impacts to a less than significant level.

c. Mitigation Measures

Implementation of Aes-1 and Aes-2 would reduce potential impacts associated with lighting and daytime glare from proposed CIP reservoirs, pump stations, lift stations and access roads to a less than significant level. No further mitigation is required.

4.8.4 Cumulative Impacts

Landform Alteration and Aesthetics Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative aesthetic impact considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Local degradation of visual character.	Yes	Not cumulatively considerable with implementation of Aes-1 and Aes-2.
Local degradation of scenic vistas.	Yes	Not cumulatively considerable with implementation of Aes-3.
Regional light pollution.	Yes	Not cumulatively considerable with implementation of Aes-1 and Aes-2.

Visual impacts associated with glare tend to occur on a localized level, and has limited potential for related cumulative effects. With the inclusion of mitigation measures Aes-1, Aes-2, and Aes-3, there would be no cumulatively considerable contribution from the proposed CIP projects.

4.8.4.1 Visual Character

Visual impacts tend to occur on a localized level. Therefore, the geographic context for the analysis of cumulative impacts to visual character encompasses the public viewsheds from which aboveground CIP projects would be visible. Cumulative development within the vicinity of aboveground CIP projects and pipeline access roads could result in significant visual character impacts if the design of a cumulative project was inconsistent with the visual character of an area. Therefore, the baseline cumulative impact to visual character

due to construction and development within the VWD service area (i.e., local cumulative impact area) is significant because it cannot be assumed that all cumulative projects would incorporate landscaping and design measures that would ensure the existing visual character of their project area is not visually altered. As discussed in Section 4.8.3.1 above, 2018 Master Plan CIP projects have the potential to impact the existing visual character in the area. Implementation of mitigation measures Aes-1 and Aes-2 would reduce this impact to a level below significance and the development of the CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution to a significant cumulative visual character impacts within the local viewsheds.

4.8.4.2 Scenic Vistas

Visual impacts tend to occur on a localized level; therefore, the geographic context for the analysis of cumulative impacts to scenic vistas encompasses the public viewsheds from which aboveground CIP projects and access roads would be visible. Cumulative development within the vicinity of aboveground CIP projects and pipeline access roads could result in significant scenic vista impacts if the project is located on a designated scenic vista and if the design of the cumulative project impairs the existing visual character of that scenic vista. Therefore, the baseline cumulative impact to scenic vistas due to cumulative construction and development within the VWD service area (i.e., local cumulative impact area) is significant. As discussed in Section 4.8.3.2 above, proposed CIP projects that would replace/rehabilitate existing VWD facilities or occur adjacent to existing VWD facilities (R-1, R-3, R-4, R-5, R-6, R-7, R-8, R-9, and R-10) would not significantly impact scenic vistas because upon completion of construction, the viewshed of these areas would not differ substantially from existing conditions or obstruct existing views. However, the proposed reservoir for CIP project R-11 has the potential to impact a scenic vista because it would be located on an undeveloped hillside within the Merriam Mountains Resource Conservation Area. With implementation of mitigation measure Aes-3, impacts would be reduced to a level below significance and the 2018 Master Plan would not result in a cumulatively considerable contribution to a cumulatively significant impact associated with scenic vistas within the local viewshed.

4.8.4.3 Night Lighting

The geographic context for the analysis of cumulative impacts relative to night lighting encompasses the urban areas within the VWD service area (e.g., San Marcos, Escondido, Vista, Carlsbad, and unincorporated county of San Diego). Night lighting from these areas contribute to "light dome" effects, which contributes to regional light pollution. The County of San Diego has implemented its Light Pollution Code to limit harmful effects of outdoor night lighting and the San Marcos Municipal Code includes restrictions on nighttime lighting in some zones. However, these codes are intended to address localized nuisance impacts, not regional increases in ambient light. Therefore, the baseline cumulative impact to regional light pollution in the vicinity of the VWD service area (i.e., regional cumulative impact area) is significant. As discussed above in Section 4.8.3.3, CIP projects include emergency and security lighting, which has the potential to add to cumulative night lighting effects. However, with implementation of the energy efficient security lighting

project design feature (see Chapter 3, Project Description), lighting would be low-voltage, shielded, and activated only when VWD personnel are on site and require lighting. Additionally, mitigation measure Aes-2 prohibits lighting fixtures on access roads, unless required for safety or by law. Therefore, impacts would be reduced to a level below significance and the 2018 Master Plan would not result in a cumulatively considerable contribution to regional light pollution.

4.8.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would implementation of any CIP projects under the 2018 Master Plan substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Highways in the vicinity of the 2018 Master Plan CIP projects include State Route 78, Interstates 15 and 5. None of these roadways are officially designated state scenic highways (Caltrans 2017). Portions of Interstate 5 are considered to be eligible for designation as a scenic roadway, however only the land outfall proposed CIP project would be located near this roadway. The land outfall would be installed entirely underground and would not impact any trees, rock outcroppings or historic buildings on the roadway. Therefore, no unique trees or trees of significant stature, unique rock outcroppings, or historic buildings in the vicinity of State Route 78 and Interstates 15 or 5 would be affected by the 2018 Master Plan. No impact would occur.

4.8.6 References

California Department of Transportation (Caltrans)
2017 List of eligible and officially designated State Scenic Highways. Accessed on August 29, 2017. Available at http://www.dot.ca.gov/design/lap/livability/scenic-highways/2017-03DesigandEligible.xlsx

Carlsbad, City of
2015 Carlsbad General Plan. Prepared 1994, amended 2010.

Escondido, City of
2012 Escondido General Plan.

San Diego, County of
2014 San Dieguito Community Plan (part of San Diego County General Plan).

San Marcos, City of
2013 San Marcos General Plan. Prepared 1983, last amended 2013.

Vista, City of
2012 City of Vista General Plan.

4.9 Land Use and Planning

This section of the Program Environmental Impact Report (PEIR) describes the potential physical environmental effects related to the issues of land use planning and compatibility with surrounding land uses resulting from development of proposed Capital Improvement Program (CIP) projects under the Vallecitos Water District (VWD) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

The 2011 PEIR for the 2008 Water, Wastewater, and Water Reclamation Master Plan (2008 Master Plan) identified one potentially significant impact associated with Land Use and Planning (potential to conflict with local land use policies and result in incompatibilities with surrounding land uses). The 2011 PEIR identified the mitigation measures from Section 4.1 (Air Quality), Section 4.2 (Biological Resources), Section 4.3 (Cultural Resources), Section 4.5 (Geology, Soils and Paleontology), Section 4.7 (Hydrology and Water Quality), Section 4.8 (Landform Alteration and Aesthetics), Section 4.10 (Noise), and Section 4.11 (Public Safety) to reduce the potentially significant Land Use and Planning impact to a less than significant level. The 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.9.1 Environmental Setting

The VWD service area encompasses portions of several jurisdictions, including the county of San Diego and the cities of San Marcos, Escondido, Carlsbad, and Vista. Land uses vary widely within each jurisdiction. Existing land uses and existing land use designations surrounding potable water storage projects, potable water pump station projects, wastewater lift station projects and the proposed parallel land outfall are described below. Under the applicable legal framework, local zoning regulations apply only to proposed wastewater CIP projects in the 2018 Master Plan and do not apply to potable water CIP projects. Therefore, all 2018 Master Plan wastewater projects, including the Diamond Siphon project alternatives, would be implemented in a manner to ensure full compliance with the applicable local zoning requirements. Refer to section 4.9.2, Regulatory Framework, for additional information.

Proposed CIP pipeline projects would not result in long-term, permanent land use impacts, as they would be placed underground. However, the proposed CIP pipeline projects P-30, P-

42, P-43, P-64, P-301, SP-5, SP-11, and SP-25 would construct permanent access roads within VWD easements over undeveloped land. Construction of the access roads would not represent a land use conflict because these roads would be located within easements designated specifically for VWD facilities. Refer to Section 4.8, Landform Alteration and Aesthetics, for a discussion of potential visual impacts associated with the proposed pipeline access roadways. For this reason, only above-ground proposed CIP facilities are discussed below.

4.9.1.1 CIP Potable Water Storage Projects

This section describes the existing land uses at and surrounding each of the proposed CIP water storage reservoir and pump station projects under the 2018 Master Plan.

R-1, Meadowlark #3

The R-1, Meadowlark #3, CIP reservoir project is located in the city of San Marcos. This project would demolish an existing reservoir and construct a new reservoir on the same site. Areas to the north of the reservoir contain residential housing. Undeveloped land located to the east, south, and west of the site is primarily designated as an environmental trust. The County General Plan land use designation for the CIP project R-1 site is Semi-Rural Residential (SR-1).

R-3, Coronado Hills #2

The R-3, Coronado Hills #2, CIP reservoir project is located in San Diego County. This project would construct a new reservoir adjacent to an existing VWD reservoir. Land to the east of the site includes residences while land to the north, south and west is undeveloped. The County General Plan land use designation for the CIP project R-3 site is Rural Lands (RL-20).

R-4, Deer Springs #2

The R-4, Deer Springs #2, CIP reservoir project is located in San Diego County. This project would demolish an existing reservoir and construct a new reservoir on the same site. This site is surrounded by undeveloped land, with some agricultural land and Interstate 15 located to the east. The County General Plan land use designation for the CIP project R-4 site is Semi-Rural Residential (SR-10).

R-5, Coggan #2

The R-5, Coggan #2, CIP reservoir project is located in San Diego County. This project would demolish an existing reservoir and construct a new reservoir on the same site. Lands adjacent to and surrounding the site are also undeveloped. The County General Plan land use designation for the CIP project R-5 site is Rural Lands (RL-20).

R-6, North Twin Oaks #3

The R-6, North Twin Oaks, CIP reservoir project is located in San Diego County. This project would construct a new reservoir on the same site as the existing North Twin Oaks #2 Reservoir. Areas adjacent to and surrounding the project site are undeveloped. The County of San Diego General Plan land use designation for the CIP project R-6 site is Rural Lands (RL-20).

R-7, Meadowlark #4

The R-7, Meadowlark #4, CIP reservoir project is located in the city of San Marcos. This project would construct a new reservoir on a site that that currently contains two VWD reservoirs. Undeveloped land immediately adjacent to this site is primarily designated as an environmental trust. Some residences are located to the north. The San Marcos General Plan land use designation for the CIP project R-7 site is Very Low Density Residential, 2 to 4 dwelling units per acre.

R-8, Palos Vista #1 Rehabilitation

The R-8, Palos Vista #1 Rehabilitation, CIP reservoir project is located in the city of Escondido. This project would rehabilitate an existing reservoir on the same site. Residential development intermixed with open space surrounds this site. The site for CIP project R-8 is located in an area with the Escondido General Plan land use designation of Vacant and Undeveloped land.

R-9, Coronado Hills #3

The R-9, Coronado Hills #3, CIP reservoir project is located in San Diego County. This project would construct a new reservoir on a site that currently contains a VWD reservoir. Undeveloped land surrounds the site on all sides with some residential development located to the east. The County General Plan land use designation for the CIP project R-9 site is Open Space-Conservation (OS-C).

R-10, Twin Oaks #3

The R-10, Twin Oaks #3, CIP reservoir project is located in San Diego County. This project would construct a new reservoir on the same site as two existing reservoirs. Areas to the north include San Diego County Water Authority (SDCWA) facilities; areas to the east consist of agricultural lands; areas to the west are undeveloped and areas to the south contain rural single-family homes. The County General Plan land use designation for the CIP project R-10 site is Rural Lands (RL-20).

R-11, Coggan # 3

The R-11 Coggan #3 CIP reservoir project is located in San Diego County. This project would construct a new reservoir on as site that is currently undeveloped. Lands adjacent to

and surrounding the site are also undeveloped. The County General Plan land use designation for the CIP project R-11 site is Rural Lands (RL-20).

4.9.1.2 CIP Potable Water Pump Station Projects

PS-2, 1625 High Point Hydro

The pump station CIP project PS-2, 1625 High Point Hydro, is located in Escondido. This project would construct a new pump station on a site that is located in a newly developed residential area. Residences and open space surround the site. The Escondido General Plan land use designation for the CIP project PS-2 site is Vacant and Undeveloped land.

PS-3, 1235 Deer Springs

The pump station CIP project PS-3, 1235 Deer Springs, is located in San Diego County. This project would replace existing pumps with new pumps on the same site. Agricultural lands surround this site. The County General Plan land use designation for the CIP project PS-3 site is Semi-Rural Residential (RS-10).

PS-4, 1330 Mountain Belle

The pump station CIP project PS-4, 1330 Mountain Belle, is located in San Diego County. This project would construct a new pump station on a site with an existing VWD reservoir. Areas adjacent to the CIP site are also undeveloped with some single family residences located to the west. The County of San Diego General Plan land use designation for the CIP project PS-4 site is Semi-Rural Residential (SR-2).

PS-5, 1330 North Twin Oaks

The pump station CIP project PS-5, 1330 North Twin Oaks, is located in San Diego County. This project would replace existing pumps with new pumps on the same site. Areas to the north and northeast contain additional VWD facilities; areas to the south and southeast contain agricultural uses; and areas to the west are undeveloped. The County General Plan land use designation for the CIP project PS-5 site is Public/Semi-Public Facilities (P/SP).

PS-6, 1530 Southlake

The pump station CIP project PS-6, 1530 Southlake, is located in the city of San Marcos. This project would replace existing pumps with new pumps on the same site. Land surrounding this site includes single and multi-family residential development to the north, a lake to the south, undeveloped land to the west and undeveloped land, homes and a roadway to the east. The San Marcos General Plan land use designation for the CIP project PS-6 site is Recreation (other).

PS-7, 1608 Coggan

The pump station CIP project PS-7, 1608 Coggan, is located in San Diego County. This project would replace existing pumps with new pumps on the same site. Areas adjacent to and surrounding the site include VWD facilities, rural residences and agricultural land. The County of San Diego General Plan land use designation for the CIP project PS-7 site is Public/Semi-Public Facilities (P/SP).

PS-8, 1115 Schoolhouse

The pump station CIP project PS-8, 1115 Schoolhouse, is located in the city of San Marcos. This project would replace existing pumps with new pumps on the same site. Land surrounding this site includes residential development to the south, west and east and undeveloped area to the north. The San Marcos General Plan land use designation for the CIP project PS-8 site is Communications and Utilities.

4.9.1.3 CIP Wastewater Lift Station Projects

LS-1 Montiel Lift Station Replacement

The lift station CIP project SB-1, Montiel Lift Station Replacement, is located in the city of San Marcos. This project would replace the existing pump station with a new pump station on the same site. This site is surrounded by residential and commercial development. The San Marcos General Plan land use designation for the CIP project LS-1 site is Commercial land. This wastewater CIP project would comply with all applicable zoning requirements.

Land Outfall

The parallel land outfall CIP project is approximately eight miles long and traverses three different jurisdictions, including the cities of Vista, San Marcos, and Carlsbad. The outfall is adjacent to multiple land uses, including residential, commercial, agricultural, and open space. The outfall wastewater CIP project would comply with all applicable zoning requirements.

4.9.2 Regulatory Framework

4.9.2.1 State

As a district, VWD may acquire, construct, own, operate, control, or use works for supplying the inhabitants of its district with water or the means for the collection, treatment, or disposition of sewage; it may construct such works across or along any street or public highway, with the same rights and privileges appertaining thereto as are granted to municipalities, such as, the cities of San Marcos, Escondido, Vista and Carlsbad (see Sections 12801 and 12808 of the California Public Utilities Code). Under Section 53091(d) and (e) of the California Government Code, building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water or wastewater, and zoning ordinances of a county or

city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by VWD. In addition, under Section 53096 of the Government Code, VWD, by a four fifths (4/5) vote of its members, may render a city or county zoning ordinance inapplicable to a proposed use of the property, related to the storage or transmission of water if VWD determines by resolution at a public hearing that there is no feasible alternative to its proposal. This determination may be made at the time VWD approves the Environmental Impact Report. Consequently, zoning regulations only apply to wastewater in the 2018 Master Plan. A discussion of the plans and policies that support the provision of both water and wastewater infrastructure is provided below.

a. California Urban Water Management Planning Act

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. The California Urban Water Management Planning Act requires every urban water supplier that provides water for municipal services to more than 3,000 connections or is supplying more than 3,000 acre-feet of water annually to assess the reliability of its water sources over a 20-year planning horizon considering normal and dry years. This assessment is to be included in the supplier's UWMP, which is to be prepared and adopted every 5 years and submitted to the Department of Water Resources (DWR). VWD complied with the act by preparing a UWMP in 2005, 2010, and most recently 2015 (VWD 2015).

DWR's 2015 UWMP Guidebook for Urban Water Suppliers served as a blueprint to VWD as it compiled the 2015 UWMP.

Major amendments made to the act since preparation of the 2010 UWMP include:

- California Water Code (CWC) Section 10631(f)(1) requires a narrative description that addresses the nature and extent of each water Demand Management Measure implemented over the past five years and planned to be implemented to achieve the water use targets pursuant to Senate Bill X_{7-7} (SB7).

- CWC Sections 10631(e)(1)(J) and (e)(3)(A) and (B) requires that distribution system water loss be quantified for the most recent 12-month period available. For all subsequent UWMP updates, the distribution system water loss shall be quantified for each of the preceding five years. The waster loss will be reported on a DWR-approved or developed worksheet.

- CWC Section 10631(e)(4) allows that water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans; provided that the urban water supplier provides citations to and the extent of the savings from these codes, standards, ordinances, or transportation and land use plans when making the projections. In addition, water use projections that do not include water savings shall be noted of that fact.

- CWC Sections 10631.2(a) and (b) allow the UWMP to voluntarily estimate the amount of energy used to extract, divert, convey, treat, distribute and store water supplies. The DWR shall prepare a methodology for the voluntary calculation or estimation of energy intensity of urban water systems.

- CWC Section 10632(b) requires that pools and spas be analyzed separately from other water features that are artificially supplied with water, including ponds, lakes, waterfalls and fountains, for purposes of developing the water shortage contingency analysis for the UWMP.

- CWC Section 10644(a)(2) requires that the UWMP, or amendments to the UWMP, be submitted to DWR electronically and include the standardized forms, tables and displays specified by DWR.

- CWC Section 10621(d) requires that each urban water supplier update and submit its 2015 UWMP to DWR by July 1, 2016.

b. Senate Bill 7 of the Seventh Extraordinary Session of 2009

The California State Legislature passed SB7 on November 10, 2009 (it became effective February 3, 2010). This law seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The law requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020, an interim water reduction target by 2015, and incorporate this information into the 2010, 2015, and 2020 UWMPs.

Urban water providers such as VWD must include in their 2020 plans the following information: (1) baseline daily per capita water use; (2) urban water use target; (3) interim water use target; (4) compliance daily per capita water use, including technical bases and supporting data for those determinations. An urban retail water supplier may update its 2020 urban water use target in its 2015 UWMP (CWC Section 10608.20).

A Regional Alliance allows individual urban retail water suppliers to combine their individual targets into a regional target. An urban retail water supplier is required to meet either their own or the regional water conservation target in order to comply with SB7. VWD has entered into a Regional Alliance with Olivenhain Municipal Water District (OMWD), Rincon del Diablo Municipal Water District (Rincon MWD), and San Dieguito Water District (SDWD).

c. Senate Bills 610 and 221

CWC Sections 10910 through 10914 and Government Code Section 65867.5, 66455.3, and 66473.7 (SB 610 and SB 221, respectively) amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain large proposed projects. SB 221 requires affirmative written verification from the water

purveyor of the public water system that sufficient water supplies are available for certain large residential subdivisions of property prior to approval of the tentative map.

VWD has used documentation from Metropolitan Water District of Southern California (MWD) and SDCWA in producing this UWMP, which is the basis for preparing water supply assessments and written verifications required under state law.

4.9.2.2 Local

a. San Diego County Water Authority Act

The VWD is a member agency of the SDCWA, which is governed primarily by the County Water Authority Act (Stats. 1943, c. 545). This act mandates the SDCWA to provide water to meet the needs of member agencies in its service area. As a district, SDCWA may acquire, construct, own, operate, control, or use works for supplying the inhabitants of its district with water or the means for the collection, treatment, or disposition of sewage; and may construct such works across or along any street or public highway, with the same rights and privileges appertaining thereto as are granted to municipalities, such as, the cities of San Marcos, Escondido, Vista and Carlsbad (see California Public Utilities Code Sections 12801 and 12808). Under Section 53091(d) and (e) of the California Government Code, building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, and zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by SDCWA. However, for the purposes of California Environmental Quality Act (CEQA) analysis, local land use planning documents are addressed in this PEIR.

b. County of San Diego General Plan

The adopted County General Plan was written in 1979. The most recently adopted version of the General Plan was in 2011. The County of San Diego is currently updating its General Plan; however, the updated plan has not yet been adopted. The 2018 Master Plan water and wastewater demand projections were based upon data from the 1979 General Plan, with amendments through the year 2007. The 2007 amendments reflect land uses within the VWD service area through June 2008, the initiation year for the 2008 VWD Master Plan. Please refer to Section 5.3 (Other CEQA Considerations, Growth Inducement) for further information on county land use and 2018 Master Plan projections.

The existing General Plan for San Diego County identifies long-range goals and policies for the comprehensive development of land within its jurisdiction. The following six specific elements are included within the County General Plan: Land Use, Mobility, Conservation and Open Space, Housing, Safety, and Noise. The Land Use Element of the General Plan includes a Community Services and Infrastructure section that recognizes the need for the timely provision of water and wastewater facilities concurrent with approved development and growth in the County.

c. City of San Marcos General Plan

The City of San Marcos General Plan Land Use and Community Design Element (2013) is a long-range guide to the development and use of all land within the City's eight community planning areas. As such, it sets forth goals, policies and standards to guide the location, density, and distribution of various land use activities within each of those areas. The main objective of the Community Design Element is to determine the future location, type, and intensity of new development, and to establish the desired mix and relationship between projects to maximize the long-term livability of the community. The General Plan divides the city into eight community planning areas, each with a distinct community character and/or land use pattern. Portions of the VWD service area cover all eight community planning areas.

d. City of Vista General Plan

The City of Vista General Plan 2030 (adopted in 2012) is a statement of long-range public policy to guide the use of private and public lands within the city boundaries. The existing General Plan for Vista includes the following elements: Land Use and Community Identity; Circulation; Resource Conservation and Sustainability; Health; Noise; Public Safety, Facilities, and Services; and Housing. Vista has experienced considerable growth over the past 20 years, including the addition of over 24,000 new residents and construction of new industrial and commercial development, with a corresponding increase in its employment base. Consequently, demand for roads, public utilities, recreational areas, commercial venues and other amenities have increased considerably over the past twenty years. The Vista General Plan 2030 is meant to account for these significant changes to the city's physical, social and economic landscape, and, in turn, to establish the means to guide and accommodate additional change over the next two decades.

e. City of Escondido General Plan

The City of Escondido General Plan is a statement of long-range public policy to guide the use of private and public lands within the city boundaries. The General Plan reflects the aspirations and values of the city. The General Plan is both general and comprehensive in that it provides broad guidelines for development in the city, while addressing a wide range of issues that affect the city's desirability as a place to live and work. It is comprehensive documents with policies not only directed at land use and private development, but also public facilities and services. The Escondido General Plan includes the following elements: Land Use, Community Facilities and Services, Community Protection and Safety, Community Open Space/Conservation, and Growth Management. The City of Escondido General Plan was updated in 2012.

f. City of Carlsbad General Plan

The General Plan for the city of Carlsbad contains seven elements, with each element containing maps and figures, policy statements, over-arching goals, more specific objectives, implementing programs, and in some instances, development standards. Elements in the

General Plan include Land Use, Housing, Open Space and Conservation, Parks and Recreation, Circulation, Public Safety, Noise and the Arts. The Carlsbad General Plan last underwent a comprehensive update in 1994, and in 2008, the city started the process 'Envision Carlsbad' to update the plan again. This update was approved in 2015.

g. City of Carlsbad Coastal Resource Protection Overlay Zone Ordinance

Each of the 15 counties and 53 municipalities along the California coastline, including the city of Carlsbad, is required by the California Coastal Act to prepare a Local Coastal Program (LCP). Portions of the 2018 Master Plan occur within the boundaries of the Coastal Zone within Carlsbad, as identified within the approved Carlsbad LCP. The LCP is used as a planning tool to guide development in the coastal zone, in partnership with the CCC. The LCP contains the ground rules for future development and the protection of coastal resources. The Carlsbad LCP includes two main components: a land use plan and related implementing measures (including a zoning map, and zoning ordinance). In particular, the local coastal land use plans define Environmentally Sensitive Habitat Areas and include measures specifically intended to protect natural open space resources, scenic resources, agricultural lands, and public access rights. Refer to Section 4.2 for detailed information related to the 2018 Master Plan, the most recent 2016 update to the Carlsbad Local Coastal Program, and the Carlsbad Coastal Resource Protection Overlay Zone Ordinance.

h. Multiple Habitat Conservation Program

The Multiple Habitat Conservation Program (MHCP) is a comprehensive, multiple jurisdictional planning program designed to develop an ecosystem preserve in northwestern San Diego County. Implementation of the regional preserve system is intended to protect viable populations of key sensitive plant and animal species and their habitats, while accommodating continued economic development and quality of life for residents of the North County region. The MHCP is one of several large multiple jurisdictional habitat planning efforts in San Diego County, each of which constitutes a subregional plan under the California Natural Community Conservation Planning (NCCP) Act of 1991. The MHCP includes seven incorporated cities in northwestern San Diego County: Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista. All but Solana Beach have implemented or are in the process of implementing their respective portions of the MHCP through citywide "subarea" plans, which describe the specific implementing mechanisms each city will institute for the MHCP. The goal of the MHCP is to conserve approximately 19,000 acres of habitat, of which roughly 8,800 acres (46 percent) are already in public ownership and contribute toward the habitat preserve system for the protection of more than 80 rare, threatened or endangered species.

i. Carlsbad MHCP Subarea Plan

The Carlsbad MHCP Subarea Plan, also referred to as the Habitat Management Plan for Natural Communities in the City of Carlsbad or Carlsbad Habitat Management Plan, is the

only approved Subarea Plan under the MHCP. The Carlsbad MHCP Subarea Plan has been successful in contributing toward the conservation of local habitats and recovery of regionally sensitive plant and animal species within Carlsbad since its approval. The Carlsbad MHCP Subarea Plan designates approximately 6,500 acres of the open space lands in the city for preservation based on its value as habitat for endangered animals and rare, unique or sensitive plant species. The plan identifies how the City of Carlsbad can protect and maintain these lands while still allowing additional public and private development consistent with the General Plan and the Growth Management Plan.

j. Draft MHCP Subarea Plans

The Draft MHCP Subarea Plans for the cities of Encinitas, Escondido, Oceanside, San Marcos, and Vista address how the cities will conserve natural biotic communities and sensitive plant and wildlife species under the MHCP framework. The Draft Subarea Plans would provide regulatory certainty to the landowners within the cities and aid in conserving the region's biodiversity and enhancing the quality of life. The Draft Subarea Plans address the potential impacts to natural habitats and rare, threatened or endangered species caused by projects within the Cities. The Draft Subarea Plans will also form the basis for Implementing Agreements, which will be the legally binding agreements between the cities and the Wildlife Agencies that ensure implementation of the plan and provides the cities with state and federal "Take Authority." As of 2017, none of the Draft MHCP Subarea Plans have been adopted and finalized. Therefore, although projects within the Cities are encouraged to demonstrate consistency, they are not subject to the provisions of the Draft Plans and instead, must comply with existing local, state, and federal requirements with respect to CEQA, National Environmental Policy Act (NEPA), California Endangered Species Act (CESA), and Federal Endangered Species Act (FESA).

k. Multiple Species Conservation Plan

The County Multiple Species Conservation Plan (MSCP) is a long-term regional conservation plan designed to establish connected preserve systems to ensure the long-term survival of sensitive plant and animal species and to protect the native vegetation found throughout portions of San Diego County. The MSCP addresses the potential impacts of urban growth, natural habitat loss, and species endangerment and creates a plan to mitigate for the potential loss of sensitive species and their habitats. The MSCP covers 582,243 acres over 12 jurisdictions. Each jurisdiction has its own Subarea Plan, which describes specific implementing mechanisms for the MSCP. Any habitat set aside for the protection of biological resources in accordance with the MSCP is considered sensitive. The MSCP divides habitats into tiers based on sensitivity, with habitat rankings from Tier 1 (most sensitive) to Tier IV (least sensitive, includes disturbed land). The combination of the MSCP Subregional Plan and Subarea Plans serve as a multiple species habitat conservation plan (pursuant to Section 10(a)(1)(B) of the FESA and the California NCCP Act of 1991 and CESA). The conservation measures specified in the MSCP provide for "coverage" of 85 species of plants and animals (called covered species) under these state and federal endangered species laws.

The 2018 Master Plan service area falls within portions of the County's MSCP Subregion area, and specifically, the North County Segment MSCP Subarea, for which a Draft Subarea Plan has been prepared. However, the only approved Subarea Plan within the County MSCP Subregion is the South County Segment MSCP Subarea Plan.

l. Draft North County Segment MSCP Subarea Plan

The Draft County of San Diego MSCP North County Subarea Plan, also referred to as the "North County Plan," addresses how the natural biotic communities and sensitive plant and wildlife species will be conserved in the northwestern unincorporated county lands under the MSCP framework. The area included in the plan encompasses approximately 294,849 acres in and around the unincorporated communities of Bonsall, De Luz, Fallbrook, Harmony Grove, Lilac, Pala, Pauma Valley, Rainbow, Ramona, Rincon Springs, Twin Oaks Valley, and Valley Center. The plan provides economic benefits by reducing constraints on future development outside of proposed preserve areas and decreasing the costs of compliance with federal and state laws protecting biological resources. The plan is intended to be compatible with the County General Plan and ordinances. As such, it compliments existing policies in achieving economic goals by providing a regional conservation plan to streamline the permitting process. Implementation of this Plan will also protect biodiversity and enhance the quality of life in the San Diego region. This plan will help conserve habitat that benefits numerous species, including the 63 species covered under the plan. Biological goals for the Plan follow standard principles of conservation biology and a science based approach to conservation planning. Goals, objectives, and conservation strategies for the Plan were established based on the needs of 63 target species and their habitats in the Plan area. The proposed North County preserve system incorporates existing preserves and ensures connections between these preserves through soft-line conservation areas. The goal for this Plan is to preserve 106,780 acres of natural lands in a network of preserves. Another 7,022 acres of surrounding agricultural and disturbed habitats are estimated to be needed to maintain natural processes within the preserve system. The most recent version of the Draft MSCP Subarea Plan for the North County Segment was released in February 2009. Although projects within this portion of the unincorporated county are encouraged to demonstrate consistency, they are not subject to the provisions of the Draft Plan and instead, must comply with existing local, state, and federal requirements with respect to CEQA, NEPA, CESA, and FESA.

4.9.3 Master Plan Impacts and Mitigation

4.9.3.1 Issue 1 – Land Use Incompatibilities and Conflicts with Land Use Plans and Biological Conservation Plans

Land Use and Planning Issue 1 Summary	
Would the 2018 Master Plan conflict with any land use plan, policy, regulation, biological habitat conservation plan, natural communities conservation plan or result in incompatibilities with surrounding land uses?	
Impact: The 2018 Master Plan has the potential to conflict with local land use policies and result in incompatibilities with surrounding land uses.	**Mitigation**: Applicable measures in other sections of this PEIR, including Section 4.1 (Air Quality), Section 4.2 (Biological Resources), Section 4.3 (Cultural Resources), Section 4.5 (Geology, Soils and Paleontology), Section 4.7 (Hydrology and Water Quality), Section 4.8 (Landform Alteration and Aesthetics), Section 4.10 (Noise), and Section 4.11 (Public Safety).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it would:

1. Conflict with any applicable Habitat Conservation Plans (HCPs) or NCCPs;

2. Conflict with any 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; or

3. Result in incompatibilities between CIP facilities and surrounding land uses.

b. Impact Analysis

As a district, VWD may acquire, construct, own, operate, control, or use works for supplying the inhabitants of its district with water or the means for the collection, treatment, or disposition of sewage; and may construct such works across or along any street or public highway, with the same rights and privileges appertaining thereto as are granted to municipalities, such as, the Cities of San Marcos, Escondido, Vista and Carlsbad (see California Public Utilities Code Sections 12801 and 12808). Under Section 53091(d) and (e)

of the California Government Code, building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, and zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by VWD. In addition, under Section 53096 of the Government Code, VWD, by a four fifths (4/5) vote of its members, may render a city or county zoning ordinance inapplicable to a proposed use of the property, related to the storage or transmission of water if VWD determines by resolution at a public hearing that there is no feasible alternative to its proposal. This determination may be made at the time VWD approves the Environmental Impact Report. Consequently, zoning regulations and land use requirement only apply to wastewater projects in the 2018 Master Plan.

The 2018 Master Plan's compatibility with local land use plans and policies has been addressed in a variety of different sections within this PEIR. The potential for the 2018 Master Plan to conflict with or obstruct implementation of an applicable air quality plan or violate any air quality standard is addressed in Sections 4.1.3.1 and 4.1.3.2 (Air Quality Issues 1 and 2) of this PEIR. The potential for the 2018 Master Plan to conflict with any local policies or ordinances protecting biological resources or to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan is addressed in Sections 4.2.3.4 and 4.2.3.5 (Biological Resources Issues 4 and 5) of this PEIR. The potential for the 2018 Master Plan to result in or expose people to noise levels in excess of standards established in applicable noise plans, noise ordinances, or noise standards is addressed in Sections 4.10.3.1 and 4.10.3.2 (Noise Issues 1 and 2) of this PEIR.

Table 4.9-1 summarizes the consistency of the 2018 Master Plan with local community policies, including HCPs or NCCPs, and other local policies adopted for the purpose of avoiding an environmental impact. Consistency with local community policies also ensures that any potential impacts that would result in incompatibility with adjacent land uses, such as dust and noise from construction activity, which could impact sensitive receptors or air quality objectives, potential impacts associated with scenic vistas or community aesthetic character, or potential public safety hazards, would be avoided. The significance criteria for each impact listed below are described in Section 4.1 (Air Quality), Section 4.2 (Biological Resources), Section 4.3 (Cultural Resources), Section 4.5 (Geology, Soils, and Paleontology), Section 4.7 (Hydrology and Water Quality), Section 4.8 (Landform Alteration and Aesthetics), Section 4.10 (Noise), and Section 4.11 (Public Safety).

c. Mitigation Measures

With implementation of mitigation measures identified in the following sections, the 2018 Master Plan would be compatible with adjacent land uses: Section 4.1 (Air Quality), Section 4.2 (Biological Resources), Section 4.3 (Cultural Resources), Section 4.5 (Geology, Soils, and Paleontology), Section 4.7 (Hydrology and Water Quality), Section 4.8 (Landform Alteration and Aesthetics), Section 4.10 (Noise), and Section 4.11 (Public Safety). CEQA analysis has been conducted separately for CIP projects R-1, R-7, SP-11, and SP-12; therefore, these projects are not subject to these mitigation measures.

Table 4.9-1
Summary of Community Policy Consistency and Land Use Compatibility

Potential Impact	Mitigation Measures
Section 4.1, Air Quality	
Issue 3: The 2018 Master Plan would have the potential to create objectionable odors where new wastewater facilities would vent to open air.	Odor-control measures (Air-1). Refer to Section 4.1.3.3 for a complete discussion of this impact.
Section 4.2, Biological Resources	
Issue 1: Implementation of the 2018 Master Plan may result in direct and indirect impacts to sensitive plant and wildlife species.	Project-Level Biological Resource Surveys (Bio-1A); California Gnatcatcher and Least Bell's Vireo Avoidance Measures (Bio-1B and Bio-1C); Avoidance of Nesting Birds and Raptors (Bio-1D and Bio-1E); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Construction-Related Night Lighting (Bio-1I); Avoidance of Special Status Habitat Areas (Bio-1J); and Geotechnical Investigation and Construction-Related Erosion Control Plan (Geo-1 and Geo-2). Refer to Section 4.2.3.1 for a complete discussion of this impact.
Issue 2: Implementation of the 2018 Master Plan has the potential to result in impacts to upland, riparian, and wetland habitats that are considered sensitive natural communities.	Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Project-Level Biological Resource Surveys (Bio-1A); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and, Geotechnical Investigation and Construction-Related Erosion Control Plan (Geo-1 and Geo-2). Refer to Section 4.2.3.2 for a complete discussion of this impact.
Issue 3: Implementation of the 2018 Master Plan would result in impacts to waters, wetlands, and associated resources subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife, including federally protected wetlands as defined by Section 404 of the Clean Water Act.	Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); and Hydroseeding of Graded Areas (Bio-2C).Refer to Section 4.2.3.3 for a complete discussion of this impact.
Issue 4: Implementation of the Master Plan could conflict with the County Rural Planning Organization and Carlsbad County Rural Planning Organization Ordinance.	Oak Tree Avoidance (Bio-3A); Oak Tree Replacement (Bio-3B); Project-level studies (Bio-1A); Habitat Replacement (Bio-2A); Riparian/wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and, Construction-Related Erosion Control Plan and Geotechnical Investigation (Geo-1 and Geo-2).Refer to Section 4.2.3.4 for a complete discussion of this impact.
Issue 5: Implementation of the 2018 Master Plan	Project-Level Biological Studies (Bio-4A); Species

Table 4.9-1 Summary of Community Policy Consistency and Land Use Compatibility	
Potential Impact	Mitigation Measures
could conflict with the Carlsbad MHCP Subarea Plan (Carlsbad Habitat Management Plan).	and Habitat Avoidance within Carlsbad MHCP Subarea Plan (Bio-4B); Habitat In-Lieu Fees (Bio-4C), Habitat Replacement (Bio-2A); Riparian/Wetland Replacement Ratio (Bio-2B); Hydroseeding of Graded Areas (Bio-2C); Construction Fencing (Bio-1F); Construction Staging Areas (Bio-1G); Pre-Construction Meeting (Bio-1H); Avoidance of Special Status Habitat Areas (Bio-1J); and, Construction-Related Erosion Control Plan and Geotechnical Investigation (Geo-1 and Geo-2).Refer to Section 4.2.3.5 for a complete discussion of this impact.
Section 4.3, Cultural Resources	
Issue 1: Construction activities associated with construction of the proposed CIP projects, such as grading, trenching, and clearing have the potential to adversely affect historic resources or archeological resources within the VWD service area.	Site-specific Records Search (Cul-1), Phase I Cultural Resources Survey (Cul-2); Procedure for Unintentional Disturbance of Cultural Resources (Cul-3). Refer to Section 4.3.3.1 for a complete discussion of this impact.
Section 4.5, Geology, Soils, and Paleontology	
Issue 1: Proposed CIP facilities could be located on geologic units or soil that is unstable and could result in liquefaction, lateral spreading, subsidence, expansive soils, and/or landslides.	Site-specific Geotechnical Investigations (Geo-1). Refer to Section 4.5.3.1 for a complete discussion of this impact.
Issue 2: Construction activities associated with CIP projects could result in soil erosion or loss of topsoil.	Construction-Related Erosion Control Plan (Geo-2). Refer to Section 4.5.3.2 for a complete discussion of this impact.
Issue 3: Construction of CIP projects proposed within the Santiago formation has the potential to disturb or destroy paleontological resources.	Paleontological Resources Investigation (Geo-3). Refer to Section 4.5.3.3 for a complete discussion of this impact.
Section 4.7, Hydrology and Water Quality	
Issue 3: Above-ground 2018 Master Plan CIP projects (reservoirs, pump and lift stations) could be subject to potential damage by a mudflow.	Site-specific Geotechnical Investigations (Geo-1). Refer to Section 4.7.3.3 for a complete discussion of this impact.
Section 4.8, Landform Alteration and Aesthetics	
Issue 1: Construction of CIP projects and access roadways could both temporarily and permanently degrade the existing visual character of project sites and their surroundings during construction and in areas without existing VWD facilities.	Landscaping Measures (Aes-1); Visually Compatible Design (Aes-2). Refer to Section 4.8.3.1 for a complete discussion of this impact.
Issue 2: CIP project R-11 would be located on an undeveloped hillside within the Merriam Mountains Resource Conservation Area and construction of the proposed reservoir has the potential to adversely impact scenic views.	Visual Resources Report (Aes-3). Refer to Section 4.8.3.2 for a complete discussion of this impact.

Table 4.9-1 Summary of Community Policy Consistency and Land Use Compatibility	
Potential Impact	Mitigation Measures
Issue 3: Lighting associated with CIP projects would be limited to emergency lighting and temporary security lighting and would not create a substantial new lighting source. Glare impacts could occur from sunlight reflecting off of above-ground CIP facilities.	Landscaping Measures (Aes-1); Visually Compatible Design (Aes-2). Refer to Section 4.8.3.3 for a complete discussion of this impact.
Section 4.10, Noise	
Issue 2: Construction of CIP projects would temporarily increase ambient noise levels in the project vicinity.	Construction Noise Limits (Noi-1). Refer to Section 4.10.3.2 for a complete discussion of this impact.
Section 4.11, Public Safety	
Issue 2: Excavation or trenching activities associated with construction of CIP projects could result in the accidental release of a hazardous material, resulting in a hazard to the public or the environment.	Site Specific Geotechnical Investigation (Geo-1). Refer to Section 4.11.3.2 for a complete discussion of this impact.

4.9.4 Cumulative Impacts

Land Use and Planning Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative land use and planning impact considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Incompatibilities with adjacent land uses.	No	No cumulative impact.

Refer to Section 4.2.4, Biological Resources Cumulative Impacts, for the cumulative impact analysis related to local policies, ordinances and habitat conservation plans.

4.9.4.1 Incompatibilities with Adjacent Land Uses

The geographic context for the analysis of cumulative impacts relative to adjacent land use incompatibilities includes development surrounding proposed 2018 Master Plan CIP facilities. For conflicts with habitat conservation plans and natural communities conservation plans, the cumulative impact study area includes all of the open space reserves within and adjacent to the VWD service area, as identified by MSCPs and MHCPs of local agencies. It is anticipated that development of future cumulative projects would undergo CEQA review which would require a consistency analysis with applicable plans and polices. As required by CEQA, cumulative projects would be consistent with the existing adopted plans, or require mitigation measures or design review to ensure consistency, in order for project approvals to occur. Therefore, it is anticipated that

cumulative development would be consistent with applicable plans or policies, which would result in a less than significant cumulative impact.

As discussed in Section 4.9.3.1 above, implementation of the mitigation measures identified in other sections of this PEIR would reduce impacts to neighboring communities from the Master Plan to a level below significance. With implementation of these identified mitigation measures, the 2018 Master Plan, in combination with other cumulative projects, would be compatible with surrounding land uses and would not result in a cumulatively significant incompatibility of adjacent land uses within the local cumulative impact area.

4.9.5 CEQA Checklist Items Deemed Not Significant Applicable to the 2018 Master Plan

Would implementation of any of the CIP projects under the 2018 Master Plan physically divide an established community?

The majority of CIP projects would be implemented in undeveloped areas or areas that currently contain VWD facilities. Some CIP projects would be located in residential areas, however, construction of these facilities would not create a physical barrier (ex. Highway), that would result in the physical division of an established community. Therefore, the 2018 Master Plan would not physically divide an established neighborhood and no further analysis is required.

4.9.6 References

Carlsbad, City of
2015 Carlsbad General Plan. Prepared 1994, amended 2010.

Escondido, City of
2012 Escondido General Plan.

San Diego, County of
2014 San Dieguito Community Plan (part of San Diego County General Plan).

San Marcos, City of
2013 San Marcos General Plan. Prepared 1983, last amended 2013.

Vista, City of
2012 City of Vista General Plan.

San Diego, County of
2011 San Diego County General Plan.

Vallecitos Water District (VWD)
2015 Urban Water Management Plan. Available at http://www.vwd.org/departments/engineering/capital-facilities/urban-water-management-plan-uwmp-copy.

4.10 Noise

This section of the Program Environmental Impact Report (PEIR) describes the potential environmental effects related to temporary and permanent increases in noise from construction and operation of the proposed Capital Improvement Program (CIP) projects within the Vallecitos Water District (VWD) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan). Refer to Section 4.2 (Biological Resources) of this PEIR for a discussion of potential noise impacts associated with noise-sensitive avian species.

The 2011 PEIR for the 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan) identified one potentially significant impact associated with noise (temporary increase in ambient noise levels from construction activity). The 2011 PEIR identified the mitigation measure Noi-1 to reduce this impact to a less than significant level. The 2018 Master Plan update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.10.1 Environmental Setting

4.10.1.1 Fundamentals of Environmental Noise

Noise is commonly defined as unwanted sound. Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB). Sound pressures in the environment have a wide range of values and the sound pressure level was developed as a convenience in describing this range as a logarithm of the sound pressure. To be consistent throughout the world, the sound pressure level is the logarithm of the ratio of the unknown sound pressure to an agreed upon reference quantity of the same kind. To account for the pitch of sounds and the corresponding sensitivity of humans hearing to them, the raw sound pressure level is adjusted with an A-weighting scheme based on frequency that is stated in units of decibels [dB(A)].

A given level of noise may be more or less tolerable depending on the sound level, duration of exposure, character of the noise sources, the time of day during which the noise is experienced, and the activity affected by the noise. For example, noise that occurs at night tends to be more disturbing than that which occurs during the day because sleep may be disturbed. Additionally, rest at night is a critical requirement in the recovery from exposure

to high noise levels during the day. In consideration of these factors, different measures of noise exposure have been developed to quantify the extent of the effects anticipated from these activities. For example, some indices consider the 24-hour noise environment of a location by using a weighted average to estimate its habitability on a long-term basis. Other measures consider portions of the day and evaluate the nearby activities affected by it as well as the noise sources. The most commonly used indices for measuring community noise levels are the equivalent energy level (L_{eq}) and the community noise equivalent level (CNEL).

- **L_{eq}** is the average acoustical or sound energy content of noise, measured during a prescribed period, such as 1 minute, 15 minutes, 1 hour, or 8 hours. It is the decibel sound level that contains an equal amount of energy as a fluctuating sound level over a given period of time.

- **CNEL** is the average equivalent A-weighted sound level over a 24-hour period. This measurement applies weights to noise levels during evening and nighttime hours to compensate for the increased disturbance response of people at those times. CNEL is the equivalent sound level for a 24-hour period with a +5 dB(A) weighting applied to all sound occurring between 7:00 p.m. and 10:00 p.m. and a +10 dB(A) weighting applied to all sound occurring between 10:00 p.m. and 7:00 a.m.

The decibel level of a sound decreases (or attenuates) as the distance from the source of that sound increases. For a single point source such as a piece of mechanical equipment, the sound level normally decreases by about 6 dB(A) every time the distance between the source and listener is doubled (doubling of distance). Sound that originates from a linear, or "line," source such as a heavily traveled traffic corridor attenuates by approximately 3 dB(A) per doubling of distance, provided that the surrounding site conditions lack ground effects or obstacles that either scatter or reflect noise. Noise from roadways in environments with major ground effects due to vegetation and loose soils may either absorb or scatter the sound yielding attenuation rates as high as 4.5 dB(A) for each doubling of distance. Other contributing factors that affect sound reception include meteorological conditions and the presence of man-made obstacles such as buildings and sound barriers.

Noise has a significant effect on the quality of life. An individual's reaction to a particular noise depends on many factors such as the source of the noise, its loudness relative to the background noise level, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community. Because of the nature of the human ear, a sound must be about 10 dB(A) greater than the reference sound to be judged as twice as loud. In general, a 3 dB(A) change in community noise levels is perceivable, while 1 to 2 dB(A) changes generally are not perceived. Although the reaction to noise may vary, it is clear that noise is a significant component of the environment, and excessively noisy conditions can affect an individual's health and well-being. The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on a community can be organized into six broad categories: sleep disturbance; permanent hearing loss;

human performance and behavior; interference with social interaction/communication; extra-auditory health effects; and general annoyance.

Community noise environments are typically represented by noise levels measured for brief periods throughout the day and night, or during a 24-hour period (i.e., by day-night average level [L_{dn}] or CNEL). The one-hour period is especially useful for characterizing noise caused by short-term events, such as operation of construction equipment or concert noise (i.e., with L_{eq}). Community noise levels are generally perceived as quiet when the CNEL is below 50 dB(A), moderate in the 50 to 60 dB(A) range, and loud above 60 dB(A). Along major thoroughfares, roadside noise levels are typically between 65 and 75 dB(A).

4.10.1.2 Fundamentals of Environmental Vibration

Vibration consists of waves transmitted through solid material. Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be comprised of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). The normal frequency range of most groundborne vibration that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz.

Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. Ambient and source vibration are often expressed in terms of the peak particle velocity (PPV) or root mean square (RMS) velocity in inches per second (in/sec) that correlates best with human perception. The California Department of Transportation (Caltrans) estimates that the threshold of perception is between 0.006 and 0.019 in/sec RMS and that the level at which continuous vibration is considered annoying is 0.2 in/sec RMS (Caltrans 2013).

Groundborne vibration can be a concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

The rumbling sound caused by the vibration of building structures is referred to as groundborne noise. The annoyance potential of groundborne noise is usually characterized with the A-weighted sound level, which is intended to represent the response of the human ear. However, there are potential problems when characterizing low-frequency noise using A-weighting, because human hearing causes sounds dominated by low-frequency components to seem louder than broadband sounds that have the same A-weighted level. This is accounted for by setting the limits for groundborne noise lower than would be the case for broadband noise.

4.10.1.3 Existing Noise Conditions

The VWD service area includes a wide range of land uses. The following discussion describes the primary transportation noise sources and operational noise sources that contribute to the existing noise environment within the planning area.

a. Transportation Noise Sources

Roadways

Traffic on roadways is the most substantial and common source of noise within the VWD planning area. The number and type of roads vary within the VWD planning area. Major highways include Interstate 15 (along the eastern border) and State Route 78, which runs through the central portion of the planning area. Local and private roads serve lower speed, lower volume traffic, and subsequently feature lower roadway noise levels.

Aviation

No public or private airports are located within the VWD planning area. McClellan-Palomar Airport is located approximately three miles west of the VWD planning area, within the city of Carlsbad. It is owned by the County of San Diego and serves the northern part of the county. It serves the general aviation community, corporate aircraft, and commercial services. Oceanside Municipal Airport, a public airport, is located approximately seven miles northwest of the VWD planning area, within the city of Oceanside. The Oceanside Municipal Airport features one runway and covers 43 acres. It is used primarily for general aviation. The Blackington Airport is located approximately four miles to the northeast of the VWD service area. Blackington is an independent, private airport available for personal use aircraft only. The Lake Wohlford Airport is located approximately four and a half miles east of the VWD service area. The Lake Wohlford Airport is an independent, private airport available for personal use aircraft only.

b. Operational Noise Sources

Commercial/Industrial/Facility Noise

Noise associated with commercial and industrial operations throughout the VWD service area can include on-site machinery operation, outdoor truck activity, air compressors, and/or generators. The degree of noise generated by commercial or industrial uses is dependent upon various factors, including type of industrial activity, hours of operation, and the location relative to other land uses. Agricultural noise sources that generate the highest sound levels are chainsaws, crop-dusting aircraft, and tractors. In addition, operation of exterior exhaust and cooling system equipment typically used in greenhouse operations can be a source of noise that may affect surrounding land uses. Existing VWD facilities, such as pump and lift stations, contribute to the overall noise environment at varying levels throughout the VWD service area.

4.10.1.3 Noise-Sensitive Land Uses

Noise-sensitive land uses (NSLU) include uses where an excessive amount of noise would interfere with normal activities. Primary NSLU include residences, public and private educational facilities, hospitals, convalescent homes, hotels/motels, daycare facilities, and passive recreational parks. Sleep disturbance is the most critical concern for a NSLU on a 24-hour basis or longer compared to activities that are occupied only a portion of a day.

The VWD service area encompasses portions of several jurisdictions, including the cities of San Marcos, Escondido, Carlsbad, Vista, and unincorporated areas within the county of San Diego. Existing land uses within the VWD service area include a wide variety of residential, commercial and office, industrial, public facilities and utilities, parks and recreation, agriculture, and undeveloped areas. For a detailed description of the land uses surrounding each CIP project, please refer to Section 4.9 (Land Use and Planning).

4.10.1.4 Vibration-Sensitive Land Uses

Vibration-sensitive land uses include facilities where vibration would interfere with sleep, such as at a residential uses, or interfere operations within the building, such as vibration-sensitive research and manufacturing, hospitals with vibration-sensitive equipment, and university research operations. For land uses where vibration may interfere with operations, the degree of sensitivity to vibration depends on the specific equipment that would be affected by the vibration. Electron microscopes and high-resolution lithography equipment function within certain scientific and manufacturing tolerances that can be compromised in high vibration environments. Additionally, certain fragile older or historic buildings may be vulnerable to damage from excessive vibration.

4.10.2 Regulatory Framework

The VWD service area spans five jurisdictional areas: San Diego County and the cities of San Marcos, Escondido, Carlsbad, and Vista. Local noise ordinance standards are discussed below. Other local noise standards, such as noise-land use and aircraft noise compatibility standards are not considered to be relevant to the project because the project would not develop any noise-sensitive land uses. For a discussion of federal and state noise standards, see Section 4.10.2 of the 2011 PEIR.

4.10.2.1 County of San Diego Noise Ordinance

The County of San Diego Noise Ordinance establishes prohibitions for disturbing, excessive, or offensive noise, and provisions such as sound level limits for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens. The County of San Diego Noise Ordinance was passed in December 2008 and has not been amended. As discussed in the 2011 PEIR, Table 4.10-1 shows the noise level limits and corresponding times of day for each zoning designation.

Table 4.10-1 County of San Diego Noise Ordinance Exterior Noise Standards		
Zone[1,3]	Limit One-Hour dB(A)[2]	Time Period
(1) R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-90, S-92, R-V, and R-U with a density of less than 11 dwelling units per acre.	50 dB(A)	7:00 a.m. – 10:00 p.m.
	45 dB(A)	10:00 p.m. – 7:00 a.m.
(2) R-RO, R-C, R-M, S-86, RV, AND R-U with a density of 11 or more dwelling units per acre.	55 dB(A)	7:00 a.m. – 10:00 p.m.
	50 dB(A)	10:00 p.m. – 7:00 a.m.
(3) S-94, V4, and all commercial zones.	60 dB(A)	7:00 a.m. – 10:00 p.m.
	55 dB(A)	10:00 p.m. – 7:00 a.m.
(4) V1, V2	60 dB(A)	7:00 a.m. – 7:00 p.m.
	55 dB(A)	7:00 p.m. – 10:00 p.m.
V1	55 dB(A)	10:00 p.m. – 7:00 a.m.
V2	50 dB(A)	10:00 p.m. – 7:00 a.m.
V3	70 dB(A)	7:00 a.m. – 10:00 p.m.
	65 dB(A)	10:00 p.m. – 7:00 a.m.
(5) M-50, M-52, M-54	70 dB(A)	Anytime
(6) S-82, M-56, and M-58.	75 dB(A)	Anytime
(7) S-88[3]	See below	

[1]Refer to the San Diego County Zoning Ordinance for a list of zones represented by the abbreviations in this table. Available at http://www.sdcounty.ca.gov/dplu/zoning/index.html.
[2]If the measured ambient noise level exceeds the applicable limit, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating
[3]S-88 zones are Specific Planning Areas which allow different uses. The sound level limits that apply in an S-88 zone depend on the use being made of the property. The limits in subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

NOTES: The sound levels limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, is 75 decibels at the property line regardless of the zone in which the extractive property is located.
A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.
SOURCE: County of San Diego 2008. Effective January 9, 2009.

Sections 36.408 through 36.411 of the Noise Ordinance establish additional noise limitations for operation of construction equipment (San Diego County Code of Regulatory Ordinance, Title 3, Division 6, Chapter 4, Sections 36.401 through 36.435). Except for emergency work, the Noise Ordinance states that it shall be unlawful for any person to operate or cause to be operated (1) between the hours of 7:00 p.m. and 7:00 a.m.; (2) on a Sunday or a holiday; or (3) that exceeds an average sound level of 75 decibels for more than eight hours during any 24-hour period, when measured at the boundary line of or on any occupied property.

The County Noise Ordinance also includes standards for other sources of temporary and nuisance noise. Section 36.410, Sound Level Limitations on Impulsive Noise, states that except for emergency work, no person shall produce or cause to be produced an impulsive noise that exceeds the following standards when measured at the boundary line of or on any occupied property for 25 percent of the minutes in the measurement period:

- 82 dB(A) at an occupied residential, village zoning, or civic use, or 85 dB(A) at an occupied agricultural, commercial, or industrial use; or
- 85 dB(A) at an occupied residential, village zoning, or civic use, or 90 dB(A) at an occupied agricultural, commercial, or industrial use for a public road project.

4.10.2.2 City of San Marcos Noise Ordinance

The City of San Marcos Noise Ordinance governs operational noise and contains the maximum one-hour average sound levels for various land uses for operational noise. The City of San Marcos Noise Standards were amended in July 2017 through passage of Ordinance 217-1446. Thus, the City of San Marcos Noise Standards assessed in the 2011 PEIR are no longer current. Current noise standards are shown in Table 4.10-2.

Table 4.10-2
City of San Marcos Exterior Noise Standards by Zone

Zone	Time	Allowable Property Line Noise Level [dB(A) L_{eq}]
Single-Family Residential (A, R-1, R-2)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 50
Multi-Family Residential (R-3)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 55
Commercial (C, O-P, SR)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 55
Industrial	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 60

SOURCE: Section 20.300.070(f) Table 20.300-4, San Marcos Municipal Code Title 20 – Zoning Code (2017).
NOTES:
1. For single-family detached dwelling units, the "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
2. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including offstreet parking and loading areas or driveways.
3. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.

Section 10.24.020 (b)(9) of the City of San Marcos' Municipal Code identifies permissible hours for general construction activities. Excluding City holidays, construction may occur weekdays from 7:00 a.m. to 6:00 p.m. or Saturdays from 8:00 a.m. to 5:00 p.m.

4.10.2.3 City of Escondido

The City of Escondido Noise Standards were adopted in March 1990 and have not been amended. As discussed in the 2011 PEIR, Table 4.10-3 includes the exterior noise standards for Escondido (Chapter 17, Article 12: Noise Abatement and Control, of the Escondido Municipal Code [1990]) for various land uses. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line are subject to the following noise level limits, measured at or beyond six feet from the boundary of the property upon which the equipment is located.

Table 4.10-3
City of Escondido Exterior Noise Standards

Zone	Applicable Limit (decibels)[1]	Time Period
Residential Zones	50	7:00 a.m. to 10:00 p.m.
	45	10:00 p.m. to 7:00 a.m.
Multi-residential zones	55	7:00 a.m. to 10:00 p.m.
	50	10:00 p.m. to 7:00 a.m.
Commercial zones	60	7:00 a.m. to 10:00 p.m.
	55	10:00 p.m. to 7:00 a.m.
Light industrial/Industrial park zones	70[2]	Anytime
General industrial zones	75[2]	Anytime

SOURCE: Escondido Municipal Code. Chapter 17, Article 12, Sections 17-226 through 17-265.
[1]One-hour average sound level.
[2]Subject to provisions of Escondido Municipal Code Section 17-229 (c)(5).

Construction and demolition activities are exempt from the Exterior Noise Standards listed in Table 4.10-3. These noises are regulated in Section 17.234. This ordinance prohibits the operation of construction equipment at any construction site, except on Monday through Friday during a week between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays between the hours on 9:00 a.m. and 5:00 p.m., and provided that the operation of such construction equipment does not cause noise in excess of a one-hour average sound level limit of 75 dB at any time, unless a variance has been obtained in advance from the City Manager.

4.10.2.4 City of Vista

As discussed in the 2011 PEIR, the City of Vista has adopted the San Diego County Noise Ordinance for the purpose of controlling excessive noise levels, including noise from construction activities, within Chapter 8.32 of the Municipal Code, Noise Control (Vista Municipal Code Section 8.32.040 [2000]). Table 4.10-4 lists the applicable exterior property line noise limits (which replaces the table in Section 36.404 of the County Ordinance).

Table 4.10-4 City of Vista Exterior Property Line Noise Limits		
Zone[1]	Applicable Limit (decibels)[2]	Time Period
A-1, E-1, O & OSR, R-1B, MHP	50	7:00 a.m. – 10:00 p.m.
	45	10:00 p.m. – 7:00 a.m.
R-M	55	7:00 a.m. – 10:00 p.m.
	50	10:00 p.m. – 7:00 a.m.
C-1, C-2, O-3, C-T, OP, M-U and Downtown Specific Plan	60	7:00 a.m. – 10:00 p.m.
	55	10:00 p.m. – 7:00 a.m.
M-1, I-P, all areas of Specific Plan 20	70	Anytime

[1]Zones: A-1 = Agricultural, E-1 = Estates, O = Open Space, OSR = Open Space Residential, R-1B = Residence, MHP = Mobile Home Park, RM = Multi-Residential, C-1 = Commercial, C-2 = Commercial, O-3 = Office Park, C-T = Commercial Transient, OP = Office Professional, I-P = Industrial, M-1 = Manufacturing, Processing, and Warehousing.
[2]One-hour average sound level.

The adopted San Diego County Noise Ordinance also stipulates controlling construction noise. San Diego County Code Sections 36.408 and 36.409, Construction Equipment, state that, except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

- Between 7:00 p.m. and 7:00 a.m.
- On a Sunday or a holiday. For purposes of this section, a holiday means January 1, the last Monday in May, July 4, the first Monday in September, December 25, and any day appointed by the President as a special national holiday or the Governor of the state as a special state holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10:00 a.m. and 5:00 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in Sections 36.409 and 36.410.
- That exceeds an average sound level of 75 decibels for an eight-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

4.10.2.5 City of Carlsbad

The City of Carlsbad Noise Ordinance is codified in Chapter 8.48 of the City Municipal Code (2013) and addresses noise from construction activity only. This chapter states that the erection, demolition, alteration, or repair of any building or structure or the grading or excavation of land in such a manner as to create disturbing, excessive or offensive noise during the following hours constitutes a noise violation:

- After sunset on any day, and before 7:00 a.m., Monday through Friday, and before 8:00 a.m. on Saturday.
- All day on Sunday or on any federal holiday.

The City Manager may grant exceptions to these requirements by issuing a permit in the following circumstances:

- When emergency repairs are required to protect the health and safety of any member of the community.
- In nonresidential zones, provided there are no inhabited dwellings within one thousand feet of the building or structure being erected, demolished, altered or repaired or the exterior boundaries of the site being graded or excavated.

4.10.3 Master Plan Impacts and Mitigation

4.10.3.1 Issue 1 – Substantial Permanent Increases in Ambient Noise Levels

Noise Issue 1 Summary	
Would implementation of the 2018 Master Plan result in a substantial permanent increase in ambient noise levels or expose persons to noise in excess of standards?	
Impact: CIP pump and lift stations located adjacent to residential land uses would be fitted with masonry enclosures and would not result in substantial permanent increases in ambient noise levels.	**Mitigation:** None required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would result in exposure of persons to or generation of noise levels in excess of standards established in applicable plans or noise ordinance, or applicable standards of other agencies, or otherwise result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. For the purposes of this analysis, the exterior noise standards used include the County of San Diego, the City of San Marcos, the City of Escondido, the City of Carlsbad, and the City of Vista, as applicable. These noise standards are discussed above under Section 4.10.2.

b. Impact Analysis

Implementation of the 2018 Master Plan would have the potential to result in increases in ambient noise from transportation noise sources and operational noise sources, as discussed below. Temporary noise impacts resulting from construction activities are discussed in Section 4.10.3.2 (Issue 2).

Transportation Noise Sources

Transportation noise sources for the CIP projects would be primarily associated with vehicular trips by employees. The maintenance for CIP projects may require approximately two visits per day by VWD employees, as a worst-case scenario. The 2018 Master Plan would not result in an increase in vehicle trips that was not assessed in the 2011 PEIR. As discussed in the 2011 PEIR, the CIP projects would require approximately 44 daily vehicle trips. Due to the minimal number and geographic distribution of vehicular trips associated with the maintenance of the CIP projects, transportation noise increases would be negligible. Therefore, implementation of the 2018 Master Plan would not result in significant permanent increases in ambient noise associated with transportation noise sources.

Operational Noise Sources

Operational noise sources associated with the 2018 Master Plan could potentially affect nearby NSLU. The operational noise levels would vary depending on the type of CIP project, as described below.

Storage CIP Projects

Eleven potable water storage CIP projects would be constructed within the VWD planning area. Once installed, these reservoirs would be passive facilities and would not require the use of pumps, motors, or other noise-generating machinery. Therefore, operation of these facilities would not result in permanent increases in the ambient noise environment and no operational noise impact would occur.

Potable Water, Sewer, and Outfall Pipeline CIP Projects

Twelve potable water pipeline CIP projects, twenty-five wastewater pipeline CIP projects, and five outfall projects would be constructed under the 2018 Master Plan. With the exception of P-101, P-300, P-301, P-400, P-600, SP-33, SP-34, SP-35, SP-36, LO-D1, LO-D2, LO-A1, and LO-A2, these projects were assessed in the 2011 PEIR and found to result in less than significant operational noise impacts. The majority of these additional CIP projects, including the Diamond Siphon project alternatives, would be constructed underground, below pre-existing roadways. Similar to storage projects, pipelines are passive facilities. Once installed, pipelines would not require the use of pumps, motors, or other noise-generating machinery. Therefore, operation of these facilities, including the Diamond Siphon project alternatives, would not result in permanent increases in the

ambient noise environment that may affect surrounding NSLU and no operational noise impact would occur.

Pump and Lift Station CIP Projects

Of the proposed CIP projects, pump and lift stations are the most likely to produce perceptible noise off the facility site due to the motors that are used. During normal operation, pump stations are powered by electric motors; during emergencies, diesel engine generators may be used. Normal operation hours for pump stations include off-peak and semi-peak periods (evening, nighttime) when energy costs are lower. The 2018 Master Plan proposes construction of seven potable water pump stations (PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8) and one wastewater lift station (LS-1). Emergency generators at pump and lift stations would only generate noise when the equipment is tested or in the event of an emergency. Emergency generators are tested by VWD approximately 20 minutes per month per generator. Additionally, once per year VWD disables the pumps on all facilities and operates pump and lift stations with emergency generators for two hours to test the emergency system functionality.

The 2018 Master Plan would construct pump and lift stations in San Diego County, and the cities of San Marcos and Escondido. No pump or lift stations are proposed within the cities of Carlsbad or Vista. Operational noise generated from pump and lift station motors may generate noise levels that exceed those established within the local jurisdiction. In addition, noise generated from the periodic testing of the emergency power generators would temporarily increase ambient exterior noise levels. However, as part of the 2018 Master Plan, all CIP and lift station projects adjacent to residential land uses would place pumps, emergency generators, and any other motorized equipment within a masonry enclosure that minimizes noise to off-site receptors. Refer to Section 3, Project Description, for further description of the masonry enclosure project design feature. CIP projects located adjacent to residential land uses within San Diego County, and the cities of San Marcos and Escondido (PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, LS-1) would not exceed the exterior noise limit of 50 dB(A) at the property line during daytime hours (7:00 a.m. to 10:00 p.m.) or the exterior noise limits of 45 dB(A) during nighttime hours (10:00 p.m. to 7:00 a.m.). As discussed in the 2011 PEIR, noise levels below these exterior noise level limits would result in less than significant increases in ambient noise levels. Therefore, the 2018 Master Plan would not result in a significant impact related to substantial permanent increases in ambient noise levels.

c. Mitigation Measures

With implementation of the masonry enclosure project design feature, the 2018 Master Plan would not result in a substantial permanent increase in ambient noise levels and impacts would be less than significant. No mitigation is required.

4.10.3.2 Issue 2 – Temporary Increases in Ambient Noise

Noise Issue 2 Summary	
Would implementation of the 2018 Master Plan result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity?	
Impact: Construction of CIP projects would temporarily increase ambient noise levels in the project vicinity.	**Mitigation:** Construction Noise Limits (Noi-1).
Significance Before Mitigation: Significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would result in exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies, or otherwise result a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

b. Impact Analysis

Construction of CIP projects proposed under the 2018 Master Plan, including the Diamond Siphon project alternatives, would result in temporary increases in ambient noise levels. Construction activities associated with CIP projects would involve the use of heavy equipment during land clearing, demolition of structures, and construction of access roads. Equipment that would be associated with construction of the proposed CIP projects includes dozers, rollers, dewatering pumps, backhoes, loaders, and delivery trucks. The magnitude of the impact would depend on the type of construction activity, type of construction equipment, duration of the construction phase, distance between the noise source and receiver, and any intervening topography. Sound levels of typical construction equipment range from 60 dB(A) to 90 dB(A) at 50 feet from the source (Federal Highways Administration [FHWA] 2006). Further, blasting and rock removal may be required for construction of certain CIP projects. The blasting procedure would include drilling a hole, filling the hole with explosive material, capping the hole, and detonating the material. Blasting is a short-term event, typically lasting a fraction of a second. Instantaneous noise levels from rock drilling and blasting could exceed 90 dB(A) to 100 dB(A) at a distance of 50 feet. Pursuant to local regulations, any construction activity that involves blasting would be required to obtain an explosive/blasting permit. The blaster would be required to meet qualification requirements and would be required to be approved by the Fire Chief/Marshall. Prior to blasting, the contractor would secure all permits required by law for blasting operations and provide notification in advance of blasting activities within 300 feet of a residence or commercial building. Monitoring of all blasting activities would be in

conformance with local standards and the standards of the State of California, Department of Mines and in no case will blasting intensities exceed the local safety standards or safety standards established by the U.S. Department of Mines. Through implementation of the Construction and Vibration Blasting Noise Management Plan, the 2018 Master Plan would have a less than significant impact associated with blasting operations.

At this time, many of the CIP projects under the 2018 Master Plan are still in the planning phase, and as such, information regarding the specific number and type of construction equipment required and the duration of construction activities has not been determined. As a result, it is unknown whether or not construction noise for the CIP projects (either individually or collectively) would exceed the noise level limits established by applicable noise ordinances. However, temporary noise impacts associated with construction and blasting activities have the potential to exceed the applicable local noise ordinances and regulations, including the County of San Diego, and the cities of San Marcos, Vista, Escondido, and Carlsbad. This would be considered a significant impact.

Noise Increases from Diamond Siphon Project Alternatives

The Diamond Siphon project alternatives propose replacement of pipelines under East Mission Road, or rerouting flow to pipelines running along San Marcos Creek. Proximate land uses include industrial uses such as Sullins Connector Solutions and Liberty RV & Boat Depot. Mission Hills High School is north of East Mission Road; however, athletic fields, parking lots, and the school gymnasium provide a 300-foot buffer between the proposed alignment and any classrooms. Construction noise associated with the Diamond Siphon project alternatives would not result in a substantial temporary noise level increase at any noise-sensitive use. Impacts associated with the Diamond Siphon project alternatives would be less than significant.

c. Mitigation Measures

Implementation of mitigation measure Noi-1 would reduce impacts associated with a substantial temporary or periodic increase in ambient noise to a level below significance.

Noi-1 **Construction Noise Limits.** Construction activities shall comply with applicable local noise ordinances and regulations specifying sound control, including the County of San Diego, the City of San Marcos, the City of Escondido, the City of Carlsbad and the City of Vista. Measures to reduce construction/demolition noise to the maximum extent feasible will be included in contractor specifications and will include, but not be limited to, the following:

1. Construction activity shall be restricted to the hours specified within each respective jurisdiction's municipal code, depending on the location of the specific CIP project, as follows:

    a. Construction activity for CIP projects occurring within San Diego County shall occur between hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday (see Table 4.10-1). For construction activities on Sunday or

during night hours, a variance from the County must be obtained. CIP projects subject to this provision include R-3, R-4, R-5, R-6, R-9, R-10, R-11, PS-3, PS-4, PS-5, PS-7, P-16 & P-56, P-30, P-64, P-42, SP-15, SP-22, SP-31, and P-600.

b. Construction activity for CIP projects occurring within the City of San Marcos shall occur between hours of 7:00 a.m. and 6:00 p.m., Monday through Friday, and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays. For construction activities on Sunday or during night hours, a waiver from the City Manager must be obtained. CIP projects subject to this provision include PS-6, PS-8, P-100, P-101, P-300, P-301, P-400, P-15, SB-1, SP-5, SP-6, SP-8, SP-9, SP-10, SP-18, SP-19, SP-20, SP-21, SP-23, SP-24, SP-25, SP-26, SP-27, SP-28, SP-31, SP-33, SP-34, SP-35, and SP-36.

c. Construction activity for CIP projects occurring within the City of Escondido shall occur only between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, and between the hours of 9:00 a.m. to 5:00 p.m. on Saturdays (see Table 4.10-3 of this PEIR section). For construction activities on Sunday or during night hours, a variance from the City Manager must be obtained. CIP projects subject to this provision include R-8, PS-2, P-43, P-100, P-400, and SP-22.

d. Construction activity for CIP projects occurring within the City of Carlsbad shall occur between 7:00 a.m. and before sunset, Monday through Friday, and between 8:00 a.m. and sunset on Saturday; construction shall be prohibited on Sundays and federal holidays. For construction activities on Sundays, federal holidays, or during night hours, a permit from the City must be obtained. Projects subject to this provision include SP-6 and SP-13 and the parallel land outfall.

2. Construction noise for CIP projects located within San Diego County, City of Vista, and City of San Marcos shall not exceed an average sound level of 75 dB(A) for an eight-hour period at the CIP project's property boundary.

3. Construction noise for CIP projects located within the City of Escondido shall not exceed a one-hour average sound level limit of 75 dB(A) at any time, unless a variance has been obtained from the City Manager.

4. All construction equipment shall be properly outfitted and maintained with manufacturer-recommended noise-reduction devices.

4.10.2.3 Issue 3 – Excessive Groundborne Vibration or Noise

Noise Issue 3 Summary	
Would implementation of the 2018 Master Plan result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	
Impact: Implementation of the Construction Vibration and Blasting Noise Management Plan would prevent the construction of CIP projects temporarily resulting in excessive groundborne vibration and noise.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation**: Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant adverse impact if it would result in the exposure of persons to groundborne vibration equal to or in excess of 0.2 in/sec PPV. Major construction activities within 200 feet or pile driving within 600 feet would be potentially disruptive to vibration-sensitive operations (Caltrans 2002).

b. Impact Analysis

Vibration sources associated with implementation of the 2018 Master Plan would be generated primarily from project construction. Once installed, the CIP project facilities include either passive uses (pipelines, reservoirs) or pump and lift stations that do not generate substantial levels of vibration.

Construction-related vibration would have the potential to impact nearby structures and vibration-sensitive equipment and operations. The level of vibration generated from other construction activities would depend on the type of soils and the energy-generating capability of the construction equipment. According to Caltrans, the highest measured vibration level during highway construction was 2.88 in/sec PPV at 10 feet from a pavement breaker (Caltrans 2002). Other typical construction activities and equipment, such as dozers, earthmovers, and trucks have not exceeded 0.10 in/sec PPV at 10 feet. Vibration sensitive instruments and operations may require special consideration during construction. Vibration criteria for sensitive equipment and operations are not defined and are often case specific. In general, the criteria must be determined based on manufacturer specifications and recommendations by the equipment user. As a guide, major construction activity within 200 feet and pile driving within 600 feet may be potentially disruptive to sensitive operations (Caltrans 2002). Construction of certain CIP projects may include blasting, which would have the potential to generate excessive groundborne vibration that may affect nearby vibration-sensitive uses, such as residences and historic buildings. As

noted in Section 4.3 of the 2011 PEIR, the proposed outfall is located within close proximity of an historic resource.

Other CIP projects located within developed areas that may be potentially disruptive to sensitive operations or uses (including residences) include P-7, P-15, P-16, P-43, P-56, P-101, P-400, SP-5, SP-8, SP-10, SP-11, SP-12, SP-18, SP-19, SP-20, SP-21, SP-22, SP-23, SP-24, SP-25, SP-31, SP-33, SP-35, SP-36, R-8, R-10, PS-2, PS-3, PS-5, and PS-8. As a project design feature of the 2018 Master Plan, all construction activities that would have the potential to impact vibration sensitive land uses would be required to implement the Construction Vibration and Blasting Noise Management Plan. Refer to Chapter 3.0, Project Description, for further description of the Construction Vibration and Blasting Noise Management Plan. The plan requires VWD to provide notice at least five days prior to construction activities to all vibration sensitive land uses within 200 feet of construction activities. The extent and duration of the construction activity will be included in the notification. Blasting activities would require additional measures and all blasting activities would be monitored by a qualified blasting consultant and geotechnical consultant. Prior to blasting, the contractor would secure all permits required by law for blasting operations and would provide notification at least five work days in advance of blasting activities within 600 feet of a vibration sensitive land use. Monitoring of all blasting activities would be in conformance with the Standards of the State of California, Department of Mines and in no case would blasting intensities exceed the safety standards established by the U.S. Department of Mines. Through implementation of the Construction Vibration and Blasting Noise Management Plan, the 2018 Master Plan would have less than significant impacts related to blasting operations and excessive groundborne vibration or noise.

Groundborne Vibration from Diamond Siphon Project Alternatives

The Diamond Siphon project alternatives propose replacement of pipelines under East Mission Road, or rerouting flow to pipelines running along San Marcos Creek. Proximate land uses include industrial uses such as Sullins Connector Solutions and Liberty RV & Boat Depot. Mission Hills High School is north of East Mission Road. The Diamond Siphon project alternatives would not include any major construction activity within the vicinity of vibration sensitive operations, and therefore would not result in excessive groundborne vibration or noise. Impacts would be less than significant.

c. Mitigation Measures

Implementation of the Construction Vibration and Blasting Noise Management Plan would reduce impacts related to groundborne vibration to a level below significance. No mitigation is required.

4.10.4 Cumulative Impacts

Noise Cumulative Issue Summary		
Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative noise impact considering past, present, and probable future projects?		
Cumulative Impact	**Significant?**	**Proposed Master Plan Contribution**
Substantial Permanent Ambient Noise Increases	No	No cumulative impact.
Temporary Increases in Ambient Noise	No	No cumulative impact.
Generation of Groundborne Vibration	No	No cumulative impact.

4.10.4.1 Substantial Permanent Ambient Noise Increases

Noise, by definition, is a localized phenomenon and is progressively reduced as the distance from the source increases; specifically, noise levels decrease by 6 dB for every doubling of distance. Therefore, the area of cumulative impact that would be considered for the noise cumulative analysis would be only those projects within the immediate vicinity of the proposed CIP locations. Potential operational noise impacts from cumulative projects would be localized in nature, and all cumulative projects would be required to comply with the noise standards for the jurisdiction that they are located in. As discussed in the 2011 PEIR and in Section 4.10.3.1 (Issue 1), operation of CIP projects proposed under the 2018 Master Plan would not generate a significant volume of new vehicle trips. Due to the minimal number and the geographic distribution of vehicular trips associated with the maintenance of the CIP projects, transportation noise increases, in comparison to existing conditions, would not be perceptible. In addition, operational noise sources from CIP water storage projects and pipelines would be negligible once constructed since these are passive facilities. Implementation of the masonry enclosure project design feature would reduce potential operational noise impacts from CIP pump and lift station projects and emergency generators to a less than significant level. Therefore, the 2018 Master Plan, in combination with other cumulative projects, would not result in a cumulatively significant increase in permanent ambient noise levels.

4.10.4.2 Temporary Increases in Ambient Noise

As noted earlier, noise impacts are highly localized due to the attenuating effect that distance has upon noise levels. Construction of cumulative development projects within the vicinity of the CIP project locations is not likely to result in the substantial temporary

increases in ambient noise levels due to the localized nature of noise impacts, and the likelihood that construction projects would not occur simultaneously or at the same location. In addition, construction noise for cumulative projects would be subject to the noise standards within the appropriate jurisdiction. As discussed in Section 4.10.3.2 (Issue 2) of this PEIR, all CIP construction projects under the 2018 Master Plan would be required to comply with applicable local noise ordinances and regulations specifying noise control (Noi-1) and all applicable projects would prepare a Construction Vibration and Blasting Noise Management Plan. Therefore, the 2018 Master Plan, in combination with cumulative projects, would not result in cumulatively significant increases in temporary noise levels.

4.10.4.3 Generation of Groundborne Vibration

Groundborne vibration is also a localized phenomenon that is progressively reduced as the distance from the source increases. Therefore, the area of cumulative impact that would be considered for the cumulative analysis of groundborne vibration would be only those projects within the immediate vicinity of the CIP locations. The primary source of groundborne vibration from cumulative projects would be construction equipment, such as pile drivers or blasting equipment. Construction of the cumulative projects within the vicinity of the proposed CIP locations is not likely to result in excessive groundborne vibration due to the localized nature of vibration impacts, and the likelihood that all construction would not occur at the same time or at the same location. As discussed in Section 4.10.3.3 (Issue 3) of this PEIR, groundborne vibration due to CIP operations would not result in a significant impact due to compliance with a Construction Vibration and Blasting Noise Management Plan. Therefore, the 2018 Master Plan, in combination with cumulative projects, would not result in a cumulatively significant impact associated with excessive groundborne vibration.

4.10.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

For a Master Plan 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 Master Plan expose people residing or working in the project area to excessive noise levels?

The airports closest to the VWD service area include Blackington (private airport), Lake Wohlford (private airport), McClellan-Palomar (public airport), and Oceanside Municipal (public airport) (County of 2009). McClellan-Palomar Airport is located within approximately one-half mile of a segment of the Parallel Land Outfall project; however, this CIP project would be constructed fully underground and would, therefore, not result in a safety hazard. Additionally, the 2018 Master Plan CIP projects do not contain any residential housing. Due to distance and a lack of proposed residential uses, the 2018 Master Plan would not expose people residing or working in the VWD service area to excessive noise levels from private or public airports. Therefore, no impact would occur and no further analysis is required.

Is the Master Plan within the vicinity of a private airstrip, and if so, would the 2018 Master Plan expose people residing or working in the Master Plan area to excessive noise levels?

The airports closest to the VWD service area include Blackington (private airport), Lake Wohlford (private airport), McClellan-Palomar (public airport), and Oceanside Municipal (public airport) (County of San Diego 2009). McClellan-Palomar Airport is located within approximately one-half mile of a segment of the Parallel Land Outfall project; however, this CIP project would be constructed fully underground and would therefore not result in a safety hazard. Additionally, the 2018 Master Plan CIP projects do not contain any residential housing. Due to distance and a lack of proposed residential uses, the 2018 Master Plan would not expose people residing or working in the Master Plan area to excessive noise levels from private or public airports. Therefore, no impact would occur, and no further analysis is required.

4.10.6 References

California Department of Transportation (Caltrans)

2002 Transportation Related Earthborne Vibrations (Caltrans Experiences), Technical Advisory, Vibration, TAV-02-01-R9601, February 20, 2002.

2013 Transportation and Construction Vibration Guidance Manual. September 2013.

Carlsbad, City

2013 City of Carlsbad Municipal Code, Chapter 8.48, Noise.

Escondido, City of

1990 Escondido Municipal Code, Chapter 17, Offenses – miscellaneous provisions, Article 12, Noise Abatement and Control.

Federal Highway Administration (FHWA)

2006 Construction Noise Handbook. August.

San Diego, County of

2008 San Diego County Code of Regulatory Ordinances, April 1, 1960 (with ordinances effective prior to September 5, 2008). Accessed on June 28, 2008. Available at www.amlegal.com

2009 County of San Diego Municipal Code Title 3, Division 6, Chapter 4. Amended January 2009.

San Marcos, City of

2017 City of San Marcos Municipal Code, Chapter 10.24 and Zoning Code Section 20.300. As amended July 2017.

Vista, City of

2000 City of Vista Municipal Code, Section 8.32, Noise Control. April.

4.11 Public Safety

This section of the Program Environmental Impact Report (PEIR) describes the potential physical environmental effects related to the issue of public safety (including hazards and hazardous materials) resulting from development of proposed Capital Improvement Program (CIP) projects under the Vallecitos Water District (VWD) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan).

The 2011 PEIR for the 2008 Water, Wastewater, and Water Reclamation Master Plan (2008 Master Plan) identified one potentially significant impact associated with public safety (potential for excavation or trenching activities associated with construction of CIP projects to result in the accidental release of a hazardous material). The 2011 PEIR identified the mitigation measure Geo-1 to reduce this impact to a less than significant level. The 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) update has been evaluated in light of these impacts and mitigation measures to determine if there have been any substantial changes in the nature of the projects, applicable regulations, or the existing environmental settings. Based on the following analysis, it has been determined that no new significant impacts beyond those identified in the 2011 PEIR would result from implementation of the 2018 Master Plan, and no new mitigation measures would be required.

4.11.1 Environmental Setting

4.11.1.1 Use and Disposal of Hazardous Materials at Vallecitos Water District Facilities

For purposes of this PEIR, a "hazardous material" is defined by the California Health and Safety Code Sections 25501(n) as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous wastes, and any material which a handler or the administering agency has a reasonable basis to believe would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

4.11.1.2 Transportation of Hazardous Materials

The U.S. Department of Transportation (U.S. DOT), Office of Hazardous Materials Safety, sets strict regulations for the safe transportation of hazardous materials, as outlined in Title 49 of the Code of Federal Regulations. In California, the California Highway Patrol

(CHP) has the primary authority of enforcing federal and state regulations and responding to hazardous materials transportation emergencies. Specifically, Section 31303 of the California Vehicle Code requires that when hazardous materials are transported on state or interstate highways, the highway(s) that offer the shortest overall transit time possible shall be used. The transportation of hazardous materials along any city or state highway within or near the service area is subject to applicable regulations established by the CHP, the County of San Diego Department of Environmental Health (DEH) and the California Department of Toxic Substances Control (DTSC).

4.11.1.3 Emergency Response and Evacuation Plans

Emergency response plans include elements to maintain continuity of government, emergency functions of governmental agencies, mobilization and application of resources, mutual aid, and public information. Emergency response plans are maintained at the federal, state, and local level for all types of disasters, including human-made and natural. To address disasters and emergency situations at the local level, the Unified Disaster Council (UDC) is the governing body of the Unified San Diego County Emergency Services Organization. The UDC is chaired by a member of the San Diego County Board of Supervisors and comprises representatives from the 18 incorporated cities.

Potential hazards or events that may trigger an emergency response action in the county include earthquakes, tsunamis, floods, wildland fires, landslides, droughts, hurricanes, tropical storms, and freezes. Emergency response actions could also be triggered from a hazardous material incident; water or air pollution; a major transportation accident; water, gas, or energy shortage; an epidemic; a nuclear accident; or terrorism (County of San Diego 2010).

In San Diego County, there is a comprehensive emergency plan known as the Operational Area Emergency Plan (OAEP). Stand-alone emergency plans for the Operational Area include:

- San Diego County Nuclear Power Plant Emergency Response Plan;
- San Diego County Operational Area Oil Spill Contingency Element of the Area Hazardous Materials Plan;
- San Diego County Operational Area Emergency Water Contingencies Plan;
- Unified San Diego County Emergency Services Organization Operational Area Energy Shortage Response Plan;
- Unified San Diego County Emergency Services Organization Recovery Plan;
- San Diego County Multi-Jurisdictional Hazard Mitigation Plan;
- San Diego Urban Area Tactical Interoperable Communications Plan; and
- San Diego County Draft Terrorist Incident Emergency Response Protocol.

In addition to the above plans, the County of San Diego Office of Emergency Services (OES) maintains Dam Evacuation Plans for the Operational Area. Emergency plans for dam evacuation are necessary to plan for the loss of life, damage to property, displacement of people, and other ensuing hazards that can occur from dam failure. In the event of dam failure, damage control and disaster relief would be required, and mass evacuation of the inundation areas would be essential to save lives. Dam inundation is further discussed in Section 4.7, Hydrology and Water Quality.

Dam evacuation plans contain information concerning the physical situation, affected jurisdictions, evacuation routes, unique institutions, and event responses. In addition, the plans include inundation maps showing direction of flow; inundation area boundaries; hospitals, schools, multipurpose staging areas; command posts/sites; and mass care and shelter facilities/sites. Unique institutions, as defined by the OES, include the following types of facilities: hospitals, schools, skilled nursing facilities, retirement homes, mental health care facilities, care facilities with patients that have disabilities, adult and childcare facilities, jails/detention facilities, stadiums, arenas, and amphitheaters.

The San Diego County Multi-Jurisdictional Hazard Mitigation Plan was developed with the participation of all jurisdictions within San Diego County, including all incorporated cities and the County of San Diego. The plan includes an overview of the risk assessment process, identifies hazards present in the jurisdiction, hazard profiles, and vulnerability assessments. The plan also identifies goals, objectives, and actions for each jurisdiction in San Diego County.

Hazards profiled in the Multi-Jurisdictional Hazard Mitigation Plan include wildfire, structure fire, flood, coastal storms, erosion, tsunami, earthquakes, liquefaction, rain-induced landslide, dam failure, hazardous materials incidents, nuclear materials release, and terrorism. The plan sets forth a variety of objectives and actions based on a set of broad goals including: (1) promoting disaster-resistant future development; (2) increased public understanding and support for effective hazard mitigation; (3) building support of local capacity and commitment to become less vulnerable to hazards; (4) enhancement of hazard mitigation coordination and communication with federal, state, local, and tribal governments; and (5) reducing the possibility of damage and losses to existing assets, particularly people, critical facilities or infrastructure, and county-owned facilities, due to dam failure, earthquake, coastal storm, erosion, tsunami, landslides, floods, structural fire/wildfire, and manmade hazards.

4.11.2 Regulatory Framework

Applicable federal and state laws and regulations governing the generation, handling, transportation, storage, use, and disposal of hazardous materials are described in the following sections. Federal agencies that regulate hazardous materials include the U.S. Environmental Protection Agency (U.S. EPA) and the federal Occupational Safety and Health Administration (Fed-OSHA). At the state level, agencies such as the California Environmental Protection Agency (Cal-EPA), DTSC, California Occupational Safety and

Health Administration (Cal-OSHA) govern the use of hazardous materials. On the local level, the DEH governs the use of hazardous materials.

4.11.2.1 Federal

a. Resource Conservation and Recovery Act of 1976

Federal hazardous waste laws are generally promulgated under Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. These laws provide for the "cradle to grave" regulation of hazardous wastes. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed of. The U.S. EPA has the primary responsibility for implementing RCRA; however, individual states are encouraged to seek authorization to implement some or all of RCRA provisions.

b. Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act (EPCRA), also known as SARA Title III, was enacted in October 1986. This law requires any infrastructure at the state and local levels to plan for chemical emergencies. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their community. EPCRA Sections 301 through 312 are administered by U.S. EPA's Office of Emergency Management. U.S. EPA's Office of Information Analysis and Access implements the EPCRA Section 313 program. In California, SARA Title III is implemented through California Accidental Release Prevention Program (Cal-ARP).

c. International Fire Code

The International Fire Code (IFC), created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the IFC employs a permit system based on hazard classification. The IFC is updated every three years; the most recent update was in 2015.

d. Hazardous Materials Transportation Act

The U.S. DOT regulates hazardous materials transportation under Title 49 of the Code of Federal Regulations (CFR). State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the CHP and California Department of Transportation. These agencies also govern permitting for hazardous materials transportation.

4.11.2.2 State

a. California Health and Safety Code, Hazardous Materials Release Response Plans and Inventory

Two programs found in the California Health and Safety Code Chapter 6.95 are directly applicable to the California Environmental Quality Act (CEQA) issue of risk due to hazardous substance release. In San Diego County, these two programs are referred to as the Hazardous Materials Business Plan (HMBP) Program and the Cal-ARP Program. DEH is responsible for the implementation of the HMBP program and the Cal-ARP program in San Diego County. The HMBP and Cal-ARP Program provide threshold quantities for regulated hazardous substances. When the indicated quantities are exceeded, a HMBP or Risk Management Plan is required pursuant to the regulation. The federal government assists the state in the reporting of hazardous materials sites. Congress requires the U.S. EPA Region 9 to make Risk Management Plan information available to the public through the EPA's Envirofacts Data Warehouse. The Envirofacts Data Warehouse is considered the single point of access to select EPA environmental data.

b. Title 22 of the California Code of Regulations and Hazardous Waste Control Law, Chapter 6.5

The DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under RCRA and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment. Cal-EPA has delegated some of its authority under the Hazardous Waste Control Law to county health departments and other Certified Unified Program Agencies, including the DEH.

c. Senate Bill 1889, Accidental Release Prevention Law/Chemical Accident Release Prevention Program

Senate Bill 1889 required California to implement a federally mandated program governing the accidental airborne release of chemicals promulgated under Section 112 of the Clean Air Act. Effective January 1, 1997, the Cal-ARP Program replaced the previous California Risk Management and Prevention Program and incorporated the mandatory federal requirements. Cal-ARP Program addresses facilities containing specified hazardous materials ("regulated substances") that, if involved in an accidental release, could result in adverse off-site consequences. Cal-ARP defines regulated substances as chemicals that pose a threat to public health and safety or the environment because they are highly toxic, flammable, or explosive.

d. State Fire Regulations

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which include regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection

devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. The State Fire Marshal enforces these regulations and building standards in all state-owned buildings, state-occupied buildings, and state institutions throughout California.

4.11.2.3 Local

a. San Diego Multi-Jurisdictional Hazard Mitigation Plan

The San Diego Multi-Jurisdictional Hazard Mitigation Plan (County of San Diego 2010) identifies the following hazards within the San Diego region along with the emergency response/evacuation plans to avoid such hazards: coastal storms/erosion/tsunami, dam failure, earthquakes, floods, rain-induced landslides, liquefaction, structure/wildland fire, and manmade hazards (hazardous materials and terrorism).

b. County of San Diego Consolidated Fire Code

The County of San Diego, in collaboration with the local fire protection districts, created the first Consolidated Fire Code in 2001. The Consolidated Fire Code contains the county and fire protection districts amendments to the California Fire Code. The purpose of consolidation of the county and local fire districts adoptive ordinances is to promote consistency in the interpretation and enforcement of the Fire Code for the protection of the public health and safety, which includes permit requirements for the installation, alteration, or repair of new and existing fire protection systems and penalties for violations of the code. The Fire Code provides the minimum requirements for access, water supply and distribution, construction type, fire protection systems, and vegetation management. Additionally, the fire code regulates hazardous materials and associated measures to ensure that public health and safety are protected from incidents relating to hazardous substance releases. The Fire Code was most recently updated in 2017.

4.11.3 Master Plan Impacts and Mitigation

4.11.3.1 Issue 1 – Transport, Use, and Disposal of Hazardous Materials and Accidental Releases

Public Safety Issue 1 Summary	
Would implementation of the 2018 Master Plan result in a significant hazard to the public or the environment through the transport, use, or disposal of hazardous materials; through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment; or through hazardous emissions within one-quarter mile of an existing or proposed school?	
Impact: The 2018 Master Plan would comply with applicable regulations, such as RCRA, EPCRA and Cal-ARP, related to hazardous materials use and handling.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it created a hazard to the public or the environment through the transport, use, or disposal of hazardous materials; through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment; or through hazardous emissions within one-quarter mile of an existing or proposed school.

b. Impact Analysis

Many of the existing Vallecitos Water District (VWD) facilities, including pump/lift stations, treatment stations, and reservoirs, require the occasional use of hazardous materials as part of maintenance of these facilities. Typical hazardous materials used include fuels for vehicles and emergency generators, lubricants, oils, paints, and solvents. Water storage, water pump stations, and wastewater facilities also use chorine, chloramines, #2 diesel, distillates, benzene, 1-methylethyl, and other hazardous materials for water disinfection and distribution. The materials used at the proposed CIP facilities would be similar to what is already used for existing facilities operated by VWD.

Numerous federal and state regulations require strict adherence to specific guidelines regarding the use, transportation, disposal, and accidental release of hazardous materials. Regulations associated with transporting, using, or disposing of hazardous materials include RCRA, which provides the 'cradle to grave' regulation of hazardous wastes; EPCRA,

which requires any infrastructure at the state and local levels to plan for chemical emergencies; the IFC, which regulates the use, handling, and storage requirements for hazardous materials at fixed facilities; the Hazardous Materials Transportation Act, which governs hazardous materials transportation on U.S. roadways; California Health and Safety Code, which provides threshold quantities for regulated hazardous substances and the establishment of Hazardous Materials Release Response Plans; Title 22, which regulates the generation, transportation, treatment, storage, and disposal of hazardous waste; California Code of Regulations Title 27, which regulates the treatment, storage and disposal of hazardous solid wastes; Senate Bill 1889, which defines regulated substances as chemicals that pose a threat to public health and safety or the environment because they are highly toxic, flammable, or explosive; and the Consolidated Fire Code, which includes permit requirements for the installation, alteration, or repair of new and existing fire protection systems, and penalties for violations of the code.

Construction activities associated with CIP projects may also generate hazardous materials and wastes. Petroleum products such as fuels and oils would be the predominant materials used during construction due to operation of motorized construction equipment and vehicles. The main hazardous wastes produced by construction activity would be waste oil and oil-saturated materials from construction equipment. Hazardous materials and waste would be managed and used in accordance with all applicable federal, state, and local laws and regulations. There would be no routine transport, storage, use, or disposal of significant amounts of hazardous materials. Minimal amounts of hazardous materials may be transported to and from a site during construction, but the transport of such materials would be temporary and subject to applicable regulations, such as the Hazardous Materials Transportation Act. Therefore, impacts associated with hazardous wastes generated from construction activities would be less than significant.

Long-term operations at some CIP facilities (reservoir, outfall, lift stations, and pump stations) would also involve a limited amount of hazardous materials, such as chlorine, chloramine, #2 diesel, distillates, benzene, 1-methylethyl, or other disinfection materials. Implementation of the 2018 Master Plan would result in an increase in the use of hazardous materials due to an increase in reservoir, outfall, pump station, and lift station facilities and sizes. Hazards related to these materials could occur during storage, transportation, use, disposal, or accidental release. However, VWD facilities that involve the use of hazardous materials are required to prepare and implement a HMBP for long-term facility operations. Each site-specific HMBP includes best management practices to prevent downstream water quality degradation from runoff pollution associated with CIP operations. The procedures in the HMBP comply with U.S. DOT (Office of Hazardous Materials Safety) and CHP regulations for the transportation of hazardous materials along state highways. Typical best management practices implemented as part of the HMBP include, but are not limited to, the actions listed below.

1. In the event of a fire, and if safe, trained workers shall call 911, attempt to put out the fire or control the fire using available firefighting equipment, and if safe, turn off electricity and gas, and activate the sprinkler system.

2. In the event of a small chemical spill or release, and if safe, trained workers will soak up chemicals using appropriate absorbent while wearing proper protective equipment, clothing, and safety gear. All waste and absorbent materials will be stored in appropriate containers and labeled properly. All waste will be disposed of according to applicable regulations.

3. In the event of a large chemical spill or release VWD will contact the Fire Department and Hazardous Incident Response Team. Trained workers will soak up chemicals using appropriate absorbent while wearing proper protective equipment, clothing, and safety gear. All waste and absorbent materials will be stored in appropriate containers and labeled properly. All waste will be disposed of according to applicable regulations. Workers will focus on not letting chemicals enter sewers or storm drains.

The routine use, transport, or disposal of hazardous materials at CIP facilities would be managed as required by all applicable federal, state, and local laws and regulations, such as RCRA, Title 22, the Hazardous Waste Control Law, Hazardous Materials Transportation Act, and Hazardous Material Business Plans. Therefore, impacts associated with hazardous wastes generated from operational activities would be less than significant.

Compliance with applicable regulations would also minimize foreseeable risks of an accident that could create a hazard to the public or environment. Therefore, the 2018 Master Plan would not result in hazardous emissions within one-quarter mile of an existing or proposed school during operation or construction. Impacts would be less than significant. Odor emissions are addressed in Section 4.1 (Air Quality) of this PEIR.

c. Mitigation Measures

Compliance with applicable regulations would result in less than significant impacts related to the transport, use, disposal, or accidental release of hazardous materials. Therefore, no mitigation is required.

4.11.3.2 Issue 2 – Listed Hazardous Materials Sites

Public Safety Issue 2 Summary	
Would implementation of the 2018 Master Plan result in activities located on a listed hazardous materials site creating a significant hazard to the public or environment?	
Impact: Excavation or trenching activities associated with construction of CIP projects could result in the accidental release of a hazardous material, resulting in a hazard to the public or the environment.	**Mitigation:** Site-specific Geotechnical Investigation (Geo-1).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it resulted in activities located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, created a significant hazard to the public or the environment.

b. Impact Analysis

The potential exists for CIP project sites, including the Diamond Siphon project alternative sites, to have been previously contaminated by hazardous substances as a result of former uses of the sites, leaks from unidentified underground storage tanks, or unidentified buried debris that could contain hazardous substances or hazardous by-products. Typical pathways of exposure to pollutants from existing contamination includes inhalation of volatiles and fugitive particulates, dermal absorption, and ingestion of contaminated groundwater caused by migration of chemicals through soil to an underlying potable aquifer. Potential exposure to contaminants could also occur to construction workers during grading, trenching, excavation, and site development activities. Construction activities could also uncover underground storage tanks or other buried hazards. Due to the potential for unknown contamination to occur on a CIP project site, this would be considered a potentially significant impact, and a site-specific geotechnical investigation would be required prior to project construction once the definitive location for a proposed CIP project is known.

For the Diamond Siphon project, a search of the databases that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements was conducted for the Diamond Siphon project alternatives sites and surrounding area. These searches included:

- DTSC EnviroStor database (DTSC 2017)
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC (Cal-EPA 2017a)
- State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2017)
- List of solid waste disposal sites identified by the SWRCB (Cal-EPA 2017b)

Of the databases searched, no report of hazardous materials contamination was recorded within the project area. No Leaking Underground Storage Tank cleanup sites, permitted Underground Storage Tanks, Waste Discharge Requirement sites, DTSC hazardous waste sites, or solid waste disposal sites were shown within 1,000 feet of the Option 1 and Option 2 project areas. Following construction, the entire project would be located underground and would not result in the exposure of people or the environment to a significant hazard. Therefore, this impact would be less than significant.

Hazardous material sites compiled pursuant to Government Code Section 65962.5 are continually updated with the latest information on hazardous site listings. Conducting a hazardous materials database search and environmental site assessment, as required by mitigation measure Geo-1, prior to any ground-disturbing activities associated with the construction of CIP sites would identify hazardous materials that could be encountered during CIP construction activities. In addition, all construction activities conducted under the 2018 Master Plan would comply with the numerous federal and state regulations that require strict adherence to specific guidelines regarding the use, transportation, disposal, and accidental release of hazardous materials. Further, all VWD construction documents would identify contaminants and hazardous materials that are known to occur or are suspected to occur on a project site. Additionally, all VWD construction documents would state that all hazardous materials must be handled in compliance with state and local laws. Excavation and soil handling work would comply with all applicable local, state, and federal regulations, and health and safety requirements, and in accordance with specific requirements of the County of San Diego DEH, the Regional Water Quality Control Board, the California Department of Resources Recycling and Recovery. These measures would reduce the potentially significant impact associated with the exposure of hazardous materials to the public or the environment to a less than significant level.

c. Mitigation Measures

With the implementation of mitigation measure Geo-1, which requires a site-specific geotechnical investigation and a hazardous materials database search, the 2018 Master Plan would have less than significant impacts associated with listed hazardous materials sites. No further mitigation is required.

4.11.3.3 Issue 3 – Emergency Response and Evacuation Plans

Public Safety Issue 3 Summary	
Would implementation of the 2018 Master Plan impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	
Impact: The 2018 Master Plan would implement a traffic control plan that would prevent interference with an adopted emergency response plan or evacuation plan.	**Mitigation:** No mitigation required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

a. Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2018 Master Plan would have a significant impact if it impaired implementation of, or physically interfered with, an adopted emergency response plan or emergency evacuation plan.

b. Impact Analysis

Interference with an adopted emergency response or evacuation plan would result in an adverse physical effect to people or the environment by potentially increasing the loss of life and property in the event of a disaster. The San Diego County Multi-Jurisdictional Hazard Mitigation Plan evaluates risks associated with coastal storms, erosion, and tsunami, dam failure, earthquakes, floods, rain-induced landslides, liquefaction, structure/wildfire fires, and manmade hazards and provides goals, objectives, and actions to reduce impacts from these hazards. Construction activities associated with the 2018 Master Plan, particularly excavation and trenching activities associated with pipeline extensions or other improvements that are within roadway right-of-ways, may result in temporary, construction-related lane and road closures or detours. Temporary closures may affect local traffic patterns, require detours, or interfere with school operations in the vicinity of CIP projects. Schools located within approximately one mile of the proposed 2018 Master Plan CIP projects that may be affected by construction-related road closures are identified in Table 4.11-1.

Temporary roadway closures could potentially interfere with emergency plans and procedures if appropriate authorities are not properly notified, or multiple projects are constructed during the same time and multiple roadways used for emergency routes are concurrently blocked. However, as stated in Section 3.3.8 of this PEIR, in the event that CIP construction activities would require a lane or roadway closure, or could otherwise substantially interfere with traffic circulation, the contractor will submit a traffic control plan to the local land use agency and local fire protection agency to ensure that adequate emergency access and egress is maintained and that traffic will move efficiently and safely in and around the construction site. The traffic control plan may include, but not be limited to, the following measures:

1. Install traffic control signs, cones, flags, flares, and lights in compliance with the requirements of local jurisdictions and relocate them as the work progresses to maintain effective traffic control.

2. Provide trained and equipped flag persons to regulate traffic flow when construction activities encroach onto traffic lanes.

3. Control parking for construction equipment and worker vehicles to prevent interference with public and private parking spaces, access by emergency vehicles, and owner's operations.

4. Traffic control equipment, devices, and post settings will be removed when no longer required. Any damage caused by equipment installation will be repaired.

5. For CIP construction activities that may affect school access, the contractor will notify school officials of the construction schedule.

Table 4.11-1
Schools Located within One-Mile of a 2018 Master Plan CIP Project

School Name	Address
Alvin Dunn Elementary	3697 La Mirada Drive, San Marcos, CA 92078
Applied Scholastics Academy San Marcos	134 Woodland Parkway
Aviara Oaks Elementary School	6900 Ambrosia Lane, Carlsbad, CA 92009
Aviara Oaks Middle School	6880 Ambrosia Lane, Carlsbad, CA 92011
Bayshore Preparatory Charter	1175 Linda Vista Drive
California State University San Marcos	333 S. Twin Oaks Valley Road, San Marcos, CA 92096
Calvary Online School	1675 Seven Oakes Road
Carrillo Elementary School	2875 Poinsettia Lane, Carlsbad, CA 92009
Community Christian School	1645 South Rancho Santa Fe Road
Country School, The	1145 Linda Vista Drive, Suite 105
Dehesa Charter	1441 Montiel Road, Suite 143
Discovery Elementary School	730 Applewilde Drive, San Marcos, CA 92078
Discovery Isle Child Development Center	6130 Paseo Del Norte
Discovery Isle Child Development Center	1655 South Rancho Santa Fe Road, Suite 101
Escondido Adventist Academy	1301 Deodar Road
Foothills High	158 Cassou Road
Handy Academy	100 East San Marcos Boulevard
High Tech High North County	1420 West San Marcos Boulevard
High Tech Middle North County	1460 West San Marcos Boulevard
Knob Hill Elementary	1825 Knob Hill Road
La Costa Meadows Elementary	6889 El Fuerte Street
Mission Hills High	1 Mission Hills Court
Mountain Peak Charter	3220 Executive Ridge, Suite 160
North Region Court	255 Pico Avenue
Pacific Rim Elementary	1100 Camino de las Ondas
Pacific Ridge School	6269 El Fuerte Street
Palomar Community College District, San Marcos Campus	1140 West Mission Road, San Marcos, CA 92069
Paloma Elementary	660 Camino Magnifico
Pivot Charter School - San Diego	1030 La Bonita Drive, Suite 350
Poinsettia Elementary	2445 Mica Road
Rancho Minerva Middle	2245 Foothill Drive
Redeemer by the Sea Lutheran Kindergarten and Preschool	6604 Black Rail Road
Richland Elementary School	910 Borden Road, San Marcos, CA 92069
Rock Springs School	1155 Deodar Road, Escondido, CA 92026
Saint Joseph Academy	500 Las Flores Drive
San Elijo Elementary School	1615 Schoolhouse Way, San Marcos, CA 92078
San Elijo Middle School	1600 Schoolhouse Way, San Marcos, CA 92078
San Marcos Elementary School	One Tiger Way, San Marcos, CA 92069
San Marcos High School	1615 San Marcos Boulevard, San Marcos, CA 92078
San Marcos Middle School	650 West Mission Road, San Marcos CA 92069
Twin Oaks Elementary School	1 Cassou Road, San Marcos, CA 92069
Twin Oaks High School	158 Cassou Road, San Marcos, CA 92069
Valley Christian	1350 Discovery Street
Woodland Park Middle School	1270 Rock Springs Road, San Marcos, CA 92069
SOURCE: SanGIS 2016.	

Notification of the traffic control plan to the appropriate agencies to ensure emergency response and evacuation plans are not impacted is coordinated by the local agency of jurisdiction upon receipt of construction and traffic control plans from VWD. Therefore, with implementation of a traffic control plan, the 2018 Master Plan would not result in a potentially significant impact associated with impairment or interference with emergency response or evacuation plans.

c. Mitigation Measures

The 2018 Master Plan includes the implementation of a Traffic Control Plan (see Section 3.3.8 of this PEIR), which would ensure public safety hazards associated with temporary construction-related lane and road closures or detours and their potential impairment or interference with adopted emergency response and evacuation plans to a less than significant level. Therefore, no mitigation is required.

4.11.4 Cumulative Impacts

Public Safety Cumulative Issue Summary

Would implementation of the 2018 Master Plan have a cumulatively considerable contribution to a cumulative public safety impact considering past, present, and probable future projects?

Cumulative Impact	Significant?	Proposed Master Plan Contribution
Transport, use, and disposal of hazardous materials and accidental releases into the environment and near schools.	Yes	Not cumulatively considerable.

Impacts relative to listed hazardous materials sites and emergency response and evacuation plans are generally specific to the CIP project sites. Therefore, these issues are not subject to a cumulative impact analysis, and are not addressed in this section.

4.11.4.1 Transport, Use, and Disposal of Hazardous Materials and Accidental Releases

The geographic context for the analysis of cumulative impacts relative to the transport, use, and disposal of hazardous materials and associated accidental releases encompasses the roadways and freeways used by vehicles transporting hazardous materials to and from the CIP construction sites and the CIP project sites that involve the use of hazardous materials. Construction activities associated with many of the cumulative projects could also involve the transport, use, and disposal of hazardous materials and associated accidental releases along the circulation system within the service area. Therefore, the baseline cumulative impact to public safety from potential exposure to hazardous materials related to the transport, use, and disposal of hazardous materials as well as the associated accidental

releases into the environment and near schools within the service area circulation system (i.e., regional cumulative impact area) is significant.

As discussed in Section 4.11.3.1 above, all CIP construction activities are required to comply with applicable federal, state, and local regulations related to the transportation, storage, use, and disposal of hazardous materials. In addition, VWD is required to implement a HMBP to allow for the transportation, storage, use, and disposal of hazardous materials for CIP reservoir and pump station operations. Therefore, through compliance with applicable regulations and implementation of mitigation measure Geo-1, which requires a database search of hazardous materials sites pursuant to Government Code Section 65962.5, the construction and operation of CIP projects under the 2018 Master Plan would not result in a cumulatively considerable contribution to the cumulative impact associated with public hazards related to the transport, storage, use, or disposal of hazardous materials, and associated accidental releases into the environment and near schools, within the regional cumulative impact area.

4.11.5 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

Would implementation of the 2018 Master Plan result in a safety hazard for people residing or working within two miles of a public airport or within the vicinity of a private airstrip?

The airports closest to the VWD service area include Blackinton (private airport), Lake Wohlford (private airport), McClellan-Palomar (public airport), and Oceanside Municipal (public airport) (County of San Diego 2016). The McClellan-Palomar Airport is located within approximately one-half mile of a segment of the Parallel Land Outfall project. However, this CIP project would be constructed fully underground and therefore would not result in a safety hazard. Additionally, there would be no human occupation associated with any 2018 Master Plan CIP project. Therefore, the 2018 Master Plan would not result in a public safety hazard related to public or private airports and no further analysis is required.

Would implementation of the 2018 Master Plan expose CIP structures or people to a significant risk of loss involving wildland fires?

The VWD service area is located in a developing inland area that is prone to the spread of wildland fires from undeveloped areas of San Diego County. A vast amount of the undeveloped lands within the county support natural habitats such as grasslands, sage scrub, chaparral, and some coniferous forest. In the context of fire ecology, these areas are known as wildlands. The California Department of Forestry and Fire Protection has mapped areas of significant fire hazards in the state through their Fire and Resource Assessment Program. These maps place areas into different Fire Hazard Severity Zones (FHSZ) based upon fuels, terrain, weather, and other relevant factors. The FHSZ are divided into three levels of fire hazard severity: Moderate, High, and Very High. All three

levels occupy the VWD service area, with Very High FHSZ comprising a greatest proportion (County of San Diego 2010).

Construction and design of all 2018 Master Plan CIP projects would comply with the Uniform Fire Code (Title 24 CFR, Part 9), which requires installation of sprinkler systems, fire-resistant building materials, standard roadway access widths, and other features to ensure that reservoirs, pump stations, and lift stations are constructed with all reasonable fire safety features. Implementation of the required fire safety features would reduce potential impacts to a less than significant level. Additionally, there would be no human occupation associated with any 2018 Master Plan CIP project. Therefore, no further analysis is required.

4.11.6 References

California Department of Toxic Substances Control

2017 EnviroStor database. Accessed on August 31, 2017. Available at http://www.envirostor.dtsc.ca.gov.

California Environmental Policy Agency (Cal-EPA)

2017a List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code. Accessed on August 31, 2017. Available at https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/.

2017b List of solid waste disposal sites identified by the SWRCB. Accessed on August 31, 2017. Available at http://calepa.ca.gov/wp-content/uploads/sites/34/2016/10/SiteCleanup-CorteseList-CurrentList.pdf.

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2010 Multi-Jurisdictional Hazard Mitigation Plan. Office of Emergency Services.

2016 County of San Diego Airports At-a-Glance. Available at http://www.sandiegocounty.gov/content/dam/sdc/dpw/AIRPORTS/all/documents/at-a-glance%20Oct%2021%202016.pdf.

SanGIS

2016 Regional Data Warehouse Layer Updates. Accessed October 25, 2017. Available at http://www.sangis.org/docs/news/Layer_Update_Report.pdf.

State Water Resources Control Board

2017 GeoTracker database. Accessed August 31, 2017. Available at http://geotracker.waterboards.ca.gov.

Chapter 5.0
Other CEQA Considerations

The California Environmental Quality Act (CEQA) Guidelines Section 15128 requires that an Environmental Impact Report (EIR) disclose the reasons why various possible environmental effects of a proposed project are found not to be significant and, therefore, are not discussed in detail in the EIR. Issues that were found to have no potential for a significant impact or are not applicable to the Vallecitos Water District (VWD) 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) and do not fall under the topics analyzed in Chapter 4.0 are discussed in Sections 5.1 and 5.2 below.

Section 15126 of the CEQA Guidelines requires that all aspects of a project be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the following three issues are also addressed in this chapter:

- Growth-inducing impacts (Section 5.3);
- Significant environmental effects that cannot be avoided upon implementation of the 2018 Master Plan (Section 5.4); and
- Significant irreversible environmental effects associated with implementation of the 2018 Master Plan (Section 5.5).

5.1 Effects Found Not Significant

Implementation of the 2018 Master Plan would not result in significant impacts to agricultural resources, mineral resources, and transportation and traffic, as discussed below and, therefore, further analysis in this PEIR is not necessary. Impacts related to emergency access are discussed in Section 4.11 (Public Safety) of this PEIR.

5.1.1 Agricultural and Forest Resources

Would implementation of the 2018 Master Plan convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use?

As discussed in the VWD 2008 Water, Wastewater, and Recycled Water Master Plan (2008 Master Plan), and according to the updated 2016 San Diego County Important Farmland Map, there are areas of Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance within the VWD service area (California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program 2016). However, the small development footprints of the proposed CIP projects, in relation to the total VWD service area, the amount of farmland present within the VWD service area, and the temporary impacts associated with construction activities would not result in a significant direct or indirect conversion of agricultural resources. Additionally, most of the Capital Improvement Program (CIP) projects would occur within sites that are already disturbed or have existing VWD facilities and do not contain known agricultural resources. Neither of the two project site options for the Diamond Siphon project (CIP SP-10) is located within any designated agricultural resources. Therefore, a less than significant impact would occur and no further analysis is required.

Would implementation of the 2018 Master Plan conflict with existing zoning for agricultural use, a Williamson Act contract, or conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4256), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

As discussed in the 2008 Master Plan, based upon the California Department of Forestry and Fire Protection (CDF) 2010 Forest and Range Assessment, areas within the VWD service area contain working landscapes, which are defined as areas managed for agriculture/timber/forage (CDF 2010). Although surrounding agricultural uses may be temporarily affected by construction activities, any areas temporarily disturbed during construction would be returned to their prior condition once the facilities are installed. The operation and maintenance of the CIP projects proposed in the 2018 Master Plan, including pipelines, pump stations, and reservoirs, would not conflict with or otherwise affect the operation of surrounding agricultural uses. In addition, the 2018 Master Plan does not propose any CIP projects beyond those anticipated in the 2008 Master Plan and analyzed in the 2011 Master Plan PEIR. Neither of the two project site options for the Diamond Siphon project (CIP SP-10) is located within any designated forest land or timberland. As such, the 2018 Master Plan would not result in impacts greater than those analyzed in the 2011 PEIR, and would not conflict with existing zoning for these resources, resulting in a less than significant impact. No further analysis is required.

Would implementation of the 2018 Master Plan result in the loss of forest land or conversion of forest land to non-forest use?

Based upon the CDF 2010 Forest and Range Assessment, areas within the VWD service area contain working landscapes, which are defined as areas managed for agriculture/timber/forage (CDF 2010). However, the 2011 PEIR concluded that the small development footprints of the proposed CIP projects and temporary impacts associated with construction activities would not result in a significant direct or indirect conversion of forest resources, and that a less than significant impact would occur, warranting no further analysis. Since the 2018 Master Plan is proposing a reduction in the overall CIP projects, no additional impacts above those analyzed in the 2011 PEIR are expected, and impacts would remain less than significant. No further analysis is required.

5.1.2 Mineral Resources

Would implementation of the 2018 Master Plan result in the loss of availability of a known mineral resource that would be of value to the region and to the residents of the State, or result in the loss of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

As discussed in the 2011 PEIR, the VWD service area includes portions of land designated as Mineral Resource Zone 1 (MRZ 1; mineral resources not present); Mineral Resource Zone 2 (MRZ 2; mineral resources present); Mineral Resource Zone 3 (MRZ 3; mineral resources potentially present); and Mineral Resource Zone 4 (MRZ 4; mineral resources inconclusive) by the County of San Diego (2011). The 2011 PEIR stated that the majority of the 2008 Master Plan CIP projects would be constructed on disturbed sites adjacent to existing VWD facilities and, therefore, would not result in the loss of availability of known mineral resources. Additionally, due to the small development footprints associated with the CIP projects, in relation to the total VWD service area, implementation of these projects would not result in a significant loss of availability of known mineral resources or locally important mineral resource recovery sites. Further, the majority of CIP projects would occur within sites that are already disturbed, have existing VWD facilities, and do not contain known mineral resources. The 2011 PEIR concluded that impacts would be less than significant and no further analysis was required.

Neither of the two project site options for the Diamond Siphon project (CIP SP-10) is located within a Mineral Resource Zone as designated by the County of San Diego General Plan Program EIR (County of San Diego 2011). Since the 2018 Master Plan is proposing a reduction in the overall CIP projects as compared to the 2008 Master Plan, no additional impacts above those analyzed in the 2011 PEIR are expected, and impacts would remain less than significant. No further analysis is required.

5.1.3 Transportation and Traffic

Would implementation of the 2018 Master Plan conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit or conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

As discussed in the 2011 PEIR, 2008 Master Plan CIP projects would generate a minor amount of daily construction-related trips from trucks hauling soil and/or debris from the construction sites; trucks delivering equipment and materials to/from the construction sites; and construction workers driving to/from the construction sites. These localized increases in construction traffic would be temporary. Permanent traffic associated with operation of the 2008 Master Plan CIP projects would occur primarily from vehicular trips by employees. However, operation of projects proposed under the 2008 Master Plan would not generate a significant volume of new vehicle trips. Based on the maintenance trips required for the existing VWD facilities, the new reservoirs and pump stations would require approximately one round trip per day, plus an additional trip if repairs are needed. The new land outfall projects would require approximately one round trip per week. The new pipelines would only require trips during rain events, and only to trouble spots along the pipeline. The 2011 PEIR stated that the 2008 Master Plan would not generate a significant volume of new vehicle trips and any incremental increases in vehicle trips would be distributed on roadways throughout the VWD service area and would not be substantial in relation to the existing traffic load and capacity of intersections, street segments and freeways within the VWD service area. As identified in Table 3-7 of Chapter 3, Project Description, of this PEIR, any work performed within a Caltrans right-of-way would require an encroachment permit and Caltrans approval.

According to the 2011 PEIR, the 2008 Master Plan would not conflict with any applicable plans establishing measures of effectiveness for the performance of a circulation system and would not conflict with any applicable congestion management program. No impacts were identified and no further analysis was required.

Since the 2018 Master Plan is proposing a reduction in the overall CIP projects as compared to the 2008 Master Plan, no additional impacts above those analyzed in the 2011 PEIR would occur. Impacts would be less than significant and no further analysis is required.

Would implementation of the 2018 Master Plan 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?

As discussed in the 2011 PEIR, implementation of the 2008 Master Plan would not involve the construction of facilities that would require changes in air traffic patterns from increased traffic levels, location, or design. The 2011 PEIR stated that there would be no impact to air traffic patterns and no further analysis was required.

Since the 2018 Master Plan is proposing a reduction in the overall CIP projects as compared to the 2008 Master Plan, no additional impacts above those analyzed in the 2011 PEIR would occur and no further analysis is required.

Would implementation of the 2018 Master Plan substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

As discussed in the 2011 PEIR, implementation of the 2008 Master Plan would involve planning VWD water and wastewater facilities; it would not involve any roadway or intersection improvements, or involve any uses that are not compatible with the surrounding area. Therefore, the 2011 PEIR stated that the 2008 Master Plan would not increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses, that no impact would occur, and that no further analysis was required.

Since the 2018 Master Plan is proposing a reduction in the overall CIP projects as compared to the 2008 Master Plan, no additional impacts above those analyzed in the 2011 PEIR would occur. No further analysis is required.

Would implementation of the 2018 Master Plan conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

As discussed in the 2011 PEIR, construction of the Parallel Land Outfall project and other pipeline CIP facilities may result in the temporary closure of portions of a recreational trail, which could temporarily impact local pedestrian and/or bicycle travel. However, this impact would be short term in nature and the trail would re-open upon completion of construction and pedestrian and cyclist access would be returned to existing conditions. Public transit could be temporarily affected if a CIP project requires a roadway lane closure, but facilities would not be permanently affected by implementation of the 2008 Master Plan. Furthermore, as described in Section 3.3.8 of this PEIR, the Master Plan would incorporate a Traffic Control Plan should construction require lane closures. Therefore, the 2011 PEIR stated that the 2008 Master Plan would not conflict with policies or programs regarding public transit, bicycle, or pedestrian facilities or otherwise permanently decrease the access, performance, or safety of such facilities. A less than significant impact would occur and no further analysis was required.

Since the 2018 Master Plan is proposing a reduction in the overall CIP projects as compared to the 2008 Master Plan, no additional impacts above those analyzed in the 2011 PEIR would occur. No further analysis is required.

5.2 CEQA Checklist Items Deemed Not Significant or Not Applicable to the 2018 Master Plan

The 2018 Master Plan Initial Study, included as Appendix A to this PEIR, indicates that the 2018 Master Plan does not have the potential to result in significant impacts related to the following checklist items and, therefore, further analysis in this PEIR is not necessary.

5.2.1 Population and Housing

Implementation of the 2018 Master Plan would not directly induce population growth within the VWD service area because VWD has no land use authority and cannot approve land development projects. Additionally, implementation of the 2018 Master Plan would not indirectly induce population growth because the plan was developed to accommodate the projected population growth of the region until 2036. Every three to five years, the San Diego Association of Governments (SANDAG) produces a new forecast to incorporate updated data, changing trends, and new policies. In February 2010, the SANDAG Board of Directors adopted the Series 12 2050 Regional Growth Forecast (Series 12) for planning purposes. Existing land use data from the Series 12 forecast was used in the preparation of the 2018 Master Plan. In April 2016, SANDAG provided updated existing population data for the District's service area, as well as projected population estimates for the years 2020, 2025, 2030, and 2035. The data indicates that the population within the study area will increase by approximately 29 percent from 2014 to 2035, at an average rate of approximately 1.4 percent per year. This population forecast was used to forecast the phasing of future facilities needed to serve the planned level of growth in the 2018 Master Plan. Therefore, the projected population growth of the region was based upon existing and planned land use data for the VWD service area, obtained through SANDAG. Further, the majority of proposed CIP projects would be constructed in developed areas such as roadway rights-of-way or on VWD properties in areas adjacent to or replacing existing VWD facilities and would not displace any existing housing or people and no further analysis is required.

5.2.2 Public Services

The 2018 Master Plan includes a combination of water and wastewater storage reservoirs, pump/lift stations, and pipelines. The proposed CIP projects do not contain any residential uses and implementation of the 2018 Master Plan would not result in impacts associated with maintaining acceptable service ratios, response times, or other performance objectives for fire protection services, police protection services, schools, parks, or any other public facilities. As such, implementation of the 2018 Master Plan would not require the provision

of new or physically altered fire protection, police protection, school, and park facilities, the construction of which could cause significant environmental impacts. Therefore, there would be no impact to public services and no further analysis is required.

5.2.3 Recreation

The 2018 Master Plan includes a combination of water and wastewater storage reservoirs, pump/lift stations, and pipelines. The proposed CIP projects do not contain any residential uses and would not introduce new residents to the area. Therefore, implementation of the 2018 Master Plan would not impact the use of parks or other recreational facilities, and would not require the construction or expansion of new recreational facilities. Therefore, there would be no impact to recreational facilities and no further analysis is required.

5.2.4 Utilities and Service Systems

A primary purpose of the 2018 Master Plan is to ensure an adequate, effective, reliable, equitable and fiscally sound water and sewer service to its current and projected future residential, commercial, and industrial customers, consistent with SANDAG forecasts and local general plans, through 2050. The 2018 Master Plan responds to projected growth in the region (refer to Section 5.3 below) and includes proposed CIP projects to distribute existing and planned water supplies to meet existing and projected demand. Implementation of the 2018 Master Plan would not directly result in the need for new or expanded water and sewer supplies by introducing people or development to an area. However, the projected population increase in the region and a desire to diversify water supply sources may require additional water supplies in the future. For example, in the fall of 2007, VWD announced that its Board of Directors unanimously approved a Water Purchase Agreement with the San Diego County Water Authority for the purchase of desalinated seawater. Under the agreement, the San Diego County Water Authority will provide the District with 3,500 acre-feet per year of potable water from the Claude "Bud" Lewis Carlsbad desalination plant, which went online in December 2015. The desalination plant is expected to ultimately provide almost a third of the VWD's current annual demand. This new supply represents a new local water resource, which enhances the reliability of the VWD supply system. The environmental impacts associated with the construction and operation of the Claude "Bud" Lewis Carlsbad desalination facility was evaluated under a separate environmental document conducted by the City of Carlsbad in 2006 (SCH No. 2004041081). Therefore, no additional environmental analysis is required for this desalination facility.

Implementation of the 2018 Master Plan would involve the construction of new, and expansion of existing, VWD water and wastewater facilities, the potential environmental effects of which are addressed in this PEIR. The 2018 Master Plan would comply with the Construction Storm Water General Permit and adopted ordinances by local municipal separate storm sewer system jurisdictions and would not exceed the capacity of existing storm water drainage systems or require the construction of off-site storm water drainage systems (refer to Section 4.7, Hydrology and Water Quality of this PEIR). Any storm water drainage facilities that would be constructed for CIP projects have been included in the

overall disturbance footprints for the proposed CIP sites, for which the corresponding environmental effects have been addressed within this PEIR.

As discussed in Section 4.11 (Public Safety) of this PEIR, all demolition debris and construction waste associated with construction of CIP projects under the 2018 Master Plan would be properly handled and disposed of, in accordance with federal, state, and local laws and regulations related to solid and hazardous waste. Moreover, the long-term operations of proposed CIP projects under the 2018 Master Plan would not generate solid waste that would significantly impact the permitted capacity of area landfills.

The provision of additional seawater desalination facilities, or other water supplies, is not presently foreseeable but if deemed necessary in the future, these facilities would be included as part of a future Master Plan and evaluated in a separate CEQA document. The evaluation of water supply wastewater treatment capacity is typically conducted by lead agencies and water districts as part of the required CEQA approvals for new development or redevelopment projects that would require additional water supplies and/or additional wastewater treatment facilities to serve those projects.

5.3 Growth Inducement

As required by CEQA Guidelines Section 15126.2(d), an EIR must include a discussion of the ways in which a proposed project could directly or indirectly foster economic development or population growth, and how that growth would affect the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion of the "removal of obstacles to growth" relates directly to the removal of infrastructure limitations or regulatory constraints that could result in growth unforeseen at the time of project approval. According to CEQA Guidelines Section 15126.2(d), "it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment." The CEQA Guidelines require a discussion of growth inducement, but not speculation as to when, where and what form growth may occur, as such speculation does not provide the reader with accurate or useful information about the project's potential effects.

The 2018 Master Plan analyzes existing and projected future land uses, as well as current water demands and projected demand trends to propose CIP projects necessary to serve VWD existing and projected future customers. Through use of the VWD's ArcGIS/ArcINFO-based Geographic Information System and WaterGEMS/SewerGEMS hydraulic modeling software, the 2018 Master Plan evaluates the capacity of the existing water and sewer systems and specifies improvements necessary to serve existing and projected future customers. Phasing of these improvements enables adequate responsive implementation of CIPs and is consistent with phased regional population calculations and projections as well as taking into account known plans for development within the District's sphere of influence. Land use data used in the 2018 Master Plan was obtained through SANDAG, which serves as a regional clearinghouse for land use information in the San Diego region.

5.3.1 San Diego Association of Governments

Existing land use data was obtained through SANDAG, which serves as a regional clearinghouse for land use information in San Diego County. Every three to five years, SANDAG produces a new forecast to incorporate updated data, changing trends, and new policies. In February 2010, the SANDAG Board of Directors adopted the Series 12 2050 Regional Growth Forecast (Series 12) for planning purposes. Existing land use data from the Series 12 forecast was used in the preparation of the 2018 Master Plan.

To estimate planned land uses within the District's service area, data from SANDAG's Series 12 was obtained and reviewed. The SANDAG planned land use data was then sent to all five jurisdictions (cities of Carlsbad, Escondido, San Marcos, and Vista, as well as the County of San Diego) within the District's planning area. These jurisdictions were asked to review and confirm the land use projections or provide updated land use plans that were approved as of June 30, 2014. The cities of Carlsbad and San Marcos and the County of San Diego provided updated land use projections and zoning data based on their most recent General Plans and Specific Plan areas, while the cities of Escondido and Vista confirmed that SANDAG's Series 12 data were consistent with their planned projections. Thus, planned land use data from a variety of sources were considered as part of this Master Plan development. This approach is intended to provide the District with the most accurate land use projections.

The existing and planned land use coverages for the 2018 Master Plan were summarized and categorized to match the VWD's standard land use categories. Planned land uses were utilized to estimate future water demands and wastewater flows. VWD, as the water and wastewater purveyor, does not designate land uses. Land planning authority in the VWD service area falls under the purview of the City of San Marcos, City of Carlsbad, City of Vista, City of Escondido, and the County of San Diego (unincorporated areas). Of these, the City of San Marcos and the County of San Diego represent the main areas of future growth in the system based on available developable area.

The 2018 Master Plan addresses VWD's CIP projects in five-year increments from 2020 to 2035, and until the ultimate build-out. In April 2016, SANDAG provided updated existing population data for the District's service area, as well as projected population estimates for the years 2020, 2025, 2030, and 2035. The data indicates that the population within the study area will increase by approximately 29 percent from 2014 to 2035, at an average rate of approximately 1.4 percent per year. This population forecast was used to forecast the phasing of future facilities needed to serve the planned level of growth in the 2018 Master Plan.

5.3.2 Direct and Indirect Growth-Inducing Effects

The inclusion of any particular CIP project as a part of the 2018 Master Plan is not a commitment or an assurance that the particular CIP project would be constructed. Indeed, there any many factors which influence the likelihood that any given CIP project would be constructed as well as the ultimate description of CIP project-specific details and

parameters, such as when, where, what, and how it would be built. Instead, the 2018 Master Plan is intended to serve as a planning tool enabling VWD to model, plan for, budget, and otherwise prepare to respond to the water and wastewater infrastructure demands that may arise as a result of SANDAG's projected growth and growth related development within the VWD service area to 2036.

Various factors may affect the future character of such growth and development; and, therefore, the implementation of the CIP designed under the Master Plan to meet growth-based demand. For example, construction of CIP projects are influenced by the actual timing, density, type, and location of growth-based demand (i.e., when, where, and what development actually occurs); and, growth-based demand is itself subject to factors such as changes in the area wide employment base, settlement characteristics, socio-economic trends, transportation, and environmental constraints. The 2018 Master Plan enables VWD to calculate and plan a CIP of sufficient scale to support the implementation of infrastructure update and expansion projects as needed to meet actual development in accordance with projected increases in demand arising from growth and growth related development projects to 2036.

Implementation of the 2018 Master Plan would not directly create or induce growth within the planning area because the VWD has no land use authority and cannot approve land development. As stated above, indirect growth may result from the removal of physical impediments or restrictions to growth, as well as the removal of planning impediments resulting from land use plans and policies. In this context, physical growth impediments may include nonexistent or inadequate access to an area or the lack of essential public services, while planning impediments may include restrictive zoning and/or general plan designations.

The majority of the CIP projects within the 2018 Master Plan would be constructed at sites that contain existing VWD facilities. These projects would not result in indirect growth effects because they would not extend new infrastructure into areas without existing infrastructure and would not encourage growth in a region without existing infrastructure. The construction of new CIP facilities within undeveloped areas would be phased commensurate with growth; therefore, these projects would also not result in indirect growth effects because the timing of implementation is intended to serve the water delivery and wastewater service needs of specified planned developments as they are approved. In other words, none of the CIP projects proposed within the 2018 Master Plan would be developed in anticipation of unforeseen or unplanned future growth. Therefore, implementation of the 2018 Master Plan would not be growth-inducing because it would not remove an impediment to growth.

Furthermore, construction of CIP projects proposed as part of the 2018 Master Plan could generate a small number new jobs throughout the VWD service area, but this additional economic activity would be incremental compared to the economic growth of the greater San Diego region. Therefore, implementation of the 2018 Master Plan would not be growth-inducing because it would not foster substantial economic expansion or growth in the region.

5.4 Significant and Unavoidable Environmental Impacts

Section 15126.2(b) of the CEQA Guidelines requires the identification of significant impacts that would not be avoided, even with the implementation of feasible mitigation/performance measures. The final determination of significance of impacts and of the feasibility of mitigation/performance measures will be made by the VWD Board of Directors as part of their certification of this PEIR. Sections 4.1 through 4.11 of this PEIR provide a programmatic evaluation of the potentially significant environmental effects and corresponding mitigation/performance measures associated with implementation of the 2018 Master Plan to avoid or substantially reduce the environmental effect. According to this evaluation, all potentially significant environmental effects would be reduced to less than significant levels with implementation of identified feasible and enforceable mitigation measures. The 2018 Master Plan would not result in any significant and unavoidable environmental impacts.

5.5 Significant and Irreversible Environmental Effects

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by a proposed project, as follows:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve a large commitment of nonrenewable resources;
- The project involves uses in which irreversible damage would result from any potential environmental accidents associated with the project; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Development of potable water infrastructure under the 2018 Master Plan would allow VWD to continue to supply water to its current and projected future users within the VWD service area. Resources that would be permanently and continually consumed by implementation of the 2018 Master Plan include water, electricity, natural gas, and fossil fuels. However, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources for the reasons given in Section 5.2 above (refer to discussion of utilities and service systems) and Section 4.4 (Energy) of this PEIR. Nonetheless, construction and operations associated with implementation of the 2018 Master Plan would result in the irretrievable commitment of nonrenewable energy resources. It is also possible that new technologies or systems would emerge, or would become more cost-effective or user-friendly, upon which VWD may rely to further reduce their reliance on nonrenewable energy resources. Overall, the consumption of natural resources associated with implementation of the 2018 Master Plan is expected to increase at a lesser rate than the projected population increase within the service area due to the variety of energy conservation measures that VWD will continue to implement, expand and develop to achieve energy efficiency for their construction and operational activities (refer to Section 4.4, Energy, of this PEIR).

The CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by an accident. As discussed in Section 4.11 (Public Safety) of this PEIR, VWD uses, transports, stores, and disposes of hazardous materials in accordance with applicable federal, state and local regulations, as well as with existing VWD programs, practices, and procedures related to hazardous materials, to reduce the likelihood and severity of accidents that would result in irreversible environmental damage. Therefore, compliance with existing regulations and implementation of mitigation measure Geo-1 would reduce hazards to the public or the environment through the transport, storage, use, or disposal of hazardous materials during CIP operations, and associated accidental releases of hazardous materials into the environment and near schools, to a less than significant level.

5.6 References

California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program

2014 San Diego County Important Farmland Date Availability. 2014 PDF Map. Available at ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/sdg14_w.pdf.

2016 San Diego County Important Farmland Map.

California Department of Forestry and Fire Protection (CDF)

2010 The Changing California: Forest and Range 2010 Assessment. Available at http://frap.fire.ca.gov/assessment/2010/assessment2010.

San Diego, County of

2011 San Diego County General Plan Update Final Environmental Impact Report. SCH #2002111067.

Chapter 6.0
Project Alternatives

The California Environmental Quality Act (CEQA) statutes require an Environmental Impact Report (EIR) to describe and evaluate a range of reasonable alternatives to a proposed project, or alternatives to the location of a proposed project. The purpose of the alternatives analysis is to explore ways that most of the basic objectives of a proposed project could be attained while reducing or avoiding significant environmental impacts of the project as proposed. This approach is intended to foster informed decision making and public participation in the environmental process.

This chapter evaluates alternatives to the 2018 Water, Wastewater, and Recycled Water Master Plan (2018 Master Plan) and examines the potential environmental impacts associated with each alternative. The State CEQA Guidelines indicate that EIRs are required to evaluate a ". . . range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project" (Section 15126.6[a] State CEQA Guidelines). According to the Guidelines, not every conceivable alternative must be addressed nor do infeasible alternatives need be considered. Section 15126.6 of the CEQA Guidelines lists the factors that may be taken into account when addressing the feasibility of alternatives: site suitability, economic viability, availability of infrastructure, other plans or regulatory limitations, and jurisdictional boundaries. The Guidelines also state that the discussion of alternatives should focus on "…alternatives capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives could impede to some degree the attainment of the project objectives or would be more costly" (Section 15166.6[b] State CEQA Guidelines). CEQA further directs that "…the significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project as proposed" (Section 15126.6[d] State CEQA Guidelines).

The following alternatives to avoid or reduce significant project impacts were identified and are discussed in Section 6.2 below: No Project Alternative, Reduced Footprint Alternative, and Alternative Outfall Alignment.

6.1 Master Plan Objectives

As stated in Section 3.1 (Goals and Objectives) of this Program Environmental Impact Report (PEIR), the goals and objectives of the 2018 Master Plan include the following actions:

- Plan facilities to meet treated and untreated water demand and supply projections;
- Optimize the use of existing infrastructure;
- Protect the public's health, safety, and welfare by maintaining a safe and reliable water supply;
- Plan facilities that are cost-effective;
- Develop facility plans adaptive to changes in future conditions.
- Update water demands and wastewater flows based on current land uses, approved land uses, and projected growth-based land uses using capital improvement program (CIP) phasing periods corresponding with the phases used in relevant growth projection data.
- Ensure that proposed CIP facilities are designed and sized to serve the "build-out" land use through either upgrades of existing facilities or expansion of the existing system, and to construct CIP projects within existing right-of-ways, to the extent feasible, to avoid and minimize environmental impacts.
- Update Vallecitos Water District's (VWD) wastewater treatment capacity needs at both Encina Water Pollution Control Facility and Meadowlark Water Reclamation Facility, and review and update wastewater land outfall capacity needs based on the new wastewater flow forecast.

6.2 Alternatives Analyzed

This section presents an evaluation of three alternatives to the proposed 2018 Master Plan: No Project Alternative, Reduced Footprint Alternative, and Alternative Outfall Alignment. For all alternatives, a brief description is included, followed by a summary impact analysis relative to the 2018 Master Plan, and an assessment of the degree to which the alternative would meet the eight goals and objectives of the 2018 Master Plan. Table 6-1 provides a summary of the impacts of the alternatives compared to the 2018 Master Plan. A summary of how each alternative fulfills the 2018 Master Plan objectives is provided in Table 6-2. Additional alternatives may be available at the specific CIP project level and would be analyzed during the appropriate CEQA review for such projects.

Table 6-1 Summary of Analysis for Alternatives to the 2018 Master Plan					
	2018 Master Plan		Alternatives		
Issue Area	Without Mitigation	With Mitigation	No Project Alternative	Reduced Footprint Alternative	Alternative Outfall Alignment
4.1 Air Quality					
Consistency with Applicable Air Quality Plan	LS	LS	▼	=	=
Consistency with Air Quality Standards	LS	LS	▼	=	=
Objectionable Odors	S	LS	▼	■	■
4.2 Biological Resources					
Candidate, Sensitive, or Special Status Species	S	LS	▼	■	■
Riparian Habitat and Other Sensitive Natural Communities	S	LS	▼	■	■
Wetlands	S	LS	▼	■	■
Local Policies or Ordinances	S	LS	▼	■	■
Habitat Conservation Plans	S	LS	▼	■	■
4.3 Cultural Resources					
Historical, Archaeological Resources	S	LS	▼	■	=
Human Remains	S	LS	▼	■	=
Tribal Cultural Resources	LS	LS	▼	=	=
4.4 Energy					
Energy Consumption	LS	LS	▼	=	=
4.5 Geology, Soils, and Paleontology					
Exposure to Seismic and Geologic Hazards	S	LS	▼	■	=
Soil Erosion or Topsoil Loss	S	LS	▼	■	=
Paleontological Resources	S	LS	▼	■	=
4.6 Greenhouse Gas Emissions					
Direct and Indirect Generation of GHG and Consistency with Applicable Plans Adopted for Reducing GHG	LS	LS	▼	▼	=
4.7 Hydrology and Water Quality					
Water Quality	LS	LS	▼	=	=
Alteration of Drainage Patterns	LS	LS	▼	=	=
Mudflows, Dam Inundation, Tsunamis and Seiches	S	LS	▼	■	=
4.8 Landform Alteration and Visual Aesthetics					
Visual Character and Quality	S	LS	▼	■	=
Scenic Vistas	S	LS	▼	▼	=
Lighting and Glare	S	LS	▼	■	=

Table 6-1
Summary of Analysis for Alternatives to the 2018 Master Plan

Issue Area	2018 Master Plan		Alternatives		
	Without Mitigation	With Mitigation	No Project Alternative	Reduced Footprint Alternative	Alternative Outfall Alignment
4.9 Land Use and Planning					
Land Use Incompatibilities and Conflicts with Land Use Plans and Biological Conservation Plans	S	LS	▼	■	=
4.10 Noise					
Substantial Permanent Increase in Ambient Noise Levels	LS	LS	▼	=	=
Temporary Increases in Ambient Noise	S	LS	▼	■	=
Excessive Groundborne Vibration or Noise	LS	LS	▼	=	=
4.11 Public Safety					
Transport, Use, and Disposal of Hazardous Materials and Accidental Releases	LS	LS	▼	=	=
Listed Hazardous Materials Sites	S	LS	▼	■	=
Emergency Response and Evacuation Plans	LS	LS	▼	=	=

▲ Alternative would result in an increased level of impact when compared to the2018 Master Plan
= Alternative would result in a similar level of impact to issue when compared to 2018 Master Plan
■ Alternative would result in a reduced level of impact when compared to the 2018 Master Plan, but impacts would remain significant without mitigation.
▼ Alternative would result in a reduced level of impact to issue when compared to the 2018 Master Plan and would not require mitigation.
S = Significant; LS = Less than significant impact

Table 6-2 Ability of Alternatives to Meet Proposed Master Plan Objectives			
Master Plan Objectives	No Project	Reduced Footprint Alternative	Alternative Outfall Alignment
1. Plan facilities to meet treated and untreated water demand and supply projections.	No	Yes	Yes
2. Optimize the use of existing infrastructure.	No	Yes	Yes
3. Protect the public's health, safety, and welfare by maintaining a safe and reliable water supply.	No	Yes	Yes
4. Plan facilities that are cost-effective.	No	Yes	Yes
5. Develop facility plans adaptive to changes in future conditions.	No	Yes	Yes
6. Update water demands and wastewater flows based on current land uses, approved land uses, and projected growth-based land uses using CIP phasing periods corresponding with the phases used in relevant growth projection data.	No	Yes	Yes
7. Ensure that proposed CIP facilities are sized to serve the "build-out" land use through either upgrades of existing facilities or expansion of the existing system, and to construct CIP projects within existing right-of-ways, to the extent feasible, to avoid and minimize environmental impacts.	No	No	Yes
8. Update Vallecitos Water District's wastewater treatment capacity needs at both Encina Water Pollution Control Facility and Meadowlark Water Reclamation Facility, and review and update wastewater land outfall capacity needs based on the new wastewater flow forecast.	No	Yes	Yes

6.2.1 No Project Alternative

Section 15126.6(e) of the CEQA Guidelines requires the No Project Alternative to be addressed in an EIR. Under this alternative, the 2018 Master Plan would not be adopted, and none of the proposed CIP projects would be constructed at this time. The existing 2008 Master Plan Update (adopted in 2011) would remain the planning document for the VWD. The No Project Alternative would not necessarily preclude the future implementation of individual projects listed in the 2018 Master Plan (individual infrastructure projects would still be required to undergo CEQA environmental review).

6.2.1.1 Impact Analysis

The No Project Alternative would avoid all of the potentially significant environmental impacts identified for the 2018 Master Plan because no proposed CIP projects would be constructed at this time and the existing adopted 2008 Master Plan would remain the planning document for the VWD (the environmental impacts associated with the construction of CIP facilities proposed under the 2008 VWD Master Plan were evaluated in a separate EIR in March 2011 [SCH No. 2010071073]). Compared to the proposed 2018

Master Plan Update, all currently identified impacts related to air quality (odors), biology, cultural resources, geology and soils, hydrology and water quality (mudflows), landform alteration/aesthetics, land use, noise (construction), and public safety (listed hazardous material sites) as a result of the 2018 Master Plan would be avoided under the No Project Alternative.

This conclusion assumes, however, that none of the currently proposed CIP projects would be constructed. In reality, the No Project Alternative does not preclude the future construction of CIP projects. Although future infrastructure projects would still be required to undergo individual environmental review, the impacts would be evaluated on a project-by-project basis and the potential cumulative impact associated with all of the CIP projects within the Master Plan may not be addressed adequately. In other words, cumulative environmental impacts could potentially be addressed in a "piece-meal" manner, which may result in underestimating the total extent of cumulative environmental impacts in comparison to evaluating the entire Master Plan at the PEIR level. In addition, this approach restricts the VWD's ability to properly plan for projected growth and to design infrastructure accordingly. So while new and upgraded infrastructure projects would still occur under this alternative, they would be implemented in a more disorganized, less efficient, and likely more costly manner.

6.2.1.2 Ability to Accomplish Master Plan Objectives

The No Project Alternative would not meet any of the eight objectives identified for the 2018 Master Plan. This would hinder VWD's ability to meet the future water demands of its service area, because water demands and wastewater flows would not be updated to reflect future demand, CIP facilities would not be properly sized for future demand, and wastewater capacity needs would not be updated to reflect future sewer flows.

6.2.2 Reduced Footprint Alternative

The Reduced Footprint Alternative would reduce the footprint of the 2018 Master Plan CIP potable water reservoir projects and potable water pump station projects that were determined to result in direct impacts to special status biological species. These CIP projects include R-4, R-5, R-10, PS-3, PS-6, and PS-8. Under the Reduced Footprint Alternative, each of these CIP projects would be reduced in size so that their development footprint would not extend into sensitive habitat. In some cases, the reduction in the development footprint would also result in a reduction in CIP storage and pumping capacity or the reduction in capacity or footprint of an associated CIP storage, pumping, or pipeline project. Under the Reduced Footprint Alternative, no pipelines, storage tanks, or reservoir projects would be increased in capacity or size. Additionally, under this alternative CIP project R-11 would not be constructed, and no CIP projects would be located in areas with designated scenic vistas. Under this alternative, the location and sizes of the parallel land outfall and potable water and wastewater pipelines would remain the same as in the 2008 Master Plan.

Under this alternative, potential impacts related to biological resources would be reduced because development footprints would not extend into sensitive habitat. Additionally, impacts related to landform alteration and visual aesthetics would be reduced, because CIP projects would not be located in areas with designated/protected scenic vistas.

Although this alternative would have a reduced overall footprint in comparison to the 2018 Master Plan, it would involve similar types of uses and construction methods. Therefore, for this alternative the following issues would result in a reduced level of impact when compared to the 2018 Master Plan, and impacts would either remain less than significant or would require mitigation to reduce impacts to a less than significant level: cultural resources; geology, soils, and paleontology; hydrology and water quality; land use and planning; and public safety. Any mitigation that would be required for the Reduced Footprint Alternative would be similar to the 2018 Master Plan.

More specifically, the Reduced Footprint Alternative's impacts related to air quality, biological resources, energy, greenhouse gas (GHG) emissions, landform alteration and visual aesthetics, and noise compared to the 2018 Master Plan are discussed below.

6.2.2.1 Impact Analysis

a. Air Quality

The Reduced Footprint Alternative would result in less construction than the proposed 2018 Master Plan, because the development footprint size of several CIP projects would be reduced and CIP R-11 would not be constructed. Due to a reduction in CIP development footprints, construction duration for these projects would be reduced compared to the same projects under the 2018 Master Plan. Therefore, this alternative would result in slightly reduced air pollutant emissions compared to the 2018 Master Plan. During operation, air pollutant emissions would be slightly reduced, when compared to the Master Plan, due to the removal of CIP project R-11 and the associated reduction in maintenance trips. Similar to the 2018 Master Plan, impacts associated with compliance with air quality plans and consistency with air quality standards would be less than significant. Similar to the 2018 Master Plan, potential odor impacts would be required to be mitigated to reduce impacts to a less than significant level.

b. Biological Resources

The Reduced Footprint Alternative would result in reduced direct impacts to biological resources compared to the proposed CIP projects because the development footprints of several CIP projects would avoid extending into sensitive habitat. When compared to the 2018 Master Plan, biological resource impacts for this alternative would be reduced, but direct and indirect biological impacts would still occur under the Reduced Project Footprint due to the occurrence of development and construction activities. For example, while decreasing the development footprint of a CIP project would decrease the amount of California gnatcatcher habitat that may be removed to construct the facility, some direct impacts from clearing and grading, and indirect impacts from noise from construction

activities, would still be expected to occur. The duration of indirect impacts from noise would be reduced compared to the proposed CIP projects because less construction would be required. Similar to the 2018 Master Plan, impacts to sensitive species, habitats, and wetlands, and conflicts with local policies and habitat management plans would be potentially significant and mitigation would be required.

c. Energy

The Reduced Footprint Alternative would result in less energy consumption than the 2018 Master Plan, because less construction would take place due to a reduction in development footprint. A reduction in the amount of construction required for CIP projects would result in less fuel consumption. Additionally, because the development footprint of the selected CIP projects would be reduced, a reduction in capacity of these facilities may also be required. A reduction in CIP capacity would result in a lesser consumption of electricity than in the proposed CIP projects. Further, CIP project R-11 would not occur under this alternative, which would reduce energy consumption associated with construction and operation when compared to the 2018 Master Plan. Therefore, the Reduced Footprint Alternative would result in less energy usage than the 2018 Master Plan. Similar to the 2018 Master Plan, implementation of project design features would ensure that impacts remain at a less than significant level.

d. Greenhouse Gas Emissions

Under the Reduced Footprint Alternative, less construction would take place than is anticipated by the 2018 Master Plan; therefore, construction would result in fewer GHG emissions than in the 2018 Master Plan. Additionally, the removal of CIP project R-11 would result in a reduction in maintenance trips, and associated GHG emissions would be reduced. Therefore, GHG emissions under the Reduced Footprint Alternative would be reduced when compared to the 2018 Master Plan. Impacts would be less than significant, similar to the 2018 Master Plan.

e. Landform Alteration and Aesthetics

Under the Reduced Footprint Alternative, as CIP project R-11 would not be constructed, no CIP facilities would be located on undeveloped hillsides within the Merriam Mountains Conservation Area of San Diego County, and this alternative would not result in a significant impact to a scenic vista. Therefore, when compared to the 2018 Master Plan, impacts associated with scenic vistas would be reduced. Similar to the 2018 Master Plan, impacts to visual character, lighting, and glare would be less than significant with implementation of mitigation.

f. Noise

Temporary noise impacts from construction would be slightly reduced compared to the 2018 Master Plan under this alternative, because construction would be reduced. However, impacts associated with construction noise would be potentially significant, and mitigation

would still be required to reduce potential impacts to a less than significant level, similar to the 2018 Master Plan. During operation, pump stations would be required to be equipped with masonry enclosures, and operational noise-related impacts would be less than significant, similar to the 2018 Master Plan.

6.2.2.2 Ability to Accomplish Master Plan Objectives

The Reduced Footprint Alternative would meet seven of the eight project objectives identified for the 2018 Master Plan. This alternative would meet all but objective #7, because a Master Plan would be prepared under this alternative and projections for future water demands, wastewater flows, and wastewater capacity needs at the treatment plans would be updated. However, this alternative would not meet objective #7 for the 2018 Master Plan (ensure that proposed CIP facilities are sized to serve the "build-out" land use through either upgrades of existing facilities or expansion of the existing system, and to construct CIP projects within existing rights-of-way, to the extent feasible, to avoid and minimize environmental impacts) because the reduction in CIP storage and pumping capacity resulting from the reduction in CIP development footprints may result in VWD not fully satisfying the projected water demand and wastewater flow within its service area.

6.2.3 Alternative Outfall Alignment

The Alternative Outfall Alignment would revise the proposed location of CIP LO-A1, LO-A2, LO-B, LO-D1, and LO-D2 to avoid areas within and near sensitive biological resources. Under this alternative, these portions of the outfall would not be parallel to the existing outfall, and a greater portion of the outfall may be located within existing street right-of-ways than in the 2018 Master Plan. The total length of outfall could be extended in order to avoid the biological resources that would be impacted by the 2018 Master Plan CIP outfall projects. As a result, topographic constraints in alternative outfall alignments could increase construction operations and duration and potentially require the use of lift stations. All other CIP projects would remain the same as those proposed in the 2018 Master Plan. The VWD service area would be the same under this alternative as the 2018 Master Plan and all applicable regulations would also apply to the Alternative Outfall Alignment. Therefore, this alternative would result in similar impacts to the following issues compared to the 2018 Master Plan: geology, soils, and paleontology; hydrology and water quality; landform alteration and visual aesthetics; land use and planning; and public safety. Impacts related to air quality, biological resources, cultural resources, energy, GHG emissions, and noise that could change as a result of the alternative outfall alignment are discussed below.

6.2.3.1 Impact Analysis

a. Air Quality

The Alternative Outfall Alignment would potentially result in more construction than the 2018 Master Plan. This alternative proposes the same number and size of projects as the 2018 Master Plan; therefore, emissions would be similar to the 2018 Master Plan. However,

because of topographic constraints in areas that would be considered for the alternative outfall alignment, additional construction may be required to install the outfall. The use of lift stations may be required due to these constraints and would also result in additional construction. In the case of topographic constraints, construction emissions could increase compared to the 2018 Master Plan if the alternative results in a greater length of pipeline. During operation, air pollutant emissions would be the same under this alternative as in the 2018 Master Plan if no lift stations were required, because the same number of emergency generators and maintenance trips would be required. However, if lift stations were constructed, additional emergency generators and maintenance trips would be required. These lift stations would increase emissions compared to the 2018 Master Plan. Due to the small amount of emissions that result from each lift station, the operational air quality impact would still be less than significant, similar to the 2018 Master Plan. Odor emissions associated with the outfall would be similar to the 2018 Master Plan, and require mitigation to reduce impacts to a less than significant level.

b. Biological Resources

Under the Alternative Outfall Alignment, the portions of LO-A1, LO-A2, LO-B, LO-D1, and LO-D2 that cross riparian/wetland and upland sensitive natural communities would not be constructed in the location proposed in the 2018 Master Plan. The location of these outfall segments in relation to riparian/wetland and upland sensitive natural communities are shown in Figure 4.2-1. Therefore, the direct and indirect impacts to sensitive biological resources, such as habitat for the California gnatcatcher, would be avoided. However, relocating the outfall projects may still result in clearing, grading, and other temporary land disturbances. When compared to the 2018 Master Plan, although biological resource impacts would be reduced, direct and indirect impacts to sensitive biological resources in undeveloped areas would not be eliminated entirely because of construction activities under the Alternative Outfall Alignment, and mitigation would still be required to reduce impacts to a less than significant level. If new lift stations were required, additional impacts to biological resources may occur if these lift stations are located in undeveloped areas. Under this alternative, impacts to sensitive species, habitats and wetlands, and conflicts with local policies and habitat management plans would be reduced when compared to the 2018 Master Plan. However, mitigation would still be required to reduce potentially significant impacts to less than significant.

c. Cultural Resources

Depending on the ultimate location of the Alternative Outfall Alignment, impacts associated with disturbing the historic Rancho De Los Kiotes property could either be greater or reduced, corresponding to whether the alternative alignment is closer or further away from this resource. The Rancho De Los Kiotes property is considered historic, because it was owned and built by the film actor and California State Parks Commissioner Leo Carrillo in 1937. The Alternative Outfall Alignment could potentially impact this resource due to its close proximity to construction activities that may cause excessive groundborne vibration from grading, clearing, blasting, and demolition or dust or debris fallout that may damage the historic resource. Impacts to archaeological resources and human remains

would be similar under this alternative as under the 2018 Master Plan due to the abundance of known and recorded archaeological sites throughout the VWD service area. Similar to the 2018 Master Plan, impacts would be potentially significant and require mitigation.

d. Energy

The Alternative Outfall Alignment has the potential to result in additional fuel consumption during construction because of topographic constraints and additional pipeline construction. Additionally, if lift station were required as a result of this alternative, the Outfall Alignment Alternative would result in greater electricity consumption than the 2018 Master Plan. However, similar to the 2018 Master Plan, this impact would likely be less than significant with the incorporation of energy-efficient project features.

e. Greenhouse Gas Emissions

The Alternative Outfall Alignment has the potential to result in additional construction compared to the 2018 Master Plan because of topographic constraints. Therefore, GHG emissions during construction would be greater than under the 2018 Master Plan. If lift stations were required as a result of this alternative, the Alternative Outfall Alignment would result in slightly greater GHG emissions as a result of increased electricity consumption than the 2018 Master Plan. Similar to the 2018 Master Plan, this impact would be less than significant.

f. Noise

Temporary noise impacts from construction would potentially increase under this alternative compared to the 2018 Master Plan, because more construction may be required due to topographic constraints. If lift stations were required, these lift stations would result in additional sources of noise compared to the 2018 Master Plan, but the incorporation of masonry enclosures would ensure that operational noise levels remain less than significant. Similar to the 2008 Master Plan, construction noise impacts would be mitigated to a less than significant level.

6.2.3.2 Ability to Accomplish Master Plan Objectives

The Alternative Outfall Alignment would meet all eight of the objectives identified for the 2018 Master Plan because this alternative would change only the location of the proposed outfall and not the outfall size. Further, all other CIP projects would remain the same as those proposed in the 2018 Master Plan, although the potential exists for more lift stations to be required under this alternative.

6.2.4 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) requires that an EIR identify the environmentally superior alternative among the range of reasonable alternatives that are evaluated. The No

Project Alternative assumes that none of the proposed CIP projects would be constructed at this time, and would therefore avoid all potentially significant environmental impacts identified for the 2018 Master Plan. However, this alternative would not preclude implementation of some, if not all, of the CIP projects on an individual basis sometime in the future. Although future infrastructure projects would still be required to undergo individual environmental review, the impacts would be evaluated on a project-by-project basis, and the potential cumulative impacts associated with all of the CIP projects within the 2018 Master Plan may not be addressed adequately. In other words, cumulative environmental impacts could potentially be addressed in "piece-meal" manner, which may result in underestimating the total extent of cumulative environmental impacts in comparison to evaluating the entire Master Plan at the PEIR level. In addition, this approach restricts the VWD's ability to properly plan for projected growth and to design infrastructure accordingly. So while new and upgraded infrastructure projects would still occur under this alternative, they would be implemented in a more disorganized, less efficient, and likely more costly manner. In addition, this alternative would not meet any of the objectives of the 2018 Master Plan.

CEQA Guidelines Section 15126.6(e)(2) also requires that an EIR identify another alternative as environmentally superior, besides the No Project Alternative. In this case, the next environmentally superior alternative would be the Reduced Footprint Alternative, which would reduce, but not eliminate, potential impacts to biological resources, cultural resources, geology/soils, hydrology/water quality, landform alteration/aesthetics, land use, noise, and public safety. However, this alternative would only achieve seven of the eight project objectives of the 2018 Master Plan. This project would not ensure that VWD facilities would be adequately sized for future water and wastewater demand. Water demand and wastewater generation in the VWD service area will continue to grow regardless of Master Plan implementation; therefore, this alternative would hinder the VWD from being able to meet future demand.

7

Chapter 7.0
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