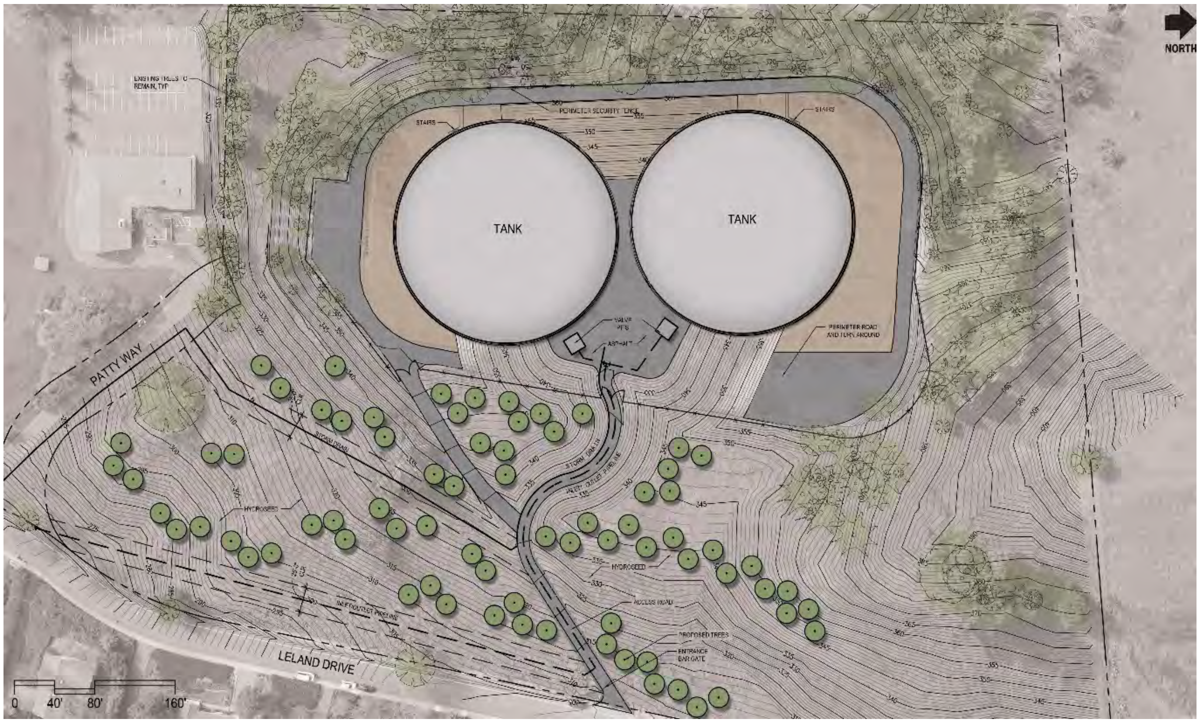
EAST BAY MUNICIPAL UTILITY DISTRICT

Leland Reservoir Replacement Project

Draft Environmental Impact Report

SCH #2016082082



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RMC water and environment

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January 2018

East Bay Municipal Utility District

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Draft Environmental Impact Report
Volume I

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Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	acre-feet
AFY	acre-feet per year
ASF	Age Sensitivity Factor
ATCM	Airborne Toxics Control Measure
AWSC	all-way stop-controlled intersection
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Basin Plan	San Francisco Bay Basin (Region 2) Water Quality Control Plan
BMPs	Best Management Practices
CAA	Clean Air Act
CAFÉ	Corporate average fuel economy
Cal/OSHA	California Department of Occupational Safety and Health Administration
CalEEMod®	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
CALFIRE	California Department of Forestry and Fire Protection
CalVeg	Classification and Assessment with Landsat of Visible Ecological Groupings
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCCSD	Central Contra Costa Sanitary District
CCCTA	Central Contra Costa Transit Authority
CCCWP	Contra Costa Clean Water Program
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CCWD	Calaveras County Water District
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey

CH_4	methane
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act (Federal)
CWP	County Watershed Program
CY	cubic yards
dB	decibel
dBA	A-weighted decibel
dbh	diameter at breast height
DOT	U.S. Department of Transportation
DPM	Diesel Particulate Matter
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances and Control
DWR	Department of Water Resources
EB	eastbound
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
EMFAC2014	Emissions Estimator Model (2014 version)
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
EPP	Existing Plus Project
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GWh	gigawatt hours
HI	Hazard Index
I-680	Interstate 680
IPaC	Information for Planning and Conservation

IS	Initial Study
L_{10}	Noise level excceded 10 percent of the specified time period
L_{50}	Noise level excceded 50 percent of the specified time period
L_{90}	Noise level excceded 90 percent of the specified time period
L_{dn}	day-night average noise level
L_{eq}	energy-equivalent noise level
$L_{eq}24$	Steady-state acoustical energy level measured over a 24-hour period
L_{max}	maximum noise level
LOS	Level of Service
LSBTA	Lamorinda School Bus Transportation Agency
MBTA	Migratory Bird Treaty Act
MCE	Marin Clean Energy
MEI	Maximally Exposed Individual
MG	million gallons
mg/kg	Milligrams per kilogram; same unit of measurement as ppm
MMRP	Mitigation Monitoring and Reporting Program
MSDS	Material Safety Data Sheet
MT	Metric Tons
MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standard
NAHC	Native American Heritage Commission
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NOC	Notice of Completion
NOP	Notice of Preparation
NO	Nitrogen Oxide
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides ($NO + NO_2$)
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Federal Occupational Safety and Health Administration
PCBs	Polychlorinated biphenyls
PG&E	Pacific Gas & Electric
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than 10 Micrometers in Aerodynamic Diameter
$PM_{2.5}$	Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Diameter

ppm	parts per million
PPV	Peak particle velocity
PRC	Public Resources Code (California)
RCRA	Resource Conservation and Recovery Act
RMC	RMC Water and Environment
ROG	Reactive Organic Gas
ROW	right-of-way
RSL’s	Regional Screening Levels
RWQCB	Regional Water Quality Control Board
SAAQS	State Ambient Air Quality Standards (California)
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SHM	Seismic Hazard Mapping
SO_2	Sulfur dioxide
SR 24	State Route 24
SSSC	side street stop-controlled intersection
STLC	Soluble Threshold Limit Concentration
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
TCLP	Toxicity Characteristic Leaching Procedure
TIS	Transportation Impact Study
TM	Technical Memorandum
TMDL	Total Maximum Daily Load
TTLC	Total Threshold Limit Concentration
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	Unied States Geological Survey
V/C	Volume/Capacity
VDEC	Verified Diesel Emission Control Strategy
VOCs	Volatile Organic Compounds
WET	Whole Effluent Toxicity
WTP	Water Treatment Plant
WTTIP	Water Treatment and Transmission Improvement Program
$\mu g/m^3$	Microgram per Cubic Meter

Executive Summary

ES-1 Introduction

The East Bay Municipal Utility District (EBMUD) is proposing the Leland Reservoir Replacement Project (Project), which includes replacement of the existing 18-million-gallon (MG) open-cut Leland Reservoir with two new 8-MG prestressed concrete tanks within the existing reservoir basin and replacing approximately 1,700 linear feet of existing 30-inch and 36-inch transmission pipeline that currently runs beneath the reservoir with approximately 2,700 linear feet of 36-inch pipeline to be constructed in Windsor Drive, Condit Road and a short section of Leland Drive between Condit Road and Meek Place, and approximately 950 feet of pipeline within the Leland Reservoir site as shown on **Figure ES-1**. The current access road from Leland Reservoir up to and around the reservoir perimeter would be improved. Construction would involve demolition of the existing reservoir structure, removing vegetation and breaching the reservoir embankment to provide access into the existing reservoir basin, constructing two new tanks within the basin, and landscaping the site following construction. A new 30-inch storm drain pipeline would also be installed on site and connect to the City of Lafayette's existing storm drain system at the intersection of Leland Drive and Patty Way. Construction would require stockpiling of soil from the embankment on the eastern portion of the site adjacent to Leland Drive.

EBMUD prepared an Initial Study (IS) to provide the public and Responsible and Trustee Agencies reviewing the Project with information about the Project's potential impacts on the environment. The IS evaluated the Project relative to various environmental resource areas and identified potentially significant impacts to several resource areas that required further study to determine whether such impacts are significant, and if so, whether they can be mitigated to less than significant levels. Based on the IS completed for the Project, the following areas of potentially significant environmental impact are addressed in detail in this Environmental Impact Report (EIR): Aesthetics, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use, Noise, Recreation, and Traffic and Transportation. Potential cumulative impacts and potential for growth inducement are addressed; alternatives, including the No Project Alternative, are evaluated.

Based on the evaluation of impacts in the IS, it was determined that the Project would have no impacts on Agriculture and Forestry Resources, Mineral Resources, Population and Housing, Public Services, and less than significant impacts on Utilities and Service Systems. Therefore, a detailed discussion of these resources has been excluded from this EIR.

EBMUD is the lead agency for compliance with the California Environmental Quality Act (CEQA) environmental review process for the Project.

The EIR considers the Project, as described above. In addition, the EIR considers the following alternatives:

- No Project Alternative: This alternative assumes that the Leland Reservoir would not be replaced, and the current reservoir would remain in service. This option would require substantial repair work to the existing roof.
- New Leland Pressure Zone Reservoir Project Alternative: This alternative would involve construction of a new tank on a 10-acre site on a hillside east of Interstate 680 (I-680) and south of Rudgear Road in Walnut Creek. The new tank would accommodate about half of the capacity of the current reservoir, which would allow EBMUD to construct a single new tank at the Leland Reservoir site, instead of two tanks. This would shorten the duration of construction at the Leland site and reduce the amount of soil that would have to be hauled off the site.

ES-2 Project Location

The Leland Reservoir site is in Lafayette, opposite 1050 Leland Drive. The Project would include pipeline construction in Windsor Drive between Old Tunnel Road and Condit Road, Condit Road between Windsor Drive and Leland Drive, and Leland Drive between Condit Road and Meek Place, as shown in **Figure ES-1**.

ES-3 Purpose and Need

Replacement of the Leland Reservoir is required as the reservoir has reached the end of its useful life, the unsafe condition of the precast concrete panel roof and roofing system and the criticality of the facility. Issues also include rainwater ponding on the roof, obsolete mechanical and electrical equipment, and inaccessibility of a critical pipeline that runs beneath the existing reservoir. Replacement would remove the reservoir from the jurisdiction of the Division of Safety of Dams (DSOD), which currently requires the reservoir to operate at a restricted level, thus limiting reservoir capacity.

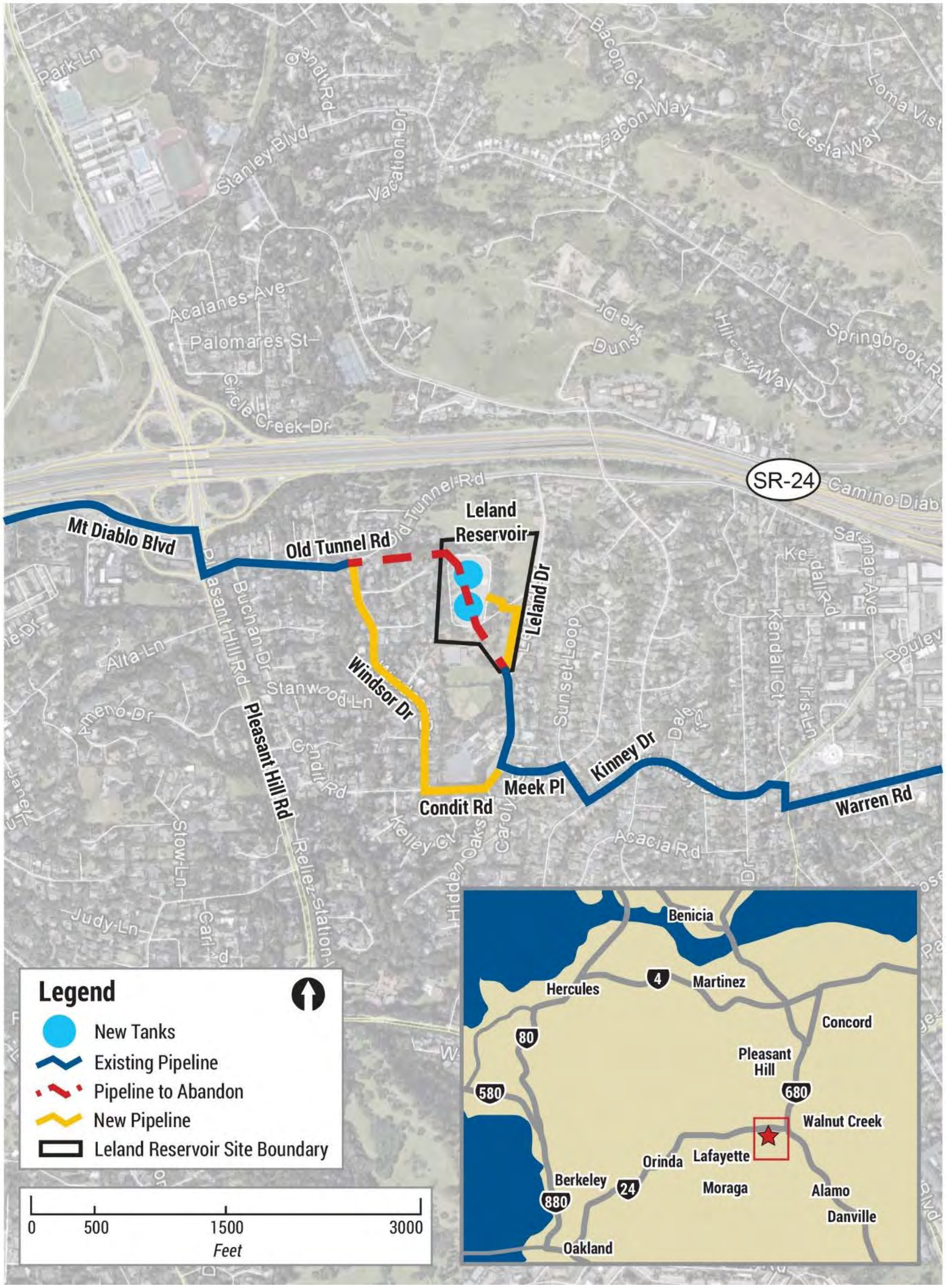
ES-4 CEQA Objectives

The specific primary operational and construction impact objectives of the Project are as presented in **Table ES-1**.

Table ES-1: Project Objectives

Primary Operational Objectives
• Improve water service reliability by adding flexibility via two reservoirs where each can be operated independently if needed. • Improve maintenance and repair accessibility: o By adding capability to take one reservoir out of service while the other remains. o By relocating the inaccessible backbone transmission pipeline so that the pipeline is not beneath the existing reservoir. • Improve water quality • Improve redundancy and reliability for future outages • Maintain a safe facility while reducing the monitoring, permitting and other operational costs associated with managing a dam. • Maximize the useful life of existing facilities in a manner that reduces costs for customers. • Minimize life-cycle costs (capital, operating, and maintenance) to EBMUD's customers.
Construction Impact Objectives
• Minimize environmental impacts on the community during construction. • Maintain a similar and acceptable aesthetic site environment post construction. • Reuse or recycle building materials on site to the extent feasible, including concrete demolition materials and excavated earth. • Maintain water service and emergency flows during construction. • Protect the local community from construction hazards. • Provide safe travel routes for motorists and pedestrians • Provide safe construction site conditions

Figure ES-1: Project Vicinity



Source: Compiled by RMC, a Woodard & Curran Company 2016

ES-5 Summary of Impacts

Table ES-2 below provides a summary of potential Project impacts by environmental resource topic area, and EBMUD Practices and Procedures that would be applied for the Project. **Table ES-3** is a summary of all significant impacts following implementation of EBMUD's Practices and Procedures and required mitigation measures identified for the Project, as well as impacts identified as less than significant. For all significant impacts, the significance after mitigation is determined.

Table ES-2: Summary of Impacts and EBMUD Practices and Procedures

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
Aesthetics			
AES-1: Substantially degrade the existing visual character or quality of the site and its surroundings.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 1.1** B. Site Activities 1. No debris including, but not limited to, demolition material, treated wood waste, stockpile leachate, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into storm drains or surface waters or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan. 2. Excess material shall be disposed of in locations approved by the Engineer consistent with all applicable legal requirements and disposal facility permits. 3. Do not create a nuisance or pollution as defined in the California Water Code. Do not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board, as required by the Clean Water Act. 4. Clean up all spills and immediately notify the Engineer in the event of a spill. 5. Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans. 6. Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work and staging areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of Work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable, in the Engineer's opinion. 7. Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material.	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		8. Furnish all labor, equipment, and means required and shall carry out effective measures wherever, and as often as necessary, to prevent Contractor’s operations from causing visible dust emissions to leave the work areas. These measures shall include, but are not limited to, providing additional watering equipment, reducing vehicle speeds on haul roads, restricting traffic on haul roads, covering haul vehicles, and applying a dust palliative to well-traveled haul roads. The Contractor shall provide the specifications of the dust palliative for Engineer approval prior to use. The Contractor shall be responsible for damage resulting from dust originating from its operations. The dust abatement measures shall be continued for the duration of the Contract. Water the site in the morning and evening, and as often as necessary, and clean vehicles leaving the site as necessary to prevent the transportation of dust and dirt onto public roads. Dust control involving water shall be done in such a manner as to minimize waste and runoff from the site.	
		9. Construction staging areas shall be graded, or otherwise protected with Best Management Practices (BMPs), to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters including wetlands, drainages, and creeks.	
		10. All construction equipment shall be properly serviced and maintained in good operating condition to reduce emissions. Contractor shall make copies of equipment service logs available upon request.	
		11. Any chemical or hazardous material used in the performance of the Work shall be handled, stored, applied, and disposed of in a manner consistent with all applicable federal, state, and local laws and regulations.	
		12. Contaminated materials excavated and/or removed from the construction area shall be disposed of in a manner consistent with all applicable local, state, and federal laws and regulations.	
		Section 3.7, Protection of Native and Non-native Protected Trees	
		A. Tree Protection	
		1. Locations of trees to be removed and protected are shown in the construction drawings. Pruning and trimming shall be completed by the Contractor and approved by the Engineer. Pruning shall adhere to the Tree Pruning Guidelines of the International Society of Arboriculture.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		2. Erect exclusion fencing five feet outside of the drip lines of trees to be protected. Erect and maintain a temporary minimum 3-foot high orange plastic mesh exclusion fence at the locations as shown in the drawings. The fence posts shall be six-foot minimum length steel shapes, installed at 10-feet minimum on center, and be driven into the ground. The Contractor shall be prohibited from entering or disturbing the protected area within the fence except as directed by the Engineer. Exclusion fencing shall remain in place until construction is completed and the Engineer approves its removal. 3. No grading, construction, demolition, trenching for irrigation, planting or other work, except as specified herein, shall occur within the tree protection zone established by the exclusion fencing installed shown in the drawings. In addition, no excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the tree protection zone. 4. In areas that are within the tree drip line and outside the tree protection zone that are to be traveled over by vehicles and equipment, the areas shall be covered with a protective mat composed of a 12-inch thickness of wood chips place until construction is completed and the Engineer approves its removal. 5. Tree roots exposed during trench excavation shall be pruned cleanly at the edge of the excavation and treated to the satisfaction of a certified arborist provided by the District. 6. Any tree injured during construction shall be evaluated as soon as possible by a certified arborist provided by the District, and replaced as deemed necessary by the certified arborist. **EBMUD Standard Construction Specification 01 74 05, Cleaning** 3.1 GENERAL A. At all times maintain areas covered by the Contract and public properties free from accumulations of waste, debris, and rubbish caused by construction operations. B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. Do not burn or bury rubbish and waste materials on project site. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways. C. Use only cleaning materials recommended by manufacturer of surface to be cleaned.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		D. Use cleaning materials only on surfaces recommended by cleaning material manufacturers. 3.2 CLEANING DURING CONSTRUCTION A. During execution of work, clean site and public properties and legally dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. All soil and any other material tracked onto the streets by the Contractor shall be cleaned immediately. The Contractor shall comply with all rules and regulations as applicable for its cleaning method. B. Dispose of all refuse off District property as often as necessary so that at no time shall there be any unsightly or unsafe accumulation of rubbish. 1. Pine needles, leaves, sticks, and other vegetative debris on the ground shall be removed if they are in the way of construction, present a safety hazard, or present a fire hazard. Otherwise they shall be left in place during construction and final cleaning C. Wet down dry materials and rubbish to lay dust and prevent blowing dust. D. Provide approved containers for collection and disposal of waste materials, debris, and rubbish.	
Air Quality			
AIR-1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 1.3 Submittals** E. Dust Control and Monitoring Plan 1. Submit a plan detailing the means and methods for controlling and monitoring dust generated by demolition and other work on the site for the Engineer's acceptance prior to any work at the jobsite. The plan shall comply with all applicable regulations including but not limited to the Bay Area Air Quality Management District (BAAQMD) visible emissions regulation and Public Nuisance Rule. The plan shall include items such as mitigation measures to control fugitive dust emissions generated by construction activities. The Plan shall outline best management practices for preventing dust emissions, provide guidelines for training of employees, and procedures to be used during operations and maintenance activities. The plan shall also include measures for the control of paint overspray generated during the painting of exterior surfaces. The plan shall detail the equipment and methods used to monitor compliance with the plan. The handling and disposal of water used in compliance with the Dust Control Plan shall be addressed in the Water Control and Disposal Plan.	LTS

		EBMUD Standard Construction Specification 01 35 44, Section 3.3 Dust Control and Monitoring B. Dust Control 1. Contractor shall implement all necessary dust control measures, including but not limited to the following: a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered minimum two times per day or as directed by the Engineer. b. Water and/or coarse rock all dust-generating construction areas as directed by Engineer to reduce the potential for airborne dust from leaving the site. c. Cover all haul trucks entering/leaving the site and trim their loads as necessary. d. Using wet power vacuum street sweepers to: 1) Sweep all paved access road, parking areas and staging areas at the construction site daily or as often as necessary. 2) Sweep public roads adjacent to the site at least twice daily or as often as necessary. e. The use of dry power sweeping is prohibited. f. All trucks and equipment, including their tires, shall be washed off prior to leaving the site. g. Gravel or apply non-toxic soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. h. Water and/or cover soil stockpiles daily. i. Site accesses to a distance of 100 feet from the paved road shall be treated with 12-inches layer of compacted coarse rock. j. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. k. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. l. Building pads shall be laid as soon as possible after grading. m. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation I s established.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		n. Wind breaks (e.g., fences) shall be installed on the windward sides(s) of actively disturbed areas of construction. Wind breaks should have a maximum 50 percent air porosity. o. The simultaneous occurrence of excavation, grading, and ground disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. p. All excavation, grading and/or demolition activities shall be suspended when average wind speeds exceed 20 mph q. All vehicle speeds shall be limited to fifteen (15) mph or less on the construction site and any adjacent unpaved roads. **Section 3.4, Emissions Control** A. Air Quality and Emissions Control 1. The Contractor shall ensure that line power is used instead of diesel generators at all construction sites where line power is available. 2. The Contractor shall ensure that for operation of any stationary, compression-ignition engines as part of construction, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards. 3. Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) shall be electrically powered unless the Contractor submits documentation and receives approval from the Engineer that the use of such equipment is not practical, feasible, or available. All portable engines and equipment units used as part of construction shall be properly registered with the California Air Resources Board or otherwise permitted by the appropriate local air district, as required. 4. Contractor shall implement standard air emissions controls such as: a. Minimize the use of diesel generators where possible. b. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations. Clear signage shall be provided for construction workers at all access points.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		c. Follow applicable regulations for fuel, fuel additives, and emission standards for stationary, diesel-fueled engines. d. Locate generators at least 100 feet away from adjacent homes and ball fields. e. Perform regular low-emission tune-ups on all construction equipment, particularly haul trucks and earthwork equipment. 5. Contractor shall implement the following measures to reduce greenhouse gas emissions from fuel combustion: a. On road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals. b. Construction equipment engines shall be maintained to manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. c. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of Oxide of Nitrogen (NOx) and Particulate Matter (PM). d. Demolition debris shall be recycled for reuse to the extent feasible.	
AIR-3: Conflict with or obstruct implementation of the applicable air quality plan.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.3(B) Dust Control and Monitoring and 3.4(A), Emissions Control** (Details as previously listed)	LTS
AIR-4: Create objectionable odors affecting a substantial number of people.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.4(A), Emissions Control** (Details as previously listed)	LTS
AIR-5: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.3(B) Dust Control and Monitoring and 3.4(A), Emissions Control** (Details as previously listed)	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
Biological Resources			
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Nesting Special Status Bird Species and Special Status Bat Species	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.8, Protection of Birds Protected Under the Migratory Bird Treaty Act and Roosting Bats** A. The District will conduct biological reconnaissance in advance of construction and will conduct biologic monitoring during construction as necessary. B. Protected Species 1. If protected species or suitable habitat for protected species is found during biological reconnaissance surveys: a. Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by the District of up to one-day for site supervisors, foreman and project managers and up to 30-minutes for non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District-designated location, conducted by a qualified biologist provided by the District. The program will discuss all sensitive habitats and sensitive species that may occur within the project work limits, including the responsibilities of Contractor's construction personnel, applicable mitigation measures, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing or performing construction work, all Contractor personnel shall: 1) Sign a wallet card provided by the Engineer verifying that all Contractor construction personnel have attended the appropriate level of training relative to their position; have read and understood the contents of the training program; and shall comply with all project environmental requirements. 2) Display an environmental training hard hat decal (provided by the District after completion of the training) at all times. b. Birds Protected under the Migratory Bird Treaty Act (MBTA): 1) It is unlawful to pursue, hunt, take, capture, or kill any migratory bird without a permit issued by the U.S. Department of the Interior. 2) If construction commences between February 1 and August 31, during the nesting season, the District will conduct a preconstruction survey for nesting birds within 7 days prior to construction to ensure that no nest will be disturbed during construction.	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		3) If active nests of migratory bird species (listed in the MBTA) are found within the project site, or in areas subject to disturbance from construction activities, an avoidance buffer to avoid nest disturbance shall be constructed. The buffer size will be determined by the District in consultation with California Department of Fish and Wildlife (CDFW) and is based on the nest location, topography, cover and species' tolerance to disturbance. 4). If an avoidance buffer is not achievable, a qualified biologist provided by the District will monitor the nest(s) to document that no take of the nest (nest failure) has occurred. Active nests shall not be taken or destroyed under the MBTA and, for raptors, under the CDFW Code. If it is determined that construction activity is resulting in nest disturbance, work should cease immediately and the Contractor shall notify the Engineer who will consult with the qualified biologist and appropriate regulatory agencies. 5) If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the avoidance buffer for active nests may be removed. Nests initiated during construction (while significant disturbance from construction activities persist) may be presumed to be unaffected, and only a minimal buffer, determined by District's biologist, would be necessary. c. Roosting Bats**:** 1) If construction commences between March 1 and July 31, during the bat maternity period, the District will conduct a preconstruction survey for roosting bats within two weeks prior to construction to ensure that no roosting bats will be disturbed during construction. 2) If roosting surveys indicate potential occupation by a special-status bat species, and/or identify a large day roosting population or maternity roost by any bat species within 200 feet of a construction work area, a qualified biologist provided by the District will conduct focused day- and/or night-emergence surveys, as appropriate. 3) If active maternity roosts or day roosts are found within the project site, or in areas subject to disturbance from construction activities, an avoidance buffers shall be constructed. The buffer size will be determined by the District in consultation with CDFW.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		4) If a non-breeding bat roost is found in a structure scheduled for modification or removal, the bats shall be safety evicted, under the direction of a qualified biologist provided by the District in consultation with CDFW to ensure that the bats are not injured. 5) If preconstruction surveys indicate that no roosting is present, or potential roosting habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by roosting bats, or that are located outside the avoidance buffer for active roosting sites may be removed. Roosting initiated during construction is presumed to be unaffected, and no buffer would be necessary.	
BIO-2: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.7, Protection of Native and Non-native Protected Trees** (Details as previously listed)	LTS
Cultural Resources			
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.9, Protection of Cultural and Paleontological Resources** A. Confidentiality of Information on Cultural Resources 1. Prior to, or during the course of the Contractor's performance under this contract, the Contractor may obtain information as to the location and/or nature of certain cultural resources, including Native American artifacts and remains. This information may be provided to the Contractor by the District or a third party, or may be discovered directly by the Contractor through its performance under the contract. All such information shall be considered "Confidential Information" for the purposes of this Article. 2. The Contractor agrees that the Contractor, its subcontractors of any tiers, and their respective agents and employees shall not publish or disclose any Confidential Information to any person, unless specifically authorized in advance, in writing by the Engineer. 3. The indemnity obligations of Document 00 72 00 - General Conditions Article 4.7.5 shall apply to any breach of this Article.	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		B. Conform to the requirements of statutes as they relate to the protection and preservation of cultural and paleontological resources. Unauthorized collection of prehistoric or historic artifacts along the Work Area, or at Work facilities, is strictly prohibited. C. Before beginning construction, all Contractor construction personnel shall attend a cultural resources training course provided by the District of up to two hours for site supervisors, foreman, project managers, and non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District designated location, conducted by a qualified archaeologist provided by the District, or by District staff. The program will discuss cultural resources awareness within the project work limits, including the responsibilities of Contractor’s construction personnel, applicable mitigation measures, confidentiality, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing the construction site, or performing site work, all Contractor personnel shall: 1. Sign an attendance sheet provided by the Engineer verifying that all Contractor construction personnel have attended the appropriate level of training; have read and understood the contents of the training; have read and understood the contents of the “Confidentiality of Information on Archaeological Resources” and shall comply with all project environmental requirements. D. In the event that potential cultural or paleontological resources are discovered at the site of construction, the following procedures shall be instituted: 1. Discovery of prehistoric or historic-era archaeological resources requires that all construction activities shall immediately cease at the location of discovery and within 100 feet of the discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel, and shall not recommence work until authorized to do so by the Engineer.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		b. The District will retain a qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical resource as defined by CEQA (or a historic property as defined by the National Historic Preservation Act of 1966, as amended), construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the District, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric, who shall be identified by the Native American Heritage Commission [NAHC]). In consultation with the District, the archaeologist (and Native American representative) will determine when construction can resume. 2. Discovery of human remains requires that all construction activities immediately cease at, and within 100 feet of the location of discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel and shall not recommence work until authorized to do so by the Engineer. b. The District will contact the County Coroner to determine whether or not the remains are Native American. If the remains are determined to be Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects. 3. Discovery of paleontological resources requires that all construction activities immediately cease at, and within 100 feet of the location of discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified paleontologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the Engineer, and shall not recommence work until authorized to do so by the Engineer.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		b. The District will retain a qualified paleontologist to inspect the findings within 24 hours of discovery. The qualified paleontologist, in accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), will assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and management. If it is determined that construction activities could damage a paleontological resource as defined by the Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), construction shall cease in an area determined by the paleontologist until a salvage, treatment, and future monitoring and management plan has been prepared, approved by the District, and implemented to the satisfaction of the paleontologist. In consultation with the paleontologist, the District will determine when construction can resume. E. If the District determines that the find requires further evaluation, at the direction of Engineer, the Contractor shall suspend all construction activities at the location of the find and within a larger radius, as required.	
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.9, Protection of Cultural and Paleontological Resources** (Details as previously listed)	LTS
CUL-4: Disturb any human remains, including those interred outside of dedicated cemeteries.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.9, Protection of Cultural and Paleontological Resources** (Details as previously listed)	LTS
CUL-5: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.9, Protection of Cultural and Paleontological Resources** (Details as previously listed)	LTS
Energy			
EN-1: Potential to result in a significant consumption of energy.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.4(A), Emissions Control** (Details as previously listed)	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
Geology and Soils			
GEO-1: Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides.	PS	**EBMUD Reservoir Design Guide** EBMUD's Reservoir Design Guide establishes the minimum requirements to be followed in the design of EBMUD above and below ground drinking water reservoirs. The Design Guide provides a list of goals, with each project design team using its engineering judgment for project-specific applications. Chapter 4 includes criteria specific to the design of prestressed concrete reservoirs, which is the type of reservoir design proposed for the Leland Reservoir site. The Design Guide requires completion of a geotechnical investigation during design and incorporation of geotechnical design recommendations in project plans and specifications. **EBMUD Engineering Standard Practice 512.1, Water Main and Services Design Criteria** This Engineering Standard Practice establishes basic criteria for the design of water pipelines and establishes minimum requirements for pipeline construction materials. **EBMUD Engineering Standard Practice 550.1, Seismic Design Requirements** This Engineering Standard Practice addresses seismic design of the pipelines to withstand seismic hazards including ground shaking, and requires that EBMUD establish project specific seismic design criteria for pipelines with a diameter of greater than 12-inches, such as the water pipelines that would be installed as part of the Project.	LTS
GEO-2: Potential to result in substantial soil erosion or the loss of topsoil.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 1.1(B), Site Activities** (Details as previously listed)	LTS
GEO-3: Potential to be located on a geologic unit or soil that is unstable or that would become unstable as a result of the proposed project, and potentially could result in on-site or off-site landslides, lateral spreading, subsidence (i.e. settlement), liquefaction, or collapse.	PS	**EBMUD Standard Construction Specification 01 35 24, Section 1.3(C), Excavation Safety Plan** 1. Submit detailed plan for worker protection and control of ground movement for the Engineer's review prior to any excavation work at jobsite. Include drawings and details of system or systems to be used, area in which each type of system will be used, de-watering, means of access and egress, storage of materials, and equipment restrictions. If plan is modified or changed, submit revised plan. 2. All surface encumbrances that are located and determined to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		3. Tunnel work shall comply with the Tunnel Safety Orders	
GEO-4: Potential to be located on expansive or corrosive soils that would create substantial risks to life or property.	PS	**EBMUD Engineering Standard Practice 512.1, Water Main and Services Design Criteria** (as previously listed) **EBMUD Engineering Standard Practice 550.1, Seismic Design Requirements** (as previously listed)	LTS
Greenhouse Gas Emissions			
GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	**EBMUD Standard Construction Specification 01 35 44, Section 3.4(A)** (Details as previously listed)	LTS
GHG-2: Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	**EBMUD Climate Mitigation Action Plan and Climate Change Monitoring and Response Plans.** These plans ensure that EBMUD operations are consistent with the California Climate Change Scoping Plan.	LTS
Hazards and Hazardous Materials			
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 1.1(B), Controls on Site Activities** (Details as previously listed) **Section 1.3(A), Stormwater Management** 1. Construction General Permit a. The Contractor shall create a user account on the SWRCB's Storm Water Multi-Application & Report Tracking System (SMARTS). The Engineer will link the Contractor to the District's account as a Data Submitter. The Contractor shall prepare and upload to SMARTS Permit Registration Documents (PRDs), including, but not limited to, a Notice of Intent, a Site Specific Risk Assessment, a Site Map, and a Storm Water Pollution Prevention Plan (SWPPP) for the Engineer's review which meets the requirements of the SWRCB, for coverage under the General Construction Stormwater Permit (Order No. 2009-0009-DWQ) and amendments thereto. Upon acceptance by the Engineer, the Engineer will electronically certify and file the PRDs to gain permit coverage and the	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		Contractor shall submit the registration and the subsequent annual fees as required by the SWRCB. b. The Contractor shall be responsible for complying with the requirements of the Construction General Permit. The Contractor’s responsibilities include, but are not limited to, providing qualified professionals as described in the permit to prepare and certify all permit-required documents/submittals and to implement effective stormwater/non-stormwater management practices, and conducting inspections and monitoring as required by the permit. The Contractor shall, in compliance with the permit, prepare and upload to SMARTS all required documents, photos, data, and/or reports (including the Annual Reports) and ensure permit coverage termination upon construction completion by preparing a Notice of Termination on SMARTS. The Contractor shall inform the Engineer when documents/reports are available on SMARTS for Engineer certification and submittal. 2. Storm Water Pollution Prevention Plan a. Submit a Stormwater Pollution Prevention Plan that describes measures that shall be implemented to prevent the discharge of contaminated storm water runoff from the jobsite. Contaminants to be addressed include, but are not limited to, soil, sediment, concrete residue, pH less than 6.5 or greater than 8.5, and chlorine residual and all other contaminants known to exist at the jobsite location as described in Document 00 31 24 - Material Assessment Information. **Section 1.3(B), Water Control and Disposal Plan** 1. The Contractor shall submit a detailed Water Control and Disposal Plan for the Engineer's acceptance prior to any work at the jobsite. a. Plan shall comply with all requirements of the Specification and applicable discharge permits. Table 1 summarizes discharge permits that may be applicable to District projects.	

TABLE 1 - Discharge Permit Summary Table

Permit*	Permit Coverage	Permit Owner
SWRCB Order WQ 2014-0194-DWQ/General Order No. CAG 140001 – NPDES Permit for Drinking Water System Discharges	Discharges from a drinking water system of water that has been dedicated for drinking water purposes	EBMUD
SWRCB Order No. 2012-0006-DWQ NPDES No. CAS 000002 – Construction General Permit	Discharges from construction sites and linear underground/overhead projects greater than 1 acre	EBMUD – Contractor will provide Qualified SWPPP Practitioner/ Developer
Sanitary Sewer Discharge Permit	Publicly Owned Treatment Works approved discharges	Contractor

* The most recent version of applicable permits shall be referenced for compliance.

b. Contractor shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation in the receiving waters.

2. Drinking Water System Discharges

a. Plan shall include the estimated flow rate and volume of all proposed discharges to surface waters, including discharges to storm drains. All receiving waters shall be clearly identified.

b. Contractor shall track all discharges directly to a surface water body or a storm drain system that drains to a surface water body. A record consisting of discharge locations and volumes shall be submitted to the Engineer prior to Contract Acceptance.

c. A monitoring program is required for drinking water system discharges greater than 325,850 gallons in conformance with Attachment E, Monitoring and Reporting Program, of the General Drinking Water Discharges Permit, when the water will be discharged either directly into a surface water body or a storm drain system that drains to a surface water body. A record consisting of discharge locations, volumes and Water Quality (WQ) data shall be submitted to the Engineer. The Planned Discharge Tracking Form, attached to the end of this section, may be used to fulfill this requirement. All monitoring results shall be submitted to the Engineer prior to Contract Acceptance.

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		1) Contractor shall notify the Engineer, at least one week prior to the start of a planned discharge equal to or greater than 325,850 gallons, of the following: a) The discharge start date; b) The discharge location and the applicable receiving water; c) The flow rate and volume to be discharged; and d) The reason(s) for discharge. d. Contractor shall dechlorinate all drinking water system discharges to achieve a total chlorine residual concentration of < 0.1 mg/L measured with a handheld chlorine meter utilizing a US EPA approved method and provide effective erosion & sediment control to achieve a visual turbidity concentration of ≤ 100 NTU by implementing BMPs which meet the District minimum standards (see Figure 1 attached to the end of this section) or better. e. Instead of discharging to surface waters, where feasible, Contractor shall beneficially reuse water derived from drinking water systems as defined in the General Drinking Water Discharges Permit. Potential reuse strategies include, but are not limited to, landscape irrigation, agricultural irrigation, dust control, and discharge to stormwater capture basins or other groundwater recharge systems. Contractor shall do so without impacting property or the environment. Contractor shall provide a record of reuse location(s) and volume(s) and submit it to the Engineer prior to Contract Acceptance. f. Contractor shall ensure that the pH level of any discharges shall not be depressed below 6.5, nor elevated above 8.5. If there is potential for discharges to be below 6.5 or above 8.5, Contractor shall employ pH adjustment best management practices to ensure discharges are within the range of 6.5 and 8.5. Contractor shall conduct onsite field measurements for pH per quality assurance and quality control (QA/QC) protocol that conform to U.S. EPA guidelines, or procedures approved by the American Water Works Association or other professional drinking water industry association. Contractor shall submit all monitoring results to the Engineer prior to Contract Acceptance. 3. Non-Stormwater Discharges a. Plan shall describe measures for containment, handling, treatment (as necessary), and disposal of discharges such as groundwater (if encountered), runoff of water used for dust control, stockpile leachate, tank heel water, wash water, sawcut slurry, test water and construction water or other liquid that has been in contact with any interior surfaces of District facilities. Contractor shall provide the Engineer with containment, handling, treatment and disposal designs and a sampling & analysis plan for approval before	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		commencing the Work. Sampling and analysis shall be in conformance with Sections 1.3 (K) Analytical Test Results and 3.1 SAMPLING AND ANALYSIS. 4. Sanitary Sewer Discharges a. It is District policy to send superchlorinated discharges from pipeline disinfection to the sanitary sewer system. Plan shall include a sampling and analytical program for superchlorinated discharges in conformance with the Sanitary Sewer Discharge Permit. All monitoring results shall be submitted to the Engineer prior to the end of the Work. b. Obtain and provide to the Engineer documentation from the agency (e.g., wastewater treatment plant, local sewer owner) having jurisdiction, authorizing the Contractor to dispose of the liquid and describing the method of disposal. Discharges destined for the District’s main wastewater treatment plant in Oakland can reference Special Discharge Permit (SDP) #50333261, issued to the District’s Regulatory Compliance Office, when obtaining authorization from the pertinent local jurisdiction that owns the sewers to be used. Contractor shall, prior to the end of the Work, report to the Engineer the volumes of all discharges performed pursuant to the said SDP along with copies of any profile forms and/or correspondence between Contractor and disposal facility. **Section 1.3(C), Construction and Demolition Waste Disposal Plan** 1. Prepare a Construction and Demolition Waste Disposal Plan and submit a copy of the plan for the Engineer's acceptance prior to disposing of any material (except for water wastes which shall be addressed in the Water Control and Disposal Plan). a. The plan shall identify how the Contractor will remove, handle, transport, and dispose of all materials required to be removed under this contract in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. b. The Contractor shall procure the necessary permits required by the local, state, and federal agencies having jurisdiction over the handling, transportation, and disposal of construction and demolition waste. c. Include a list of reuse facilities, recycling facilities and processing facilities that will be receiving recovered materials. d. Identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the State of California and local ordinance and regulations).	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		e. Identify how the Contractor will comply with The California Department of Toxic Substances Control's (DTSC) Alternative Management Strategies (AMS) when handling and disposing of treated wood waste (TWW) in compliance with 22 CCR 66261.9.5. f. TWW records including but not limited to manifests, bills of lading should be submitted to the Engineer within 5 working days of off-haul. Records should include: (1) name and address of the TWW facility to which the TWW was sent; (2) estimated weight of TWW, or the weight of the TWW as measured by the receiving TWW facility; and (3) date of the shipment of TWW. (Cal. Code Regs., tit. 22, Sections 67386.8(a) and (e)(1)). g. List the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials. h. Identify each type of waste material to be reused, recycled or disposed of and estimate the amount, by weight. i. Plan shall include the sampling and analytical program for characterization of any waste material, as needed, prior to reuse, recycle or disposal. 2. Materials or wastes shall only be recycled, reused, reclaimed, or disposed of at facilities approved of by the District. 3. Submit permission to reuse, recycle, reclaim, or dispose of material from reuse, recycling, reclamation, or disposal site owner along with any other information needed by the District to evaluate the acceptability of the proposed reuse, recycling, or disposal site and obtain acceptance of the Engineer prior to removing any material from the project site. 4. All information pertinent to the characterization of the material or waste shall be disclosed to the District and the reuse, recycling, reclamation, or disposal facility. Submit copies of any profile forms and/or correspondence between the Contractor and the reuse, recycling, reclamation, or disposal facility. 5. Submit name and Environmental Laboratory Accreditation Program Certificate number of laboratory that will analyze samples for suspected hazardous substances. Include statement of laboratory's certified testing areas and analyses that laboratory is qualified to perform. Submit prior to any laboratory testing. **Section 1.3(D), Spill Prevention and Response Plan** 1. Submit plan detailing the means and methods for preventing and controlling the spilling of known hazardous substances used on the jobsite or staging areas. The plan shall include a list of the hazardous substances proposed for use or generated by the Contractor on site, including petroleum products, and measures that will be taken to	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		prevent spills, monitor hazardous substances, and provide immediate response to spills. Spill response measures shall address notification of the Engineer and appropriate agencies including phone numbers; spill-related worker, public health, and safety issues; spill control, and spill cleanup. 2. Submit a Material Safety Data Sheet (MSDS) for each hazardous substance proposed to be used prior to delivery of the material to the jobsite. **EBMUD Standard Construction Specification 01 35 24, Section 1.3(B), Project Health and Safety Plan** 1. Submit prior to start of the Work for the Engineer's review a Project Safety and Health Plan for the Work to be performed only if actual, potential, or anticipated hazards include: a) hazardous substances; b) fall protection issues; c) confined spaces; d) trenches or excavations; or, e) lockout/tagout. If the actual, potential, or anticipated hazards do not include one or more of these five hazards, no Plan is required. 2. Submit prior to start of Work the name of individual(s) who has been designated as: a. Contractor's Project Safety and Health Representative b. Submit principal and alternate Competent/Qualified Persons for: 1) scaffolding; 2) fall protection systems and equipment; and 3) employee protective systems for trenches and excavations. c. Qualified person to conduct and take samples and air measurements of known or suspect hazardous substance for personnel and environmental exposure. Sample results shall be submitted to the Engineer in writing and electronic format. 3. Plan shall include an emergency action plan in the event of an accident, or serious unplanned event (e.g.: gasoline break, fire, structure collapse, etc.) that requires notifying any responsive agencies (e.g.: fire departments, PG&E, rescue teams, etc.). **Section 1.3(C), Excavation Safety Plan** (Details as previously listed)	

EBMUD Standard Construction Specification 02 83 13, Lead Hazard Control Activities

Section 1.1 COMPLIANCE AND INTENT

A. Furnish all labor, materials, facilities, equipment, services, employee training and testing, permits, and agreements necessary to perform the lead removal in accordance with these specifications and with the latest regulations from the U.S. Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Air Quality Management District with authority over the project, the Cal/EPA Department of Toxic Substance Control, the California Occupational Safety and Health Administration (Cal/OSHA), and other federal, state, county, and local agencies. Whenever there is a conflict or overlap of the above references, the most stringent provision is applicable.

B. During demolition procedures, the Contractor shall protect against contamination of soils, water, adjacent buildings and properties, and the airborne release of hazardous materials and dusts. The costs associated with the implementation of controls will be incurred by the Contractor.

C. Any information developed from exploratory work done by the District and any investigation done by the Contractor to acquaint himself with available information will not relieve the Contractor from the responsibility of properly estimating the difficulty or cost of successfully performing the work. The District is not responsible for any conclusions or interpretations made by the Contractor based on the information made available by the District or District's representative.

D. Hazardous materials uncovered during the demolition activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests shall be furnished to the Engineer as per Section 01 35 44, Environmental Requirements. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose.

Section 1.2 Scope of Work

A. The work covered by this specification includes the handling, removal, and proper disposal of lead-containing coating as required

B. The Contractor shall perform all work according to the procedures outlined in these specifications.

C. The hazardous materials removal and disposal include the following:

1. Properly remove and dispose of all lead-containing material as part of the demolition and disposal of the reservoir tank.

		EBMUD Procedure 711, Hazardous Waste Removal The purpose of this procedure is to define hazardous waste and establish responsibilities for removal of hazardous wastes from District facilities. Responsibilities are delineated as follows: The Unit Supervisor or Project Manager (or his/her designee) • Determines if the Waste is a Hazardous Waste, either with assistance from the Environmental Compliance Section (ECS) or based on knowledge. • Contacts ECS staff to coordinate Waste disposal, reuse, or recycling issues. • Provides all known information about the Waste asked for by the ECS. • Assists in the determination of the analyses to be performed by the District Laboratory or other certified laboratory based on his/her knowledge of the Waste. • Labels, stores, inspects, and maintains inventory records for the Waste in an appropriate manner as directed by ECS. • Ensures that Waste is available for transportation when notified by the ECS that Waste collection is scheduled. • Helps the ECS coordinate interim storage of non-routine Hazardous Waste while it is being characterized for disposal. • Reviews Hazardous Waste manifests prepared by haulers, to confirm the accuracy of information. • Signs the Hazardous Waste manifest indicating approval if authorized and trained by ECS. • Sends the signed Generator copy of the manifest to the ECS within seven (7) days of the off-haul date, unless previous agreement has been made with ECS and the hauler to send Generator copy directly to ECS. • Provides the ECS with a budget unit number and a job number. Environmental Compliance Section • Coordinates the appropriate steps to characterize the Waste. • Determines, with the help of the requesting department, what analyses are needed to classify the Waste. • Works with the District Laboratory and/or the Hazardous Waste contract hauler to analyze the Hazardous Waste or to assist in identifying other labs certified to perform the analysis.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		• Obtains Hazardous Waste acceptance documents (e.g., waste profile) from disposal facility and provides to generating department to be included with Hazardous Waste shipment, as needed. • Identifies and approves disposal, reuse or recycling method and disposal, reuse, or recycling facility. • Obtains and provides EPA generator identification number. • Identifies and/or manages companies providing Hazardous Waste management services (for sampling, hauling, and disposal) depending on District departmental needs. • Provides training and guidance to unit or project staff on Hazardous Waste handling and disposal requirements and Hazardous Waste manifest completion requirements. • Reviews completed and signed Hazardous Waste manifests prior to submittal to Department of Toxic Substances Control. • Tracks manifest in a database and generates reports and summaries as needed. • Provides other information as needed.	
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	PS	**EBMUD Standard Construction Specification 01 55 26, Section 3.1(G), Immediate access for emergency vehicles** G. For complete road closures, immediate emergency access to be provided if needed to emergency response vehicles.	PS
Hydrology and Water Quality			
HYD-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.	PS	**EBMUD Standard Construction Specification 01 35 44** **Sections 1.1(B), 1.3(A), 1.3(B), 1.3(D)** (Details as previously listed)	LTS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
HYD-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	PS	**EBMUD Standard Construction Specification 01 35 44** **Sections 1.1(B), 1.3(A), 1.3(D)** (Details as previously listed)	LTS
HYD-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 1.1(B), Controls on Site Activities** (Details as previously listed)	LTS
Noise			
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	**EBMUD Standard Construction Specification Work Restrictions 01 14 00, Section 1.8(A), Construction Noise** A. Noise-generating activities greater than 90 dBA (impact construction such as concrete breaking, concrete crushing, tree grinding, etc.) shall be limited to the hours of 8:00 a.m. and 4:00 p.m., Monday through Friday **EBMUD Standard Construction Specification 01 35 44, Section 3.6, Noise Control** A. Comply with sound control and noise level rules, regulations and ordinances as required herein and in the CEQA documents which apply to any work performed pursuant to the contract. B. Contractor is responsible for taking appropriate measures, including muffling of equipment, selecting quieter equipment, erecting noise barriers, modifying work operations, and other measures as needed to bring construction noise into compliance.	S

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		C. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler. D. Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks, as necessary. E. Truck operations (haul trucks and concrete delivery trucks) will be limited to the daytime hours specified in Section 01 14 00. F. Stationary noise sources (e.g. chippers, grinders, compressors) shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used. Enclosure opening or venting shall face away from sensitive receptors. Enclosures shall be designed by a registered engineer regularly involved in noise control analysis and design. G. Material stockpiles as well as maintenance/equipment staging and parking areas (all on-site) shall be located as far as practicable from residential receptors. H. If impact equipment (e.g., jack hammers, pavement breakers, rock drills etc.) is used during project construction, Contractor is responsible for taking appropriate measures, including but not limited to the following: 1. Hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves shall be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible. It is the Contractor’s responsibility to implement any mitigations necessary to meet applicable noise requirements. 2. Impact construction including jackhammers, hydraulic backhoe, concrete crushing/recycling activities, vibratory pile drivers etc. shall be limited to the day time hours specified in Section 01 14 00. 3. Erect temporary noise barriers or noise control blankets around the construction site, particularly along areas adjacent to residential buildings. 4. Utilize noise control blankets around the major noise sources to reduce noise emission from the site.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		5. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example. 6. Limit the noisiest phases of construction to 10 work days at a time, where feasible. 7. Notify neighbors/occupants within 300 feet of project construction at least thirty days in advance of extreme noise generating activities about the estimated duration of the activity. 8. Noise Monitoring shall be conducted periodically during noise generating activities. Monitoring shall be conducted using a precision sound-level meter that is in conformance with the American National Standards Institute (ANSI) Standard S1.4, Specification for Sound Level Meters. Monitoring results shall be submitted weekly to the Engineer	
NOI-2: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	S	**EBMUD Standard Construction Specification 01 35 44, Section 3.6, Noise Control** (Details as previously listed)	S
NOI-3: Result in exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels.	PS	**EBMUD Standard Construction Specification 01 35 44, Section 3.5, Vibration Control** A. Limit surface vibration to no more than 0.5 in/sec PPV, measured at the nearest residence or other sensitive structure. See Section 01 14 00. B. Upon homeowner request, and with homeowner permission, the District will conduct preconstruction surveys of homes, sensitive structures and other areas of concern within 15 feet of continuous vibration-generating activities (i.e. vibratory compaction). Any new cracks or other changes in structures will be compared to preconstruction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused the damage, the District will have the damage repaired to the pre-existing condition.	LTS
Traffic and Transportation			
TRA-2: Substantially increase hazards due to a design feature or incompatible uses.	PS	**EBMUD Standard Construction Specification 01 55 26, Traffic Regulation** PART 1 - GENERAL 1.1 DESCRIPTION A. Work included: Comply with the traffic regulation requirements as specified herein.	PS

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		B. Where specific requirements are not detailed herein or in permits, comply with the requirements of the most current version of the CalTrans Manual of Traffic Controls for Construction and Maintenance Work Zones. C. All proposed street closures shall be clearly identified in the Traffic Control Plan (TCP) and shall conform to the section “Traffic Control Devices” below. Construction area signs for street closure and detours shall be posted a minimum of forty-eight (48) hours prior to the commencement of street closure. Contractor shall maintain safe access around the project limit at all times. Street closures shall be limited to those locations indicated on the construction documents. 1.2 SUBMITTALS A. Submit at least 15 calendar days prior to work a detailed traffic control plan, that is approved by all agencies having jurisdiction and that conforms to all requirements of these specifications and the most recently adopted edition of the California Manual on Uniform Control Devices. Traffic Control Plan shall include: 1. Circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. 2. A description of emergency response vehicle access. If the road or area is completely blocked, preventing access by an emergency responder, a contingency plan must be included. 3. Procedures, to the extent feasible, to schedule construction of project elements to minimize overlapping construction phases that require truck hauling. 4. Designated Contractor staging areas for storage of all equipment and materials, in such a manner to minimize obstruction to traffic. 5. Locations for parking by construction workers. 1.3 QUALITY ASSURANCE A. Detailed traffic control plan shall be prepared by a California licensed Traffic Engineer. B. The Traffic Engineer who prepares the detailed traffic control plan shall be available at any time during the life of the contract to modify the traffic control plan if and as required by the agency having jurisdiction.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		C. No changes or deviations from the approved detailed traffic control plan shall be made, except temporary changes in emergency situations, without prior approval of the Traffic Engineer, the District's Engineer, and all agencies having jurisdiction. D. Immediately notify the Traffic Engineer, the District's Engineer, and the agencies having jurisdiction of occurrences that necessitate modification of the approved traffic control plan. PART 2 - PRODUCTS 2.1 TRAFFIC CONTROL DEVICES A. Traffic signs, flashing lights, barricades and other traffic safety devices used to control traffic shall conform to the requirements of the most recently adopted edition of the California Manual on Uniform Control Devices and the agency having jurisdiction. 1. Portable signals shall not be used unless permission is given in writing by the agency having jurisdiction. 2. Warning signs used for nighttime conditions shall be reflectorized or illuminated. "Reflectorized signs" shall have a reflectorized background and shall conform to the current State of California Department of Transportation specification for reflective sheeting on highway signs. PART 3 - EXECUTION 3.1 GENERAL A. Except where public roads have been approved for closure, traffic shall be permitted to pass through designated traffic lanes with as little inconvenience and delay as possible. B. Install temporary traffic markings where required to direct the flow of traffic. Maintain the traffic markings for the duration of need and remove by abrasive blasting when no longer required. C. Convenient access to driveways and buildings in the vicinity of work shall be maintained as much as possible. Temporary approaches to, and crossing of, intersecting traffic lanes shall be provided and kept in good condition. D. When leaving a work area and entering a roadway carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		E. Provide temporary signs as required by the traffic control plan and remove signs when no longer required. F. Haul routes for each construction phase shall be provided to all trucks serving the site during the construction period. G. For complete road closures, immediate emergency access to be provided if needed to emergency response vehicles. H. A minimum of twelve (12) foot travel lanes must be maintained unless otherwise approved. 3.2 ALTERNATING ONE-WAY TRAFFIC A. Where alternating one-way traffic has been authorized, the following shall be posted at each end of the one-way traffic section at least one week prior to start of work: 1. The approximate beginning and ending dates that traffic delays will be encountered. 2. The maximum time that traffic will be delayed. B. The maximum delay time shall be approved by the agency having jurisdiction. 3.3 FLAGGING A. Provide flaggers to control traffic where required by the approved traffic control plan. 1. Flaggers shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flaggers" of the California Department of Transportation. 2. Flaggers shall be employed full time on traffic control and shall have no other duties. 3.4 TEMPORARY TRAFFIC CONTROL A. All traffic control devices shall conform to the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD), and as amended by the latest edition of the MUTCD California supplement. Electronic signage board with changeable message shall be placed on a street in both direction 2 weeks in advance. B. The Contractor shall replace within 72 hours, all traffic signal loop detectors damaged during construction. Any work that disturbs normal traffic signal operations and ensure proper temporary traffic control (lane shifts, lane closures, detours etc.)	

Significance Criteria	Significance before Practices & Procedures	EBMUD Practices and Procedures/Specification	Significance after Practices & Procedures
		shall be coordinated with the agency having jurisdiction, at least 72 hours prior to commencing construction. C. A minimum of twelve (12) foot travel lanes must be maintained unless otherwise approved. D. Access to driveways will be maintained at all times unless other arrangements are made. E. All traffic control devices shall be removed from view when not in use. F. Before leaving a work area, ensure the area is left orderly. Trenches must be backfilled or plated during non-working hours. G. Sidewalks for pedestrians will remain open if safe for pedestrians. Alternate routes and signing will be provided if pedestrian routes are to be closed.	
TRA-3: Results in inadequate emergency access.	PS	**EBMUD Standard Construction Specification 01 55 26, Traffic Regulation** (Details as previously listed)	PS
TRA-4: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	PS	**EBMUD Standard Construction Specification 01 55 26, Traffic Regulation** (Details as previously listed)	PS

Notes: LTS = Less than Significant, PS = Potentially Significant, S = Significant; LSM = Less than Significant with Mitigation, SU = Significant and Unavoidable.

Table ES-3: Summary of Impacts and Mitigation Measures

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
Aesthetics			
AES-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	PS	**AES-1: Nighttime Lighting Controls** To the extent possible, EBMUD will ensure that temporary stationary lighting used during nighttime construction is of limited duration, shielded and directed downward or oriented such that little or no light is directly visible from nearby residences.	LSM
Biological Resources			
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. a. Special-Status Plants b. San Francisco Dusky-footed Woodrat	PS	**BIO-1a: Preconstruction Rare Plant Survey** In the year prior to commencing ground-disturbing activities, a qualified botanist will conduct a floristic plant survey in vegetated areas to be disturbed by Project activities including the reservoir embankment, soil stockpile area, new access road, new storm drain, new inlet/outlet pipeline, construction trailer site and any other areas where vegetation would be removed. Surveys will be conducted in accordance with CNPS and CDFW rare plant survey guidelines. Surveys will be conducted during the flowering period(s) when species are most readily identifiable. • If no special-status plant species are identified, no further mitigation is required. • If special-status plant species are found during the surveys, the qualified botanist will flag and map any observed sensitive plant species for avoidance where feasible. EBMUD will notify CDFW, USFWS, and/or CNPS of the preconstruction survey results, depending on the status of species encountered. EBMUD will employ the following measures: o Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD of up to one day for site supervisors, foremen and project managers and up to 30 minutes for nonsupervisory Contractor personnel. Contractor construction personnel will receive a worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the sensitive plant species in the Project vicinity, including natural history and habitat, the general protection measures to be implemented to protect the species, and a delineation of the limits of the work areas. Contractor construction personnel will be required to sign documents stating that they understand that take of special-status plant species and destruction or damage of their habitat may be a violation of state and/or federal law.	LSM

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
		o Project boundaries will be delineated and flagged prior to construction by the Contractor. All construction activities will be conducted within the delineated Project boundaries. o Staging areas and construction access points will be delineated in the field away from sensitive plant species, and all staging will occur within these designated areas. o Sensitive plant species will be avoided or minimized by limiting ground disturbance where sensitive plants occur. Disturbance shall be avoided by establishing a visible buffer zone around the plant localities and maintaining the buffer throughout construction. o If construction activities cannot be altered to avoid special-status plants, EBMUD will relocate the affected population and/or restore similar habitat in another location, either on the Leland Reservoir site or off site, in coordination with a qualified biologist and the appropriate resource agencies. EBMUD will salvage the affected plants and transplant them to a similar habitat in the Project vicinity. The reestablished population should achieve a 1:1 ratio (transplanted:re-established) after two years. If this performance criterion cannot be met, an in-lieu fee will be paid to the state CNPS program, or as otherwise required by CESA and/or FESA. o If plants listed under CESA and/or FESA are discovered and cannot be avoided, the Project will require take coverage under Section 2081 of CFGC and Section 10 of the ESA. o Mitigation for sensitive plant species may include: repairing, rehabilitating or restoring the impacted area; preserving in-situ populations on site; or by providing offsite compensation. Offsite compensation may include the permanent protection of an offsite population through a conservation easement or the purchase of mitigation banking credits at a 1:2 ratio. **BIO-1b: Avoidance or minimization measures for the San Francisco dusky-footed woodrat** • Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD. Contractor construction personnel will receive worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the San Francisco dusky-footed woodrat, including natural history and habitat, a review of the status of the species, the general protection measures to be implemented to protect the San Francisco dusky-footed woodrat, and a delineation of the limits of the work	

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
		areas. Contractor construction personnel will be required to sign documents stating that they understand the training and consequences of impacting the species or its habitat. • A preconstruction survey will be performed by a qualified biologist (EBMUD) within seven days prior to the start of ground-disturbing activities to identify the locations of active San Francisco dusky-footed woodrat nests within the Project boundary. Any woodrat nests detected will be mapped and flagged for avoidance by the qualified biologist (EBMUD). • If active nests are determined to be present, avoidance measures will be implemented first. Because San Francisco dusky-footed woodrats are year-round residents, avoidance mitigation is limited to restricting Project activities to avoid direct impacts to San Francisco dusky-footed woodrats and their active nests to the extent feasible. A minimum ten-foot buffer should be maintained between Project construction activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if, in the opinion of a qualified biologist (EBMUD), removing the nest would be a greater impact than that anticipated as a result of Project activities. • If an unoccupied woodrat nest is found within the Project site and it cannot be avoided, the nest should be disassembled by hand by a qualified biologist (EBMUD). The nest materials should be relocated off site to prevent rebuilding. • If occupied nests are found within the Project site, and a litter of young is found or suspected, the nest shall be left alone for two to three weeks before a recheck to verify that young are capable of independent survival before proceeding with nest dismantling. Dismantling shall be done by hand, allowing any animals to escape either along existing woodrat trails or toward other available habitat. • EBMUD will notify CDFW of any nests, unoccupied or occupied, before they are dismantled. Because Mitigation Measure BIO-1b requires preconstruction dusky-footed woodrat surveys, avoidance measures and buffer zones for active nests, and mitigations for both occupied and unoccupied nests, implementation of Mitigation Measure BIO-1b would reduce impacts, due to short-term construction, on the San Francisco dusky-footed woodrat to less than significant levels.	

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
Hazards and Hazardous Materials			
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	PS	**TRA-2: Maintain Emergency Access** Emergency responders (i.e., local police, fire, and ambulance services) shall be notified at least seven days in advance of any activities requiring full or partial roadway closures. Emergency access detour routes shall be determined in consultation with emergency responders as part of the notification process. Schools, businesses, recreational facilities, and residents located within 300 feet of construction zone shall be notified at least seven days in advance of activities requiring roadway closures, outlining the Project schedule and the duration of construction activities. EBMUD will send notices to the individuals and organizations on the Project's mailing list to update them prior to any roadway closures. Temporary barricades and directional cones that can be readily removed shall be used during full or partial roadway closures. Road barricades shall be removed and open trenches shall be covered (plated) at the end of the day on a daily basis to provide access. A portion of the on-street parking zones may be retained to allow for storage and/or staging of construction equipment.	LSM
Noise			
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	**NOI-1a: Noise Control Measures for Hoe Ram and Concrete Crusher** During reservoir construction, EBMUD shall locate the concrete crusher within the reservoir basin (east of the access road) and at least 110 feet away from the closest property line to the west. During periods when the hoe ram needs to be operated within 70 feet of the closest property line to the west, a temporary noise barrier will be erected as necessary to ensure that the noise from the hoe ram does not exceed the 80-dBA (Leq) ordinance limit at the western property line. **NOI-1b: Nighttime Construction Measure** EBMUD will provide alternative lodging for residents, if requested, that are adversely affected by nighttime pipeline tie-in construction at Windsor Drive /Old Tunnel Road and Leland Drive /Meek Place. This measure would only be implemented if nighttime construction occurs. EBMUD will notify residents that could be affected by nighttime project construction at least ten (10) days in advance. Residences within 500 feet of the tie-in	SU

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
		construction sites and with a direct line-of-sight[1] who could be significantly affected by nighttime construction may request alternative lodging for the night(s) of the potential nighttime construction from EBMUD; alternative lodging will consist of a standard room at a hotel located within 6 miles of the affected residence or as close as feasible. Alternative lodging will be provided and approved by EBMUD the day before the known nighttime construction occurs, or sooner, based upon the types of construction activities that may occur during the nighttime hours (10:00 p.m. to 7:00 a.m.). **NOI-1c: Construction Liaison** EBMUD will maintain ongoing communication with residents adjacent to active construction areas. The following measures would be implemented during construction of the proposed Project. • An EBMUD contact person will be designated to respond to construction-related issues, including noise. The phone number of the liaison will be conspicuously posted at construction areas, on all advanced notifications, and on the EBMUD Project website. The EBMUD contact person will take steps to resolve complaints, including coordinating periodic noise monitoring, if necessary. • Residents located within 500 feet of project construction and with a direct line-of-sight to the construction area will be notified at least seven (7) days in advance of noisy activities and the estimated duration of the activity. EBMUD will also send emails to individuals on the Project's mailing list to update them prior to noisy phases.	
NOI-2: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	S	**NOI-1a: Noise Control Measures for Hoe Ram and Concrete Crusher** (details as previously listed) **NOI-1b: Nighttime Construction Measure** (details as previously listed) **NOI-1c: Construction Liaison** (details as previously listed)	SU

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[1] The 500-foot distance applies only to residences with a direct line-of-sight to construction activities, and is determined by applying spherical spreading losses (6 dBA per doubling of distance) to a noise level of 80 dBA (L_{eq}) at 50 feet, resulting in a noise level of 60 dBA (L_{eq}) at 500 feet. While an exterior noise level of 60 dBA (L_{eq}) would still exceed the 53-dBA nighttime ordinance threshold, the exterior shell of a house can reduce exterior noise levels by 25 dBA with the windows closed, which would result in an interior level of 35 dBA (L_{eq}) with windows closed. Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable (U.S. EPA, 1974). The requirement that windows must be closed to achieve this acceptable level is assumed to be feasible since exposure would only be for one night.

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
Traffic and Transportation			
TRA-2: Substantially increase hazards due to a design feature or incompatible uses.	PS	**TRA-1: Traffic Control Measures for Windsor Drive, Condit Road and Leland Drive** The following measures will be implemented throughout the entire duration of the Project construction, to reduce the Project's temporary impacts to traffic circulation through the Project site: • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, construction contractor shall provide advance warning signs and flaggers at both ends of construction zone on Windsor Drive and Condit Road to alternate one-way traffic through the construction zone. • When Windsor Drive, Condit Road, or Leland Drive is closed to through traffic, the construction contractor shall provide advance warning signs and detour signs along Pleasant Hill Road, Old Tunnel Road, and other affected roadways to advise motorists and bicyclists to follow appropriate detour routes well in advance of the roadway closure to through traffic. • During the entire period Project construction (including both reservoir and pipeline construction), truck trips shall be avoided during the typical school drop-off and pick-up hours for The Meher Schools along a portion of Leland Drive within approximately 300 feet radius from the entrance to the school. Typically, the school is open between 7:00 a.m. and 6:30 p.m. and the peak drop-off and pick-up hours occur from 8:00 a.m. to 9:00 a.m. and from 1:45 p.m. to 2:45 p.m., respectively. The construction contractor shall confirm the start and dismissal times prior to the beginning of each school year. If avoiding drop-off and pick-up hours is infeasible, the construction contractor shall provide additional flaggers during school drop-off and pick-up hours near the construction zone on Leland Drive to manage traffic flow and maintain traffic safety. • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, roadside safety protocols shall be implemented. Advance "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) shall be provided to achieve required speed reductions for safer traffic flow through Leland Drive, Condit Road, and Windsor Drive. • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, advance warning signs (e.g., "Truck Crossing") shall be installed along Leland Drive, advising motorists and bicyclists of construction traffic to minimize hazards associated with truck traffic on the residential road.	LSM

Significance Criteria	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
		- Pedestrian and bicycle access and circulation shall be maintained during Project construction where safe to do so. - Construction contractor shall notify LSBTA of roadway closures along Leland Drive or Windsor Drive and facilitate school bus access as much as possible or provide detour routes during the construction period. Additionally, the contractor shall provide flaggers at active school bus stops in the vicinity of construction area to ensure safe student pick-up and drop-off activities where safe to do so.	
TRA-3: Result in inadequate emergency access.	PS	**TRA-2: Maintain Emergency Access** (Details as previously listed)	LSM
TRA-4: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	PS	**TRA-1: Traffic Control Measures for Windsor Drive, Condit Road and Leland Drive** (Details as previously listed)	LSM

Notes: LTS = Less than Significant, PS = Potentially Significant, S = Significant, LSM = Less than Significant with Mitigation SU = Significant and Unavoidable.

Chapter 1 Introduction

1.1 Overview, Purpose and Authority

The California Environmental Quality Act (CEQA) requires that all state and local government agencies consider the environmental consequences over which they have discretionary authority before taking an action that has the potential to affect the environment. This Environmental Impact Report (EIR) assesses the potential impacts associated with the Leland Reservoir Replacement (Project) proposed by the East Bay Municipal Utility District (EBMUD or District). This document was prepared in conformance with CEQA (California Public Resources Code, Section 21000 et seq.), CEQA Guidelines (CCR Title 14 Section 15000 et seq.), and EBMUD policies and procedures. This EIR is intended to serve as an informational document for agency decision-makers and the public regarding the Project.

1.1.1 Overview

The existing 18-million-gallon (MG), open-cut Leland Reservoir, constructed in 1955, is a critical drinking water facility for the Leland Pressure Zone, which serves the southwest portion of Pleasant Hill, most of Walnut Creek, and parts of the City of Lafayette and unincorporated Contra Costa County located between the elevation ranges of 50 to 250 feet. Leland Reservoir is at the end of its useful service life, and its replacement is necessary due to the deteriorated condition of the pre-cast concrete roof (including rainwater ponding), mature trees growing in the earthen embankment, obsolete mechanical and electrical equipment, and the reservoir’s criticality in serving the Leland Pressure Zone.

The Project includes replacement of the reservoir with two new 8-MG pre-stressed concrete tanks within the existing reservoir basin. The Project also includes replacing approximately 1,700 linear feet of existing 30-inch and 36-inch transmission pipeline that is currently located beneath the reservoir with approximately 2,700 linear feet of 36-inch pipeline to be constructed within the public right-of-way (ROW) in Windsor Drive, Condit Road and Leland Drive, and about 950 feet of 36-inch pipeline within the Leland Reservoir site. The access road from Leland Drive to the reservoir would also be improved. Approximately 1,000 linear feet of new 30-inch storm drain pipeline would also be installed on site and connected to the City of Lafayette’s existing storm drain system at the intersection of Leland Drive and Patty Way.

1.1.2 Purpose and Authority

This EIR provides an analysis of the potential environmental effects of the Leland Reservoir Replacement. The environmental impacts of the Project are analyzed to the appropriate degree of specificity, in accordance with Section 15146 of the CEQA Guidelines. This document addresses the potentially significant adverse environmental impacts that may be associated with construction and operation of the Project and identifies appropriate and feasible mitigation measures and alternatives that may be adopted to reduce or avoid significant impacts.

1.2 Lead Agency Determination

EBMUD is designated as the lead agency for the purposes of this EIR. CEQA Guidelines Section 15367 defines the lead agency as “…the public agency, which has the principal responsibility for carrying out or approving a project.” Other public agencies may use this EIR in the decision-making or permitting process and consider the information in this EIR along with other information that may be presented during the CEQA process.

1.3 Notice of Preparation

In accordance with Sections 15082(a), 15103, and 15375 of the CEQA Guidelines, EBMUD prepared and circulated a Notice of Preparation (NOP) of an EIR for the Project for a 30-day comment period between August 31, 2016 and September 29, 2016. A postcard mailer was sent to approximately 140 residents and property owners notifying them of the NOP. The full NOP was sent to an additional 18 individuals representing agencies and special interest stakeholders.

EBMUD conducted two public outreach and scoping meetings to discuss the Project and to solicit public input. The first public meeting was held on August 3, 2016 and the second meeting was conducted on September 15, 2016. Both meetings were held at The Meher Schools located at 999 Leland Drive, Lafayette, to receive public comments on the scope and content of the EIR. At the request of the Old Tunnel Road/Windsor Drive Neighborhood Watch group, EBMUD held a meeting with the group at one of the member’s homes on September 28, 2016. EBMUD also presented the Project to the Lafayette City Council at one of their regular meetings on November 28, 2016. **Appendix A** contains a copy of the NOP and Initial Study (IS) for the Project, and **Appendix B** contains the comment letters submitted by agencies and the public in response to the NOP and during the public outreach meetings. Comment letters were received from residents and four agencies/organizations:

Residents

Kathy McCann

Ruth Grossman, Old Tunnel Road/Windsor Drive Neighborhood Watch Association

Erin Beaver, Old Tunnel Road/Windsor Drive Neighborhood Watch Association

Agencies/Organizations

Caltrans

Native American Heritage Commission

Department of Toxic Substances Control

The Meher Schools

1.4 Issues Raised during Public Outreach and Scoping

Issues and concerns raised during the public outreach and scoping meetings conducted by EBMUD include:

- Neighborhood disruption associated with construction of pipeline on Windsor Drive, Condit Road and Leland Drive;
- Possible displacement of rodents during construction onto nearby properties;
- Construction hours;
- Noise and traffic during construction;
- Public safety during construction;
- Restoration of streets following pipeline construction;
- Loss of trees at the reservoir site;
- Visual impacts of new tanks;
- Numbers and size of trees to be planted after construction.

As part of the meetings described above, landscape design concepts for the reservoir site were presented to the community and input on the design was received. EBMUD worked with the community to address visual impacts and to ensure adequate screening of the site. A total of 75 trees are proposed to be planted on the site. The currently proposed site plan was the result of input received during the community outreach process.

1.5 Review and Use of the EIR

Upon completion of the Draft EIR, EBMUD filed a Notice of Completion (NOC) with the Governor's Office of Planning and Research to begin the 45-day public review period (Public Resources Code, Section 21161). Concurrent with the NOC, this Draft EIR has been distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the EIR in accordance with Public Resources Code 21092(b)(3). During the public review period, the Draft EIR and technical appendices are available for review at EBMUD's main office during regular business hours (8 a.m. to 4:30 p.m., Monday through Friday), located at the address provided below, at the Lafayette Public Library at 3491 Mt. Diablo Boulevard, and on EBMUD's website (ebmud.com/about-us/construction-my-neighborhood/leland-reservoir-and-pipeline-replacement/). Agencies, organizations, and interested parties, including those not previously contacted, or who did not respond to the NOP, currently have the opportunity to comment on the Draft EIR during the public review period.

Written comments on this Draft EIR should be addressed to:

Oscar Herrera, Project Manager
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

Phone: (510) 287-1005
Email: lelandreservoir@ebmud.com

Upon completion of the public review period, written responses to all significant environmental issues raised will be prepared and made available for review at least 10 days prior to the public hearing before the EBMUD Board of Directors on the Project, at which certification of the Final EIR will be considered. Comments received and the responses to comments will be included as part of the record for consideration by the Board of Directors.

1.6 Organization of the EIR

This EIR is organized into the following main chapters:

Executive Summary. This chapter includes a summary of the Project evaluated in this EIR. It includes a table that summarizes the impacts, mitigation measures, and level of significance after mitigation measures are incorporated.

Chapter 1: Introduction. This chapter provides an introduction and overview describing the Project, purpose and scope of this EIR, brief explanation of the areas of consideration and issues to be resolved, and a summary of the CEQA review process.

Chapter 2: Project Description. This chapter describes the Project including objectives, location, construction methods, and operations and maintenance activities. A list of responsible agencies and required approvals is included.

Chapter 3: Environmental Analysis. This chapter analyzes the environmental impacts of the Project. Each topic area includes a description of the environmental setting, methodology, significance criteria, impacts, mitigation measures, and significance after mitigation.

Section 3.0: Introduction to Environmental Analysis. This section provides an overview of the environmental analysis and presents the format for each topical section. It describes issues that have been determined to have no or less-than-significant impacts and therefore are not carried forward for further analysis. The approach for the analysis of cumulative impacts is also described.

Section 3.1: Aesthetics. This section evaluates impacts on visual and scenic resources.

Section 3.2: Air Quality. This section addresses local and regional air quality impacts as well as consistency with Bay Area Air Quality Management District (BAAQMD) rules and regulations.

Section 3.3 Biological Resources. This section addresses impacts on habitat, vegetation, and wildlife; the potential degradation or elimination of important habitat; and impacts on listed, proposed, and candidate threatened and endangered species.

Section 3.4: Cultural Resources. This section addresses impacts on known historical resources and potential archaeological and paleontological resources.

Section 3.5: Energy Resources. This section evaluates energy consumption.

Section 3.6: Geology and Soils. This section evaluates the potential for local geological hazards to impact facilities.

Section 3.7: Greenhouse Gas Emissions. This section addresses the potential for construction and operation of the Project to generate greenhouse gases (GHG).

Section 3.8: Hazards and Hazardous Materials. This section addresses the likelihood of the presence of hazards and hazardous materials or conditions on the Project site that may have the potential to impact human health.

Section 3.9: Hydrology and Water Quality. This section addresses impacts on local hydrological conditions, including drainage areas, and changes in water quality.

Section 3.10: Land Use. This section evaluates compatibility with existing land use, and consistency with applicable local, regional, and state plans and policies.

Section 3.11: Noise. This section addresses potential construction noise impacts from mobile and stationary sources and also addresses the impact of noise generation on neighboring uses.

Section 3.12: Recreation. This section evaluates Project impacts on existing recreational facilities.

Section 3.13: Transportation. This section addresses impacts on the local and regional roadway system, public transportation, bicycle, and pedestrian access.

Chapter 4: Alternatives. This chapter compares the impacts of the Project with other alternatives considered by EBMUD, including the No Project Alternative. The environmentally superior alternative is evaluated.

Chapter 5 Other CEQA Considerations. This chapter describes potential growth-inducing impacts associated with the Project, a summary of significant environmental impacts, including unavoidable and cumulative effects, and the Project’s irreversible and irretrievable commitment of resources.

Chapter 6: EIR Preparers. This chapter lists the authors that assisted in the preparation of the EIR, by name and company or agency affiliation.

Chapter 7: Mitigation Monitoring and Reporting Program. This chapter lists all of the mitigation measures and EBMUD Practices and Procedures Monitoring Plan and defines responsibility and timing for implementation.

Appendices. This section includes all notices and other procedural documents pertinent to the EIR, as well as all technical material prepared to support the analysis.

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Chapter 2 Project Description

2.1 Overview

The East Bay Municipal Utility District (EBMUD) is implementing a planned system of improvements as part of their Water Treatment and Transmission Improvement Program (WTTIP), which is a comprehensive program to enhance and modernize water treatment and move water quickly and efficiently to where it is needed. WTTIP includes new facilities and upgrades to existing facilities primarily in the cities of Lafayette, Moraga, Orinda, and Walnut Creek. The improvements are needed to address system wide water treatment and distribution needs to ensure reliable water supply for current and future customers. Facilities that are included in the WTTIP are shown in **Figure 2-1**. The Leland Reservoir Replacement Project (Project) is one element of the WTTIP.

The environmental impacts of the WTTIP were evaluated in the WTTIP EIR, which was certified by EBMUD in December 2006. The WTTIP EIR evaluated some facilities at a project level, and some facilities, for which sufficient design details were not available, were evaluated at a program level. **Figure 2-1** shows facilities that were evaluated at a project and program level. The Leland Reservoir was considered in the WTTIP EIR at a program level because at the time the WTTIP EIR was prepared conceptual design had not been completed for the reservoir replacement. Since preparation of the WTTIP EIR, the proposed concept for the replacement of the Leland Reservoir has changed considerably, and the specific details of the design, which were not available at the time the WTTIP EIR was prepared, have been developed. Thus, EBMUD decided to prepare a project-specific EIR addressing the current project design. The mitigation measures and EBMUD Standard Practices and Procedures proposed in this EIR are at least as effective as those considered in the WTTIP EIR.

The existing Leland Reservoir, located in the western portion of the Leland Pressure Zone in the City of Lafayette, is one of two reservoirs providing water storage in the Leland Pressure Zone.

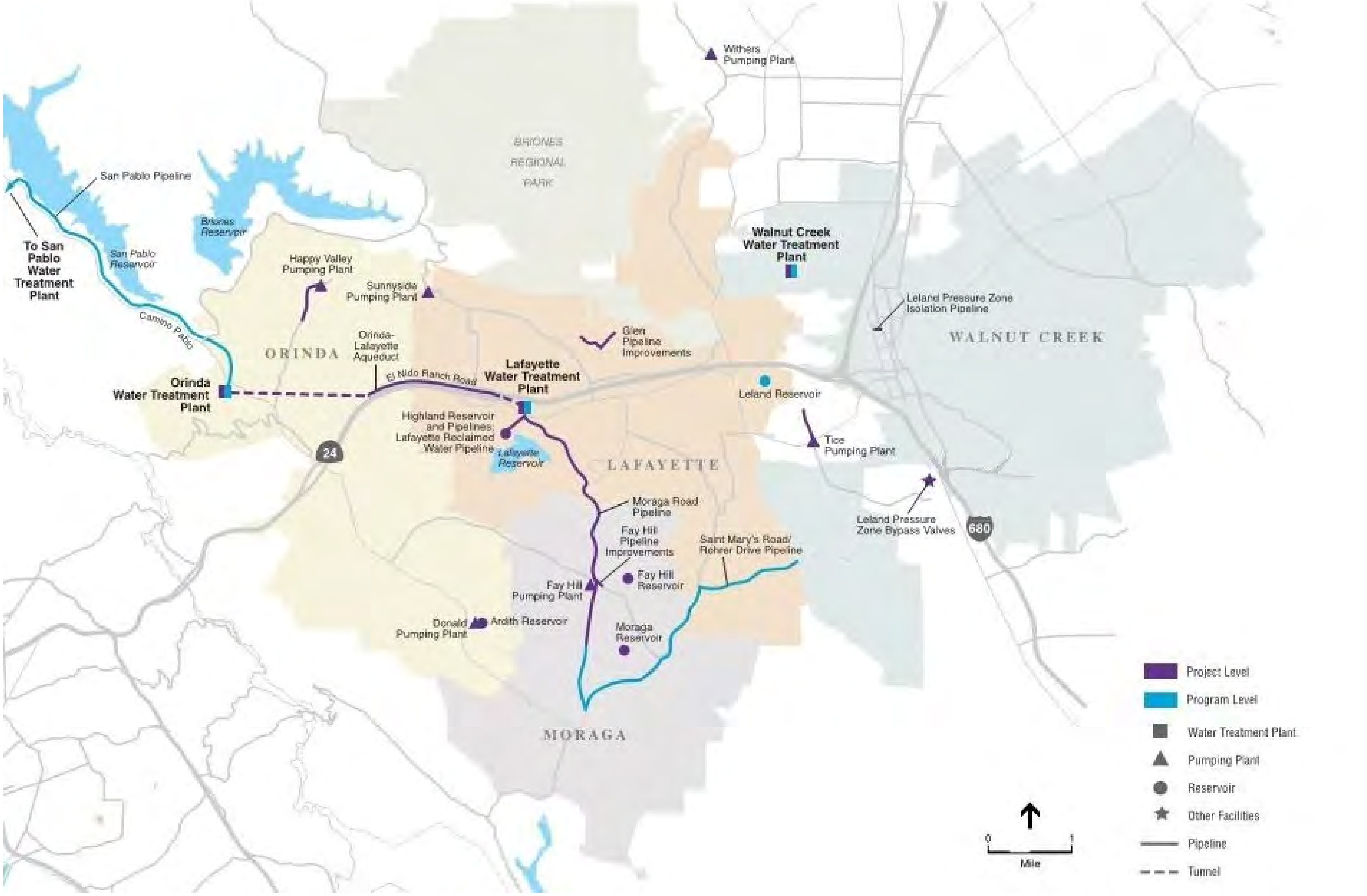
Figure 2-2 provides an overview of the Project and its location. The Project includes replacement of the existing 18-million-gallon (MG) open cut Leland Reservoir with two new 8-MG prestressed concrete tanks within the existing reservoir basin. The Project would also include replacing approximately 1,700 linear feet of existing 30-inch and 36-inch critical transmission pipeline with approximately 2,700 linear feet of 36-inch pipeline to be constructed within the public right-of-way (ROW) in Windsor Drive, Condit Road and Leland Drive and about 950 linear feet of 36-inch pipeline within the Leland Reservoir site. A portion of the 36-inch pipeline is located beneath the existing reservoir basin and would be removed as part of the reservoir demolition. The 36-inch pipeline that extends beyond the reservoir basin would be abandoned in place and filled with cellular concrete along with a 30-inch pipeline in an unimproved right-of-way, west of the property boundary. The access road from Leland Drive to the reservoir would also be improved. A new 30-inch storm drain pipeline would also be installed on site and connect to the City of Lafayette’s existing storm drain system at the intersection of Leland Drive and Patty Way.

2.2 Project Background

2.2.1 Service Area

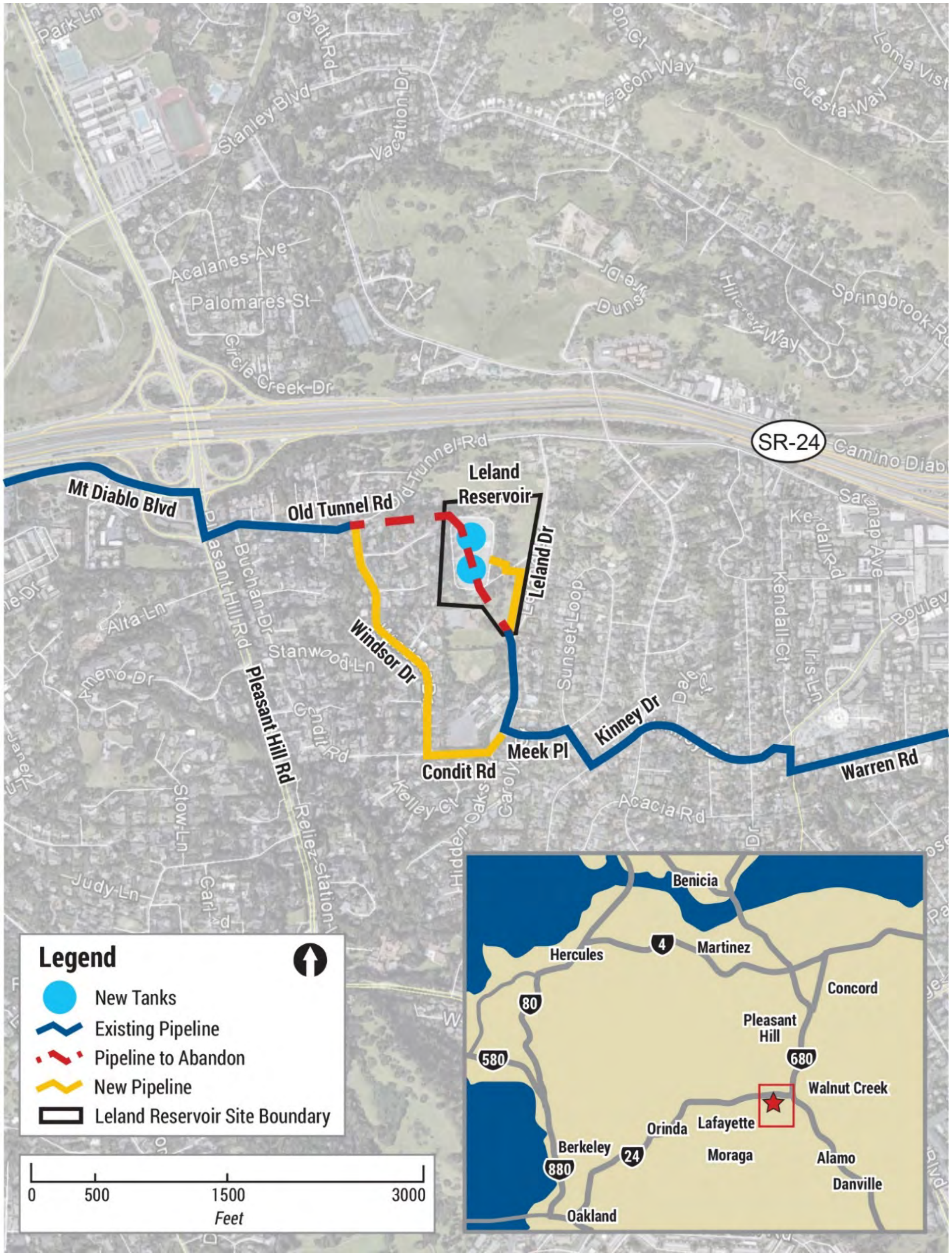
EBMUD provides potable water to Alameda and Contra Costa Counties, serving 20 incorporated cities and 15 unincorporated areas with a population of about 1.4 million people within a 332-square mile service area. The service area is divided by the Oakland-Berkeley Hills into the West of Hills and East of Hills service areas, with the latter including the Project area located in the City of Lafayette.

Figure 2-1: Water Treatment and Transmission Improvement Program



Source: EBMUD 2006a

Figure 2-2: Project Location and Overview



Source: Compiled by RMC, a Woodard & Curran company 2016

2.2.2 Overview of Existing Water System Operations

Water Supply

EBMUD's principal water source is the Mokelumne River watershed, a 575-square-mile area of the Sierra Nevada foothills in Alpine, Amador, and Calaveras Counties. Mokelumne River water is stored at the Pardee and Camanche Reservoirs, about 40 miles northeast of the city of Stockton. Untreated water flows by gravity via the Mokelumne Aqueducts from Pardee Reservoir to the San Francisco Bay Area. Additional water (less than 10 percent of total supply) comes from local watersheds in Alameda and Contra Costa Counties. During droughts, EBMUD can draw water from the Sacramento River via the Freeport Regional Water Project, which connects to the Mokelumne Aqueducts (EBMUD 2011).

Water Treatment

EBMUD operates five Water Treatment Plants (WTPs): Walnut Creek, Lafayette, Orinda, Sobrante, and Upper San Leandro. EBMUD also operates a sixth WTP, the San Pablo WTP, a facility used during drought operations and planned outages of key water facilities such as the Claremont Tunnel. Substantial overlap occurs in the service areas of the Sobrante, Orinda, and Upper San Leandro WTPs, as well as between the service areas of the Lafayette and Orinda WTPs. The overlap notwithstanding, on any given day, production from one WTP could offset some or all of the production from another depending on actual demands and daily operations decisions.

Treated Water Transmission and Distribution

The WTPs and transmission mains constitute the backbone of EBMUD's water treatment and transmission system. After passing through the WTPs, water is distributed to customers throughout EBMUD's service area via a network of transmission and distribution pipelines. The water distribution network contains approximately 4,150 miles of distribution pipelines, 140 pumping plants, and 170 distribution reservoirs (EBMUD 2016).

Pressure Zones

EBMUD's service area is divided into about 120 pressure zones ranging in elevation from sea level to 1,450 feet. A pressure zone is an area within a specific elevation band where storage and distribution facilities are designed to deliver water at a pressure range suitable for customer use. Coordination among facilities in different pressure zones is important for maintaining system operations. Generally, the pumping plant(s) in one pressure zone pump water up to reservoir(s) in the next higher pressure zone. Pumping plant(s) in that pressure zone in turn pump water up to higher pressure zones. Reservoir(s) in higher pressure zones provide water by gravity flow to lower-elevation pressure zones. The WTTIP included numerous pipeline, reservoir and pumping plant projects needed to address specific requirements for pressure zones in the Lamorinda[1]/Walnut Creek area.

The Leland Pressure Zone provides potable water to about 12,000 service connections located at elevations between 50 and 250 feet in the southwest portion of Pleasant Hill, most of Walnut Creek, and parts of the City of Lafayette and unincorporated Contra Costa County. The Leland Pressure Zone is largely residential but includes commercial and retail areas such as downtown Walnut Creek and two hospitals (John Muir Medical Center and Kaiser Permanente Walnut Creek Medical Center). Leland Reservoir provides water to most of the Leland Pressure Zone. One of the pressure zone projects identified in the WTTIP was the replacement of the Leland Reservoir.

2.2.3 Infrastructure Replacement

As part of the WTTIP, EBMUD identified facilities that needed to be replaced or upgraded due to aged conditions or to meet current safety, regulatory and technology standards. The Leland Reservoir, which

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[1] Lamorinda refers collectively to the City of Lafayette, Town of Moraga and City of Orinda.

was constructed in 1955, was identified in the WTTIP as a facility that needs to be replaced due to its condition and operating constraints (EBMUD 2006a). In addition, the 36-inch transmission pipeline under the reservoir, which connects the Lafayette WTP to the Leland Pressure Zone, is difficult to access because it is encased in concrete and buried under the reservoir and reservoir embankments.

2.2.4 Condition of Existing Leland Reservoir

The Leland Reservoir is a critical facility, and condition assessments have determined that it is at the end of its useful service life. The reservoir basin is concrete-lined with pre-cast concrete girders, columns and a pre-cast concrete panel roof. The condition of the roof was evaluated in EBMUD's *Concrete Reservoir Roof Repair and Replacement Study* (EBMUD 1995), which determined that the roof needs replacement because it leaks and is structurally unsound. In early 2017 it was determined that heavy rains had further compromised the roof and EBMUD determined that a temporary membrane needs to be installed to protect the roof; membrane installation is planned for fall 2017. Access to the roof is currently restricted because of safety concerns regarding its stability. In addition, the reservoir is operating at a restricted level based on requirements from the Division of Safety of Dams (DSOD). [2] The reservoir has obsolete mechanical and electrical equipment and trees growing on the earthen embankment may adversely affect its structural integrity. The existing 36-inch pipeline beneath the reservoir is not readily accessible for repair and maintenance.

2.3 Project Purpose and Objectives

As described in the Project Facilities Plan (EBMUD 2014), the purpose and objectives for the Leland Reservoir Replacement were developed as part of the planning process to help assess Project alternatives and prioritize Project goals.

2.3.1 Purpose and Need

Replacement of the Leland Reservoir is driven by the unsafe condition of the pre-cast concrete panel roof and roofing system and the criticality of the facility. Issues also include rainwater ponding on the roof, obsolete mechanical and electrical equipment, and inaccessibility of a critical pipeline. Replacement would remove the reservoir from DSOD jurisdiction, which currently requires the reservoir to operate at a restricted level to meet minimum freeboard requirements.

2.3.2 Project Goals and Objectives

Additional Project goals and objectives relate to water service reliability, operational flexibility, maintenance; environmental; cost and safety considerations as summarized below in **Table 2-1**.

2.4 Project Location

Leland Reservoir is located on a 14.5-acre site opposite 1050 Leland Drive, south of Old Tunnel Road in the residential area of the City of Lafayette. The reservoir is surrounded by embankments that screen the reservoir from view from the adjacent streets. The reservoir is about 700 feet south of State Route 24 (SR 24), but is not visible from the highway because there is a hill between the freeway and the reservoir. There are about a dozen homes on the east side of Leland Drive that have views of the reservoir site, but not the reservoir itself. Homes at the end of Maryola Court, Mars Court and Windsor Court have backyards that are immediately adjacent to the west side of the reservoir site, but are also screened from the reservoir itself by the intervening embankment. The Sun Valley Bible Chapel is immediately south of the reservoir site and is also screened from the reservoir itself by the intervening embankment and

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[2] DSOD is a division of the State of California Department of Water Resources, and has jurisdiction over all dams that are above a specified height and/or storage capacity, which includes EBMUD's larger open-cut reservoirs, such as Leland Reservoir. DSOD does not have jurisdiction over circular tanks.

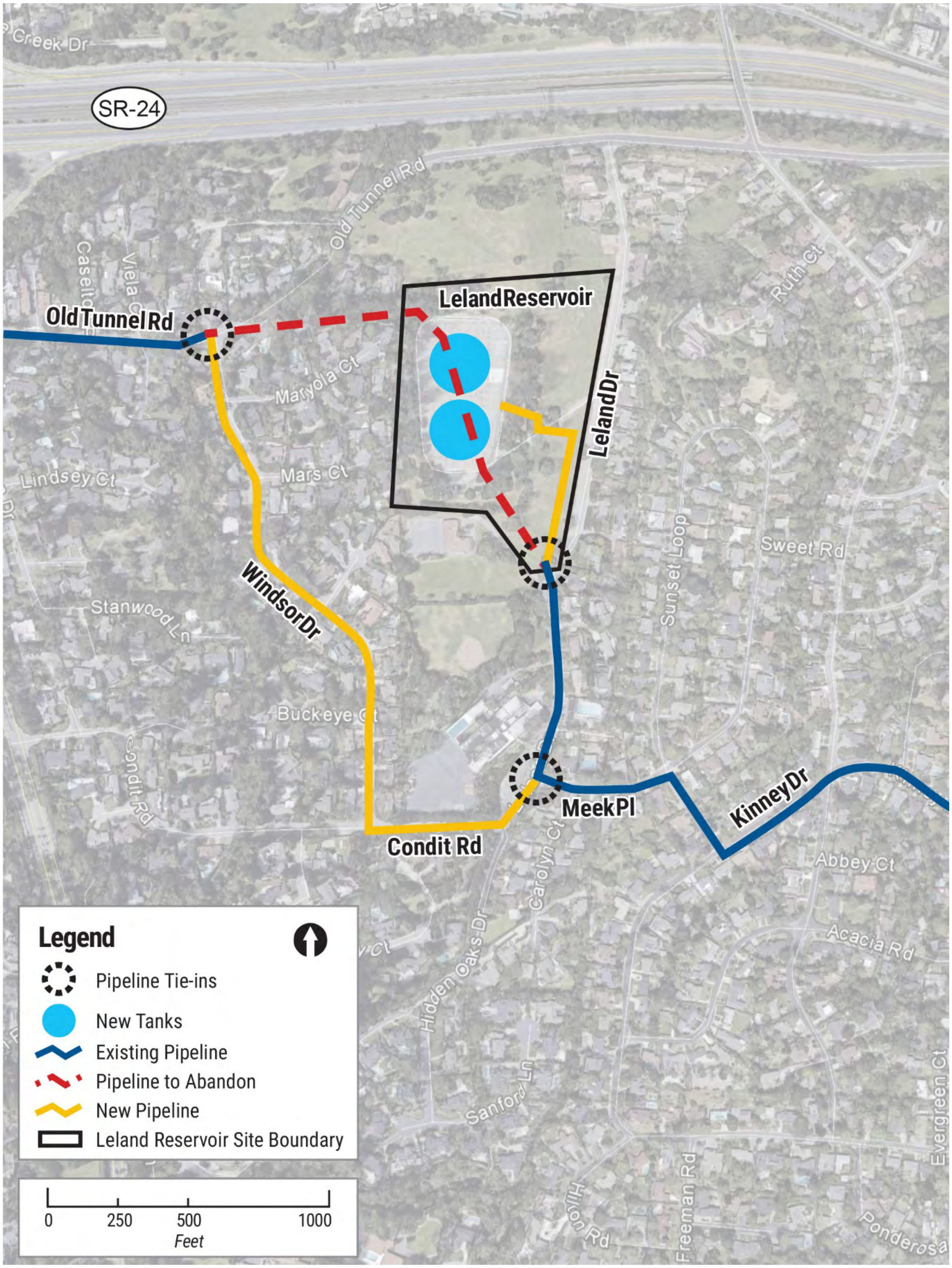
vegetation. The reservoir itself is only visible from homes at higher elevations at the end of Ruth Court and Sunset Loop, east of the Project site. The Project site is vegetated with scattered oak trees, a few of which appear to be native to the site, along with a number of oak, pine, redwood and eucalyptus trees that were planted by EBMUD or established themselves on the site. **Figure 2-2** shows the location of the Leland Reservoir site and **Figure 2-3** shows facilities that would be constructed as part of the project.

In accordance with EBMUD policy regarding security of drinking water supply facilities, access to the site is currently restricted to EBMUD staff and contractors. Access restrictions would continue during and after Project construction.

Table 2-1: Project Objectives

Issues/Concerns	Project Objectives
Primary Operational Objectives	• Improve water service reliability by adding flexibility via two reservoirs where each can be operated independently if needed. • Improve maintenance and repair accessibility: o By adding capability to take one reservoir out of service while the other remains. o By relocating the inaccessible backbone transmission pipeline so that the pipeline is not beneath the existing reservoir. • Improve water quality • Improve redundancy and reliability for future outages • Maintain a safe facility while reducing the monitoring, permitting and other operational costs associated with managing a dam. • Maximize the useful life of existing facilities in a manner that reduces costs for customers. • Minimize life-cycle costs (capital, operating, and maintenance) to EBMUD’s customers.
Construction Impact Objectives	• Minimize environmental impacts on the community during construction. • Maintain a similar and acceptable aesthetic site environment post construction. • Reuse or recycle building materials on site to the extent feasible, including concrete demolition materials and excavated earth. • Maintain water service and emergency flows during construction. • Protect the local community from construction hazards. • Provide safe travel routes for motorists and pedestrians • Provide safe construction site conditions

Figure 2-3: Leland Reservoir Replacement Project



Source: Compiled by RMC, a Woodard & Curran company, 2016

2.5 Project Characteristics

The Project includes two primary elements: replacement of the existing pipeline that is located under the reservoir and replacement of the existing reservoir with two new 8-MG storage tanks.

2.5.1 Pipelines

The existing pipeline that traverses under the reservoir would be replaced with a total of approximately 3,650 linear feet of 36-inch pipeline in Windsor Drive, Condit Road, a short section of Leland Drive from Condit Road to Meek Place, and on the reservoir property boundary (**Figure 2-3**). About 2,700 linear feet of the new pipeline would be constructed in the public ROW, and about 950 feet of the new pipeline would be constructed on the eastern edge of the reservoir site, parallel to Leland Drive. The new pipeline in Windsor Drive, Condit Road and Leland Drive would be constructed before the demolition of the existing reservoir and pipeline that runs underneath the reservoir. The existing 36-inch pipeline that traverses under Leland Reservoir is a critical transmission pipeline that connects water treatment and distribution facilities to EBMUD customers on both sides of the Leland Reservoir. The replacement of this critical transmission pipeline in the public ROW would ensure this critical connection stays intact during the reservoir demolition and replacement. The pipeline route would pass The Meher Schools, which are located at the corner of Condit Road and Leland Drive. After the new pipeline in the public ROW is installed and placed into service, the existing 36-inch pipeline located under the existing reservoir would be removed as part of the reservoir demolition. The 36-inch pipeline that extends beyond the reservoir basin would be abandoned in place along with a 30-inch pipeline in an unimproved ROW, west of the property boundary. The abandoned pipeline would be capped and filled with cellular concrete.

Standard pipeline appurtenances that would be installed include:

- Air valves;
- Blow-offs;
- Manhole vault structures;
- Test stations;
- Cathodic protection;
- Inline valves;
- Bypass valves; and
- Markers for pipelines in landscaped areas within the Leland reservoir site.

The pipelines would have air valves at high points and certain sharp grade breaks, and blow-offs at low points. Air valves include above-grade vents that are approximately 2 inches in diameter and 4 feet tall (**Figure 2-4**). Blow offs are like fire hydrants without the hydrant body on top. These small connections to the bottom of the pipeline at low points in the alignment allow EBMUD to pump or drain water out of the pipeline. Blow-offs are not surge or pressure-protection devices that automatically dump water out; rather, they are manually operated with a hose connected to the end to direct the flow of water to a proper disposal route or to a tanker truck. Blow-offs are installed below the ground surface with access provided within a sidewalk or street by a manhole, meter box, or valve pot cover.

Figure 2-4: Air Valve Vent and Marker Post

Test stations would be included as required. Test stations are used to monitor the cathodic protection system, which controls corrosion of the buried metallic pipelines. Wires attached to two pipeline segments (or attached to a segment of pipeline and a corrosion protection device called an anode) are brought to the surface to allow technicians to test the electrical current. EBMUD uses three types of test stations. For streets with a sidewalk, such as Condit Road, a water meter box can be used for sidewalk installations. Where no sidewalk exists, the test station is installed in the street under a metal lid, known as a valve pot cover; these lids would be flush with the street pavement.

Inline valves would be installed periodically along the alignment to allow portions of the pipeline to be to be isolated from the water distribution system for maintenance or repair. Inline valves would also be placed at the connection points between the new pipelines and the existing water distribution system. A bypass valve would be installed at each inline valve location. Bypass valves are required because the water pressure on a closed large inline valve is too great to manually open when one side of the valve is depressurized. The bypass valve would be a smaller valve that can be manually opened to allow water to fill into the empty side of the pipeline, equalizing water pressure on both sides of the larger inline valve. Inline and bypass valves would be buried with the pipeline. The only aboveground feature associated with the inline valve would be a valve pot cover, which would cover the valve operating stem.

Where the pipeline would be installed outside of the street in the landscaped area on the existing Leland Reservoir site, the pipeline location would be indicated with flat fiberglass marker posts about 4 feet tall and 4 inches wide (**Figure 2-4**)

2.5.2 Storage Tanks

The existing reservoir would be drained[3] and the embankment on the eastern side of the reservoir would be cleared of trees and other vegetation. **Table 2-2** shows trees that would be removed as part of the reservoir replacement. A total of about 90 trees would be removed, out of which 16 are considered protected trees under the City of Lafayette Tree Protection Ordinance (City of Lafayette Ordinance

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[3] Water in the existing reservoir would be allowed to flow into the Leland Pressure Zone until it reaches a predetermined water elevation, after which the remaining water would be discharged in compliance with applicable discharge permits.

Section 6-1702)[4]. EBMUD retained an arborist to evaluate all trees on the reservoir site to determine their condition, make recommendations regarding trees that should be preserved, if possible, and to identify any existing trees that might present a hazard to personnel who work at the site. The arborist identified approximately 30 additional hazard trees that were in poor conditions and were recommended for removal. These hazard trees included trees that were dead or dying and thus presented a fire hazard, and trees that were structurally unsound and presented safety risks associated with falling branches or potential failure of the entire tree. EBMUD maintenance staff will remove those trees as part of ongoing landscape maintenance at the site. Hazard trees to be removed as part of ongoing maintenance include ten pines, eight eucalyptus, one almond, one buckthorn and one cherry plum, plus six oak trees, of which one is a valley oak with a 12-inch diameter trunk. Although this tree would be classified as protected, the arborist has identified the tree as being in poor condition and unlikely to survive, so removal is recommended.

After vegetation is removed, the embankment would be breached to provide access into the existing basin; the basin would be re-contoured to provide a level surface for construction of the new tanks; and temporary retaining walls would be used during the construction period. Approximately 102,000 cubic yards (CY) of soil would be excavated. The existing reservoir, including roof system and lining, would be demolished and generate an additional 6,000 CY of demolition debris. The demolition material would either be recycled and used on site or off hauled. Approximately 42,000 CY of material would be temporarily stockpiled on site and then subsequently used as backfill material around the new concrete tanks after they are constructed. The remaining 66,000 CY would be hauled off for disposal at an approved disposal facility. Soil would most likely be used for daily cover at a local landfill.

Table 2-2: Tree Removal for Reservoir Replacement

Common Name	Scientific Name	Number of Trees to Be Removed	Number of Protected Trees
Eucalyptus	*Eucalyptus globulus*	19	NA
	Eucalyptus sp.	3	NA
Pines	*Pinus canariensis*	19	NA
	Pinus sabiniana	2	NA
Almond	*Prunus dulcis*	2	NA
Buckthorn	*Rhamnus* sp.	3	NA
Firethorn	*Pyracantha* sp.	1	NA
Valley oak	*Quercus lobata*	22	9
Coast live oak	*Quercus agrifolia*	17	7
Total Trees		**88**	**16**

Source: RHAA, 2017

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[4] Section 6-1702 of the Lafayette Tree Protection Ordinance defines a “Protected tree” as a native tree of specific species on developed property with a trunk diameter of twelve inches or more. The list of species includes seven species of oak, California bay, California buckeye and madrone. Two protected species are found on the Leland Reservoir site: coast live oak and valley oak.

Figure 2-5: Security Fence

The new tanks would be constructed with new valve pits to house electrical and mechanical equipment for the facility. Soil would be replaced around the tanks, partially backfilling the reservoir basin, and the embankment would be reconstructed. Access into the bottom of the basin would be retained. The site would be restored and trees and other vegetation would be planted on the site. To maintain security, the tanks would be enclosed with EBMUD standard 8-foot black vinyl coated security chain link fencing with barbed wire at the top (**Figure 2-5**).

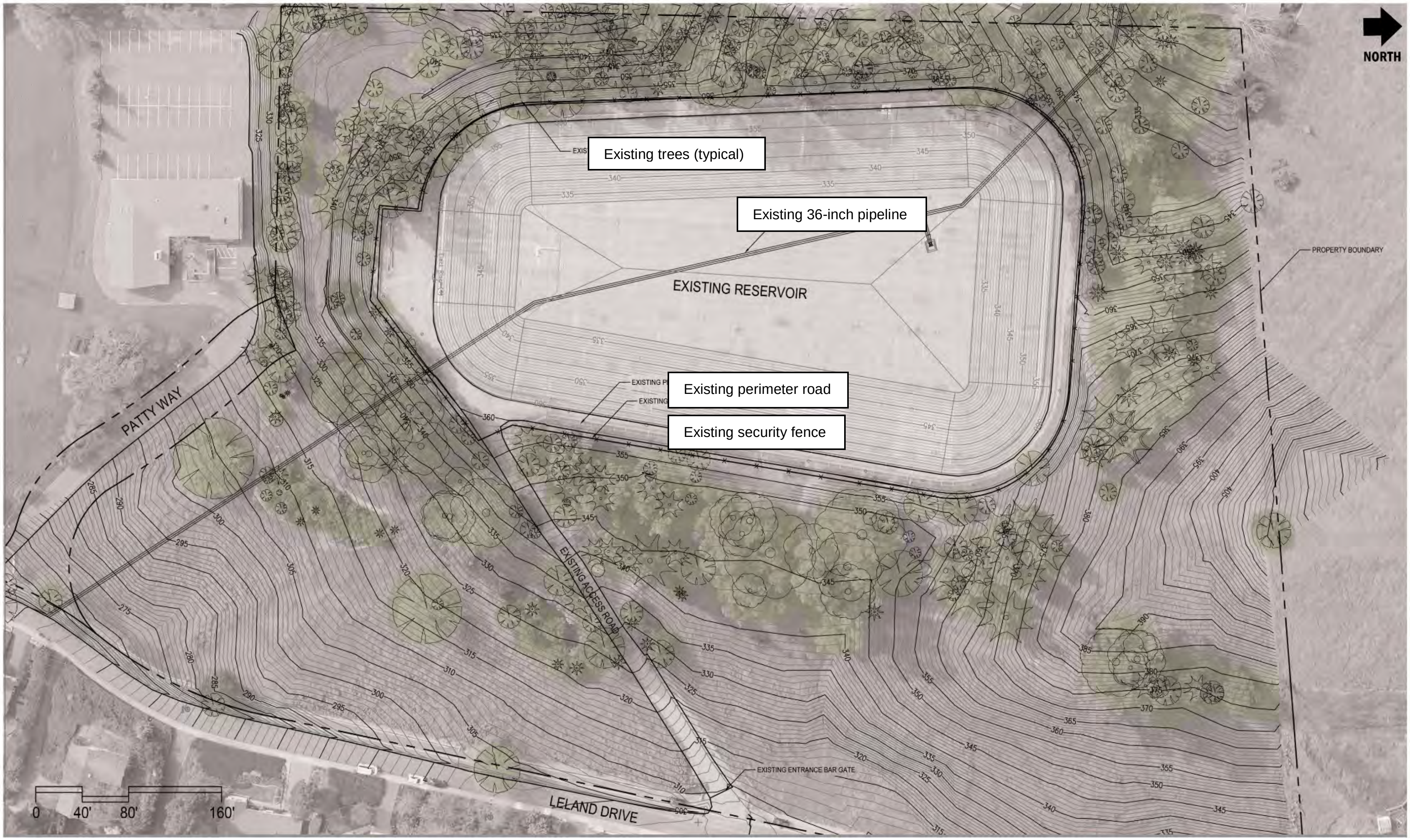
Figure 2-6 shows the Leland Reservoir site and depicts the existing reservoir, access road leading from Leland Drive to the perimeter road that circles the reservoir, and existing vegetation on site. **Figure 2-7** depicts the proposed site plan, which would include two new tanks within the existing reservoir footprint, valve pits at the base of each tank, and a new access road extending from the existing access road through the embankment into the bottom of the existing reservoir where the tanks would be sited. The existing access road and the perimeter road around the top of the embankment would remain. Trees that would be planted on site after the completion of construction are also portrayed. EBMUD would implement the design elements outlined in the Project's Conceptual Architecture and Landscape Design Report, which is included in **Appendix C**. Design elements are shown on **Figure 2-7** and include:

- Seventy-five (75) replacement trees would be planted on the site on slopes that are less that 3:1. Trees shall be coast live oak and valley oak.
- Replacement trees would be placed on the site in a layout that maintains a naturalized pattern and addresses views into the site and slope compatibility. Functional relationships between proposed Project structures, site access requirements, efficient circulation and preservation of open space would be considered.
- Replacement trees would be 24-inch box size, to provide the best balance between trees size at installation and eventual tree adaptability and growth success.
- A hydroseed mix of native grasses would be planted for erosion control to ensure full coverage of the disturbed area and reduce maintenance costs.

2.5.3 Construction Activities

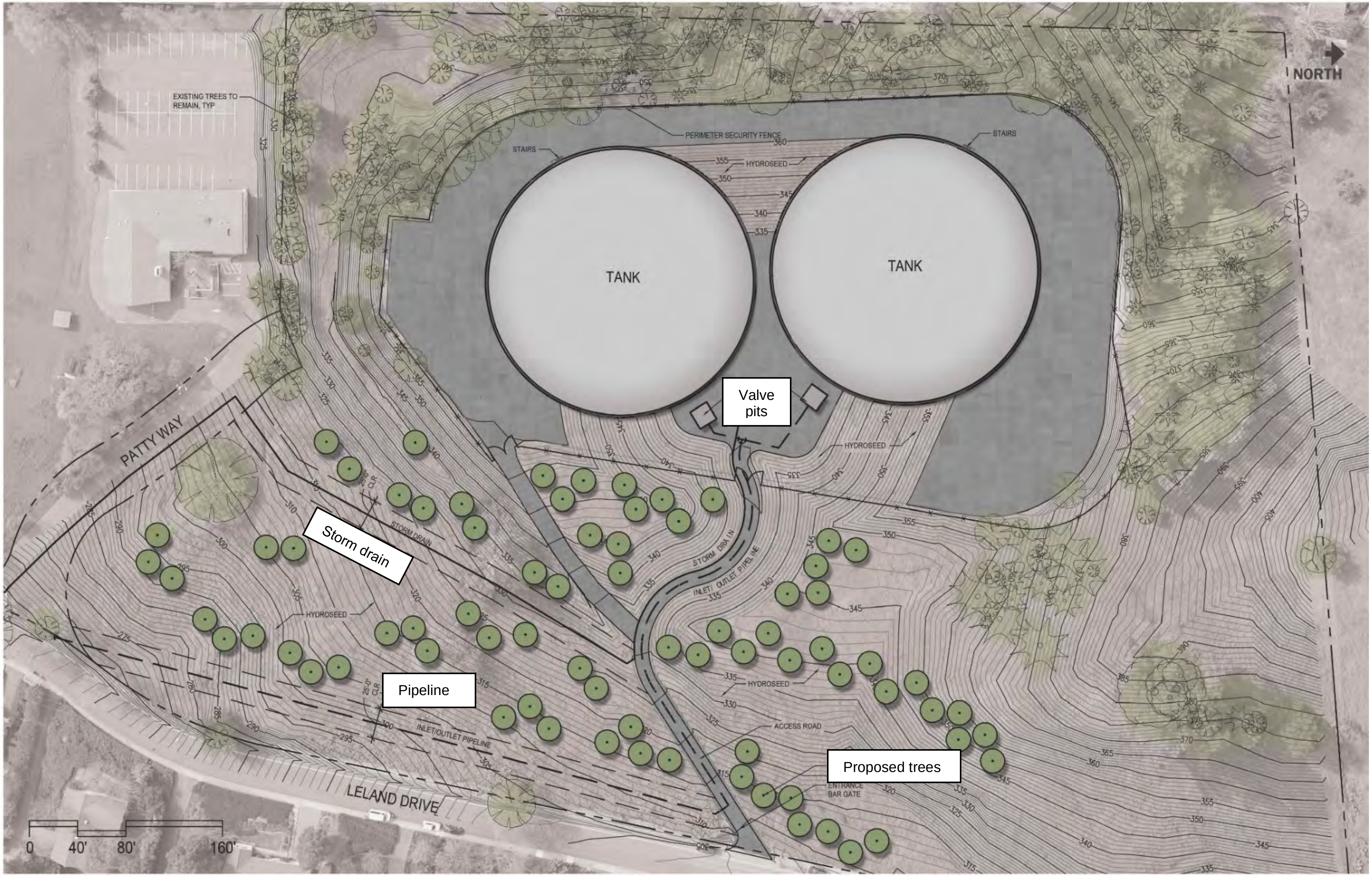
The overall construction schedule is shown in **Table 2-3**. The new pipeline in Windsor Drive, Condit Road and Leland Drive would be constructed first. When the pipeline is complete, reservoir demolition and construction would begin.

Figure 2-6: Existing Reservoir Site



Source: RHAA Landscape Architecture + Planning, 2017

Figure 2-7: Reservoir Conceptual Plan



Source: RHAA Landscape Architecture + Planning 2017

Table 2-3: Leland Reservoir Construction Activities and Duration in Weeks

Activity	Estimated Duration
Pipeline Construction in Public ROW	
Pipeline Mobilization	2
Pipeline connections-Windsor Drive/Old Tunnel Road, Leland Drive/Meek	2
Installation of pipeline in Windsor Drive Condit Road and Leland Drive [1]	7
Flushing, pressure testing and chlorination	4
Paving	1
Subtotal Pipeline Construction in Roads	16
Reservoir Demolition	
Reservoir Mobilization (mobilize crew and set up construction trailer)	2
Site Work – tree removal	2
Drain reservoir	4
Remove roof panels and structure	6
Remove girders	3
Remove columns and footings	3
Remove lining	6
Open cut excavation and soil hauling	24
Subtotal Demolition	50
Construction of New Tanks	
Reservoir foundation	8
Reservoir walls and columns	11
Reservoir prestress wrapping	8
Reservoir roof slab	20
Valve pit and piping/valves	7
Field testing and startup	9
Pipeline connection inside reservoir site	1
Install pipeline along reservoir boundary	2
Install pipeline in reservoir access road	1
Pipeline testing	2
Pipeline paving inside reservoir site	1
Storm drain connection-Patty Way/Leland Drive	1
Storm drain installation inside reservoir site	3
Paving of Patty Way/Leland Drive	1
Subtotal Construction at Reservoir Site	75
Site Restoration	
Tank backfill	13
Contouring/landscaping	8
Complete civil work	4
Demobilization	2
Subtotal Restoration	27
Total Construction Duration	**168**

Note: [1] Conservatively assumes pipeline is installed at rate of 80 linear feet/day, but actual rate could be up to 200 feet/day. Active construction time does not include down-time, submittal review, material procurement, or fabrication inspection and approval.

Pipeline

The pipeline would be constructed using an open trench construction method. Pipeline construction would require up to 23 workers, as shown in **Table 2-4**.

Table 2-4: Maximum Number of Construction Workers by Pipeline Installation Phase

	Worker Classification[1]								
Phase	**Foreman**	**Workers**	**Heavy Equipment Operator**	**Truck Driver**	**Crew Subtotal**	**Superintendent**	**EBMUD Inspector**	**City Inspector**	**Total**
Installation, Connections	2	9	4	2	20	1	1	1	23
Flushing, Testing, Chlorination	2	6	1	0	9	1	1	1	13
Paving	1	3	1	2	9	1	1	1	13
[1] Workers include plumbers and welders for pipeline installation and rakers for paving									

Open trench construction involves the following processes:

- Utility location/potholing;
- Saw cutting the pavement;
- Excavating a trench;
- Removing and stockpiling the soils;
- Installing the pipeline;
- Backfilling the trench and applying temporary paving;
- Pressure testing and disinfecting the pipeline; and
- Repaving with permanent pavement.

Pipeline construction is expected to require the following equipment:

- Concrete/industrial saws
- Loaders
- Excavators
- Dump trucks
- Generator
- Cutting Torch
- Cement mixers
- Compactor
- Water trucks
- Tractors
- Backhoes
- Delivery trucks
- Dewatering pumps
- Welder
- Air compressors
- Pavers
- Roller
- Sweepers
- Grouting pumps

Figure 2-8 shows the typical progression of open trench construction. A minimum construction easement width of 25 feet would be needed to accommodate pipe storage and to allow trucks and equipment access along the trench. In some areas where the pipeline would need to be installed at greater depth to avoid other utilities, a wider trench and construction easement may be required. The open trench in which the pipeline would be constructed would be a minimum of about 56 inches wide and about 78 inches in depth to accommodate the 36-inch in diameter pipeline. Trenches would be about 8 feet deep and 5 feet wide. Pipeline staging would be located on roadways adjacent to the pipeline alignment, with a staging area for equipment and materials at the Leland Reservoir site. Prior to installation, sections of the pipeline would be laid out along the alignment. The pipeline would then be lowered into the trench and the sections welded together. The trench would be backfilled and sections of the pipeline would be pressure tested and disinfected via chlorination before repaving[5].

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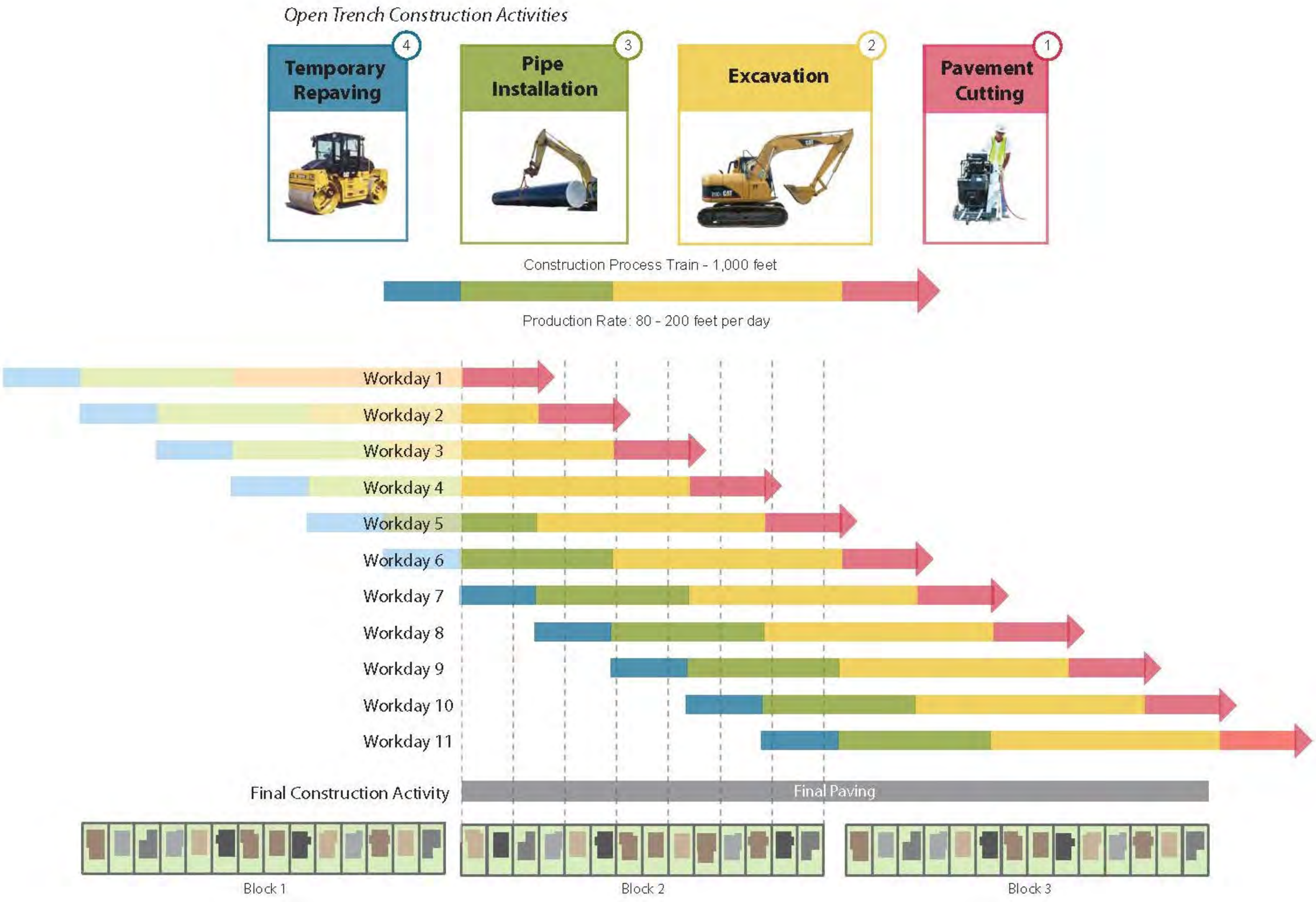
[5] Pavement would be replaced to 1 foot beyond edge of trench. If edge of trench is within 2 feet of gutter, pavement between trench cut and gutter lip would be replaced.

Figure 2-8: Typical Progression of Open Trench Construction



Source: EBMUD

Pipeline construction would proceed at a rate of about 80 feet per day. Installation of the 36-inch pipeline only within public roadways (Windsor Drive, Condit Road and Leland Drive) would take approximately two months. The entire pipeline construction process from start to finish could take approximately six months, which would include active construction and downtime (e.g. mobilization, potholing, submittal review, material procurement, fabrication inspection and approval, pipeline installation, chlorination testing, downtime, final paving, and demobilization).

The pipeline construction within the public roadways would need to be completed before the work on the reservoir starts. The existing 36-inch pipeline that traverses under Leland Reservoir is a critical transmission pipeline that connects water treatment and distribution facilities to EBMUD customers on both sides of the Leland Reservoir. The replacement of this critical transmission pipeline in the public ROW would ensure this critical connection stays intact during the reservoir demolition and replacement. Additional pipelines within the reservoir site itself would be constructed as part of the reservoir construction.

During pipeline construction, lane closures would be required, and in some cases the segment of the street undergoing active construction may be closed to traffic during construction hours. The exact location of the pipeline within the roadway would be determine during detailed design and depends on the locations of existing utilities within the street. As specified in EBMUD Standard Construction Specification 01 14 00, the contractor would be required to ensure that no damage occurs to existing utilities in the roadway, including sewer lines and existing water lines[6]. If, during pipeline installation or reservoir construction-related activities, sewer lines, sewer laterals, or other utilities are impacted, EBMUD would coordinate with the appropriate utility owner to repair or replace the damaged utility line(s). Through traffic would be restricted but access to residences would be allowed as follows. Access would be restored during non-work hours, as open trenches would be temporarily “closed” at the end of each work day, by covering with steel plates or backfilled. Pedestrian access to homes would be maintained at all times. As required by EBMUD Standard Construction Specification 01 55 26 (Traffic Regulation), EBMUD would ensure that access is maintained for emergency vehicles, the contractor would be required to prepare a detailed traffic control plan that would describe emergency vehicle access. For any areas where roads would be temporarily closed, the contractor would be required to provide immediate access to emergency response vehicles if needed.

During construction, regular trash, compost, and recycling service would not be interrupted, and residents should continue to place solid waste containers on the curbside prior to normal pickup days. The construction contractor would be responsible for ensuring access by the solid waste handler(s) at normally scheduled times. For example, the construction contractor may need to adjust their work tasks during the scheduled solid waste pickup times to ensure access by the solid waste handler, or the construction contractor may need to move the solid waste containers to a location that is accessible to the solid waste handler and then replace the containers following pickup.

The new 36-inch pipeline would connect to the EBMUD existing water transmission pipelines. The work to connect the new pipelines to existing pipelines would require the excavation of a trench or pit at each connection location: Old Tunnel Road/Windsor Drive, Leland Drive/Meek Place, and at the southern edge of the reservoir site on Leland Drive (pipeline tie-in locations are shown in **Figure 2-3**). Temporary shoring would be required to ensure the stability of the excavation. The proposed tie-ins would be located within the street ROW. Construction of the connections is estimated to require a 71- to 76-hour period, and night work would be necessary for the tie-ins at Old Tunnel Road/Windsor Drive and Leland Drive/Meek Place.

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[6] Water lines providing services to homes in the Project area are not directly connected to the pipelines that would be affected by construction, and water service interruptions are not expected to occur during construction.

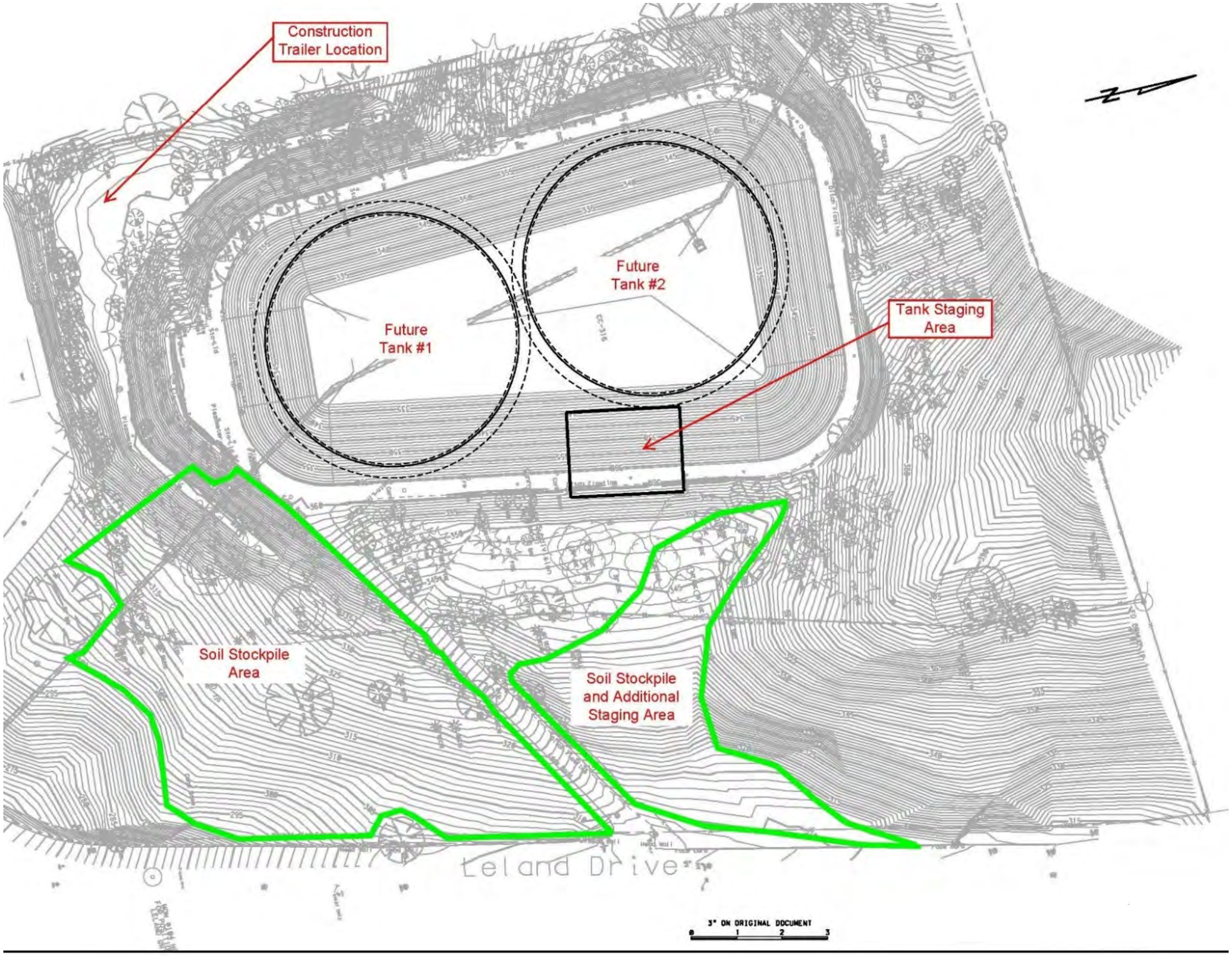
Connections would be made by installing a new tee; the installation would require construction crews to shut down the existing pipeline by closing isolation valves and then dewatering the pipeline, which would take approximately 5 to 7 hours. Water from the dewatering process would be discharged to the storm drain through a drain inlet or sewer through a manhole consistent with City of Lafayette permit requirements and statewide requirements. A section of the pipeline would then be cut out and a new tee connection and valves would then be welded in place from the inside and outside; the connection process would take about 24 hours of continuous work, requiring nighttime construction. Once welding is complete, the connection would be covered with mortar to protect the connection point, and the mortar must be allowed to dry, which requires approximately 36 hours and would extend overnight, but no active nighttime work would be needed during the drying process. Finally, the pipelines would need to be flushed, chlorinated and returned to service, which would require the use of pumps. Because the drying process would be completed at night, this last step, which takes approximately 7 to 9 hours and requires the use of pumps, is expected to occur during the nighttime hours.

Following placement of the new pipeline into service and draining of the reservoir, the existing 30-inch pipeline in Old Tunnel Road to the Leland Reservoir property would be disconnected from the transmission system and abandoned in place. Endcaps would be installed on both ends of the abandoned pipeline (one near the connection at Old Tunnel Road and Windsor Drive, and one on EBMUD property before the pipeline traverses under the reservoir). The abandoned pipeline would be filled with cellular concrete between the two endcaps.

Reservoir

As noted in **Table 2-3**, reservoir construction would begin with mobilization. This would involve mobilization of the construction crew, and setting up a construction trailer on the site (see **Figure 2-9)**. The size of the construction crew would vary depending on the phase of work, with about 10 to 25 workers being on site during various phases of the work. At the start of construction, vegetation would be removed from the existing embankment on the east side of the reservoir, and the existing reservoir would be drained. Once the reservoir is fully drained and sediments are disposed of, the embankment would be breached and soil would be stockpiled or hauled off site. **Figure 2-9** shows the soil stockpile and staging areas on the reservoir site. Stockpiles would be constructed at a 1:1 or 2:1 slope and could be up to 40 feet high, with terraces for construction equipment access and stability, and temporary retaining walls if needed. The existing reservoir and existing pipeline through the site would be demolished and construction of the new tanks would begin. Once the tanks are constructed, the stockpiled soil would be used to backfill around the tanks and reconstruct the embankment, retaining the access road into the bottom of the existing reservoir where the new tanks would be located. The pipelines within the reservoir site would be installed and connected and the site would be restored, including installation of landscaping.

Figure 2-9: Soil Stockpile and Staging Areas



Reservoir construction is expected to involve the following equipment:

- Generator to provide power to equipment on site
- Backhoe for soil removal and site contouring
- Chain saws and wood chipper for tree removal
- Portable pump to drain reservoir
- Excavator for demolition and excavation
- Hoe ram (an impact hammer mounted on excavator) for demolition of concrete structures
- Air compressor
- Concrete crusher for demolition of existing reservoir
- Bulldozer for excavation and backfill
- Concrete trucks and pumps
- Crane for erection of reservoir structures
- Compactor for backfill
- Scraper and roller to contour soil and prepare access road
- Asphalt paver

Truck traffic for off-hauling, equipment deliveries, and material deliveries would more than likely access the Project site via the most direct route using SR 24, Pleasant Hill Road, Old Tunnel Road and Leland Drive but may utilize other less direct routes. Construction workers could park along the eastern edge of the reservoir site on the shoulder of Leland Drive.

Once construction is complete, the site would be landscaped. The site would be revegetated with a mixture of native grasses and trees. As shown in **Figure 2-7** the conceptual plan includes recreating an oak savannah landscape with oaks scattered through native grassland. A total of 75 coast live oak and valley oak trees would be planted. Newly planted tree would be irrigated until the plants are well-established, typically five years.

2.5.4 Construction Schedule

Construction is planned to start in the fall 2022, beginning with pipeline construction in the public ROW. Pipeline construction would occur first and would take approximately six months to complete. The reservoir construction may begin in early 2023 after the pipeline construction is complete. Reservoir construction is expected to be completed by the end of 2025. Construction would typically occur between 7:00 a.m. and 7:00 p.m., Monday through Friday, with afterhours or weekend construction activity limited to unplanned/unexpected occurrences or critical shutdowns and emergencies. Construction trucks and personnel could report to the site at 7:00 am for minor tasks and meetings, but as required by EBMUD Standard Specification 01 14 00 (subsection 1.8A, Construction Noise) no construction work that generates noise over 90 dBA would occur until 8:00 am. A 6:00 a.m. start time is needed during reservoir foundation and roof slab concrete pour work, which is estimated to occur over a total of about 16 days for both tanks (8 days per tank). To minimize interruptions on the pipeline construction in front of The Meher Schools, pipeline construction in front of the school would be scheduled during periods when school is not in session.

Nighttime work would likely be required for the tie-in of the new pipeline to the existing distribution system. Although a 12-hour window is proposed, a typical eight-hour work day serves as the basis of the production rates in all analysis completed for this Draft EIR. If the contractor elects to work extended hours, productivity would increase and construction duration could be shortened.

2.6 Operation and Maintenance

Once constructed, both the pipeline and reservoir would operate in the same way as existing facilities. The new tanks would continue to be operated and monitored remotely. The reservoir site would be routinely inspected by EBMUD's operations and maintenance staff. Long-term site maintenance would continue, and would involve management of vegetation on site including controlling the growth of annual grasses, keeping the site clean and free of debris, and trimming shrubbery and trees to maintain clear views into the site for both fire prevention and public safety. EBMUD maintains its properties to comply with city and county fire prevention vegetation management standards as part of its on-going site maintenance program.

Pipeline maintenance procedures are described below:

2.6.1 Flushing

EBMUD would conduct periodic pipeline flushing to remove particles, rust, or old water that has lost its chlorine residual. In the event of a pipeline break that presents the possibility of contamination, EBMUD determines whether flushing the pipeline with chlorinated water is needed to remove any biological contamination and/or particles that may have entered the pipeline during the break. Transmission pipelines, such as those identified for the Project, generally carry a high flow of water that prevents sediment buildup, removes rust, and keeps the water fresh. As a result, transmission pipelines would typically be flushed only when there is a reported water quality problem or following a pipeline break. Flushed water would be disposed of to the storm drain through a drain inlet or sewer through a manhole consistent with City of Lafayette permit requirements and statewide requirements, and in accordance with local municipal permits for water discharge.

2.6.2 Anode Replacement

Welded steel pipeline would be installed for the Project. Welded steel pipelines are often protected from corrosion by a cathodic protection system. The anodes used in a cathodic protection system require replacement about once every 25 years. Anode replacement would involve using a drill rig or backhoe to make a hole for the anode, placing the anode underground, connecting wires to the cathodic protection system, and backfilling the hole.

2.6.3 Leak Detection

EBMUD would conduct routine leak detection on its pipelines. Several different methods would be used, including the deployment of internal pipeline probes and external listening devices. These methods could be performed while the pipeline is in service and would be employed by small crews driving pickup trucks or vans.

2.6.4 Right-of-Way Maintenance

EBMUD would conduct routine inspections and maintenance to identify and remove vegetation from areas above water pipelines. For pipelines installed in roadways, the valve pots would be adjusted for height whenever the road was repaved or otherwise reconstructed so that the valve pots would not sit too low or too high.

2.6.5 Valve Preventative Maintenance

Valves would be installed along the pipelines to allow EBMUD to isolate a reach of pipeline for maintenance activities or repairs. The maintenance program for these valves would consist of locating, cleaning, and exercising the valves attached to distribution mains. Maintenance activities would be conducted approximately every two years, and any broken valves would be repaired or replaced.

2.7 Permanent Rights-of-Way

The pipelines would be located beneath existing roads in public ROWs in the City of Lafayette and within the existing Leland Reservoir site owned by EBMUD.

2.8 EBMUD Practices and Procedures

EBMUD has incorporated a number of standard construction specifications, standard practices from EBMUD's Environmental Compliance Manual (EBMUD 2010), and Engineering Standard Practices into the Project. These standard specifications and standard practices are designed to address typical characteristics of EBMUD construction projects and are not project-specific or tailored to the unique characteristics of the Project. These standard specifications and standard practices, which are applicable to all EBMUD construction projects and reflect generally applicable EBMUD standard operating procedures, are described in more detail below.

EBMUD maintains several Standard Specifications specifically related to environmental conditions, including:

- 00 31 21.13, "Site Survey Information" — This section requires the Contractor to provide documentation of both pre- and post-construction pavement conditions in the project vicinity, and includes provisions for long-term transportation safety
- 01 14 00, "Work Restrictions" – This section sets limits on construction hours and on noise-generating activities.
- 01 35 44, "Environmental Requirements" — This section includes provisions related to water quality, dust and emissions control, noise and vibration control, hazardous materials control, and protection of biological and cultural resources.
- 01 55 26, Traffic Regulation – This section includes provisions for the regulation of traffic during construction and compliance with applicable traffic regulations requirements.
- 01 35 24, "Project Safety Requirements" — This section includes provisions for the safety of the public and construction workers regarding hazards and hazardous materials.
- 01 74 05, "Cleaning" – This section requires compliance with local ordinances and anti-pollution laws and that the construction site be kept free of waste materials and rubbish.
- 02 83 13, "Lead Hazard Control Activities" — This section includes requirements for the handling, removal, and proper disposal of lead-containing hazardous materials required as a result of construction activities, and includes provisions for hazardous materials controls.

EBMUD's Environmental Compliance Manual includes best management practices (BMPs) that have been incorporated into the Project, including provisions regarding water quality, hazardous waste, trench spoil, and reservoir rehabilitation.

EBMUD's Engineering Standard Practice 512.1, Water Main and Services Design Criteria (EBMUD 2006), and Engineering Standard Practice 550.1, Seismic Design Requirements (EBMUD 2001), dictate basic requirements for water pipelines and design standards for pipelines to withstand seismic hazards.

EBMUD's Reservoir Design Guide (2014) establishes minimum requirements to be followed in the design of EBMUD drinking water reservoirs. This guide details design criteria and conditions for above- and below-ground water reservoirs and outlines applicable codes and design standards.

2.9 Permits and Approvals

Table 2-5 provides a summary of the approvals and permits that EBMUD would be required to obtain prior to construction.

Table 2-5: Agency-Required Approvals and Permits

Agency/Stakeholder	Type of Jurisdiction	Type of Approval
City of Lafayette	Local	Encroachment permit for construction in city streets Approval for use of storm drains for dewatering activities.
Central Contra Costa County Sanitary District	Local	Approval for use of sewer line for dewatering activities.
Regional Water Quality Control Board	State and Federal	National Pollutant Discharge Elimination System Construction General Permit for construction activity disturbing an area equal to or greater than one acre of land, and Waste Discharge Requirements for dewatering.
Division of Safety of Dams	State	Review and approval of plans for modifying Leland Reservoir Dam.
California Department of Transportation	State	Transportation permit for movement of oversized or excessive-load vehicles on state roadways.

2.10 References

East Bay Municipal Utility District (EBMUD). 1995. Concrete Reservoir Roof Repair and Replacement Alternative Study, prepared by John Carollo Engineers. September 1995.

EBMUD. 2001. Seismic Design Requirements Engineering Standard Practice 550.1. November 2, 2001.

EBMUD. 2006a. Draft EIR for Water Treatment and Transmission Improvements Program. June 2006. Prepared by Environmental Science Associates.

EBMUD. 2006b. Water Main and Services Design Criteria Engineering Standard Practice 512.1. October 9, 2006.

EBMUD. 2010. Environmental Compliance Manual. 2010 Edition.

EBMUD. 2014. Leland Reservoir Replacement Facilities Plan. March 2014.

EBMUD. 2014. Reservoir Design Guide.

EBMUD. 2016. Urban Water Management Plan 2015. July 2016.

EBMUD. 2017. Standard Specification Number 00 31 21.13, Site Survey Information.

EBMUD. 2017. Standard Specification Number 01 14 00, Work Restrictions.

EBMUD. 2017. Standard Specification Number 01 35 24, Project Safety Requirements.

EBMUD. 2017. Standard Specification Number 01 35 44, Environmental Requirements.

EBMUD. 2017. Standard Specification Number 01 55 26, Traffic Regulation.

EBMUD. 2015. Standard Specification Number 01 74 05, Cleaning.

EBMUD. 2014. Standard Specification Number 02 82 13, Asbestos Control Activities.

EBMUD. 2017. Standard Specification Number 02 83 13, Lead Hazard Control Activities.

RHAA Landscape Architecture + Planning (RHAA). 2017. Leland Reservoir Replacement Project Conceptual Design Report.

Chapter 3 Setting, Impacts, and Mitigation

3.0 Introduction to Environmental Analysis

3.0.1 Impacts Not Found to be Significant

EBMUD prepared an IS to determine which environmental resources required detailed evaluation in the Drat EIR. Based on the evaluation of impacts in the IS, it was determined that the Project would have no impacts on: Agriculture and Forestry Resources, Mineral Resources, Population and Housing, Public Services, and Utilities and Service Systems. A detailed discussion of these resources has been excluded from this Draft EIR.

3.0.2 Organization of Chapter 3

Chapter 3 includes evaluation of each environmental resource area as follows:

- 3.1 Aesthetics
- 3.2 Air Quality
- 3.3 Biological Resource
- 3.4 Cultural Resources
- 3.5 Energy Resources
- 3.6 Geology and Soils
- 3.7 Greenhouse Gas Emissions
- 3.8 Hazards and Hazardous Materials
- 3.9 Hydrology and Water Quality
- 3.10 Land Use
- 3.11 Noise
- 3.12 Recreation
- 3.13 Traffic and Transportation

3.0.3 Organization of Discussion of Environmental Issue Areas

For each resource area, this Draft EIR evaluates the environmental impacts of the proposed Project. Sections 3.1 through 3.13 discuss the environmental impacts that may result with approval and implementation of the proposed Project. The IS, which is included in **Appendix A**, includes a discussion of all of the other environmental resources and explains why the Project would have no impact on those resources. Each environmental resource section contains the following components:

1. **Environmental Setting** describes the setting as it relates to the specific resource topic. The setting information covers the areas affected by the proposed Project: the Leland Reservoir site, the alignment of the replacement pipeline, and the surrounding neighborhood.

2. **Regulatory Framework** provides an overview of relevant Federal, state, and local laws, regulations, ordinances, and EBMUD standard construction specifications, practices, and procedures applicable to each resource area.

3. **Impact Analysis** includes the following subsections:
    - **Methodology for Analysis**, which describes the approach used in analyzing the potential impacts;
    - **Significance Criteria** is based on those identified in the Initial Study Checklist in Appendix G of the CEQA Guidelines, but are modified or supplemented as appropriate to address the proposed Project impacts; and

- **Impacts and Mitigation Measures** provide an evaluation of impacts and identification of mitigation measures, if needed. The impact analysis is presented by a numbered impact summary statement that corresponds to the resource area.

The end of each impact statement includes a determination of the level of significance before and after any identified mitigation measures are implemented. Impacts that exceed identified threshold levels of significance criteria would be considered significant. In describing the significance of impacts, the following categories of significance are used:

- **Significant and Unavoidable.** Adverse environmental consequences that exceed the significance criteria identified for the resource, even after feasible mitigation strategies are applied and/or an adverse effect that could be significant and for which no feasible mitigation has been identified.
- **Less than Significant with Implementation of Mitigation Measures.** Adverse environmental consequences with the potential to be significant, but can be reduced to less than significant levels through the application of identified mitigation measures for the relevant alternative.
- **Less than Significant.** Potential adverse environmental consequences have been identified. However, they are not so adverse as to meet the significance criteria for a resource. Therefore, no mitigation measures are required.
- **No Impact.** No adverse environmental consequences have been identified for the resource, or the consequences are negligible or undetectable. Therefore, no mitigation measures are required.

3.0.4 Approach to Analysis of Cumulative Impacts

CEQA Requirements

CEQA requires consideration of cumulative impacts. A cumulative impact is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the Project when added to other closely related past, present, or reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is provided in Section 15130 of the CEQA Guidelines, and included below:

- An EIR shall discuss cumulative impacts of a project when the project’s incremental effect is “cumulatively considerable” (i.e., the incremental effects of an individual project are considerable when viewed in connection with effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).

- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.

- The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not be as detailed as it is for the effects attributable to the project alone.

- A project’s contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

- The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

The cumulative impact analysis for each individual resource topic is described at the end of each resource section in this Chapter, except for the GHG section, in which the entire analysis is inherently cumulative.

Approach to Analysis

For evaluation of cumulative impacts, this EIR uses a list-based approach, and evaluates the potential for past, present, and probable future projects in the Project area to result in cumulative impacts. Once the Project is constructed the operation of the new facility would be essentially the same as that of the existing reservoir, so no operational impacts are expected. Project impacts are entirely associated with construction, so the analysis of cumulative impacts has focused on other projects that could be constructed in the City of Lafayette at the same time. Information about pending project applications was obtained from the City of Lafayette (2017a, 2017b), City of Walnut Creek (2017), BART (2017), PG&E (2017) and from the Central Contra Costa Sanitary District (2017). EBMUD has no pending projects in the City of Lafayette or in the City of Walnut Creek within one mile of the Project site.

Table 3.0-1 contains a list of projects planned for construction within the general vicinity of the Leland Reservoir site. There are three upcoming projects in the City of Lafayette that are in the vicinity of the Reservoir site and one project in the Saranap area of Walnut Creek. Central Contra Costa Sanitary District is not currently planning any projects that would affect the Project area. Locations of projects are shown in **Figure 3.0-1**.

Table 3.0-1: List of Cumulative Projects

Project Name/Description	Size (acres)	Location	Construction Date	Nexus? [c]
Hoedel Court Subdivision: Subdivide 6 lots and construct 6 new single-family residences	3	Hoedel Court, about 1,000 feet west of reservoir site	2017-2019 [a]	N
Lafayette Park Terrace: multiple-family residential complex with 18 condominium units	2	3235 Mt. Diablo Court, about 2,000 feet west of reservoir site	2017-2019 [a]	N
Homes at Deer Hill: 44 new single-family residences and community park facilities including sports field, playground, dog park and parking	22.3	3233 Deer Hill Road, about 2,500 feet north-west of reservoir site	2017-2021 [a]	N
Byron Park Expansion: 33,649 sq. ft. residential care facility with 40 beds. Underground parking (40 stalls)	1.2	1700 Tice Valley Blvd., Walnut Creek, about 1 mile southeast of reservoir site	2018-2019 [b]	N

[a] Date is estimate provided by City of Lafayette Planning Department.

[b] Date is developer's estimate of construction period.

[c] Impact nexus would exist if construction dates overlap with construction of the Project, which is scheduled for fall 2022 to the end of 2025.

Figure 3.0-1: Location of Cumulative Projects

3.0.5 References

BART. 2017. Projects web page, accessed October 10, 2017, available at: https://www.bart.gov/about/projects

Central Contra Costa Sanitary District. 2017. Email from Russell B. Leavitt, Environmental Coordinator, to Robin Cort of RMC, a Woodard & Curran Company June 30, 2017.

City of Lafayette. 2017a. Major Development Projects web page, accessed May 15, 2017, available at: http://lafayette.icitywork.com/

City of Lafayette. 2017b. Email from Niroop Srivatsa, Planning and Building Director to Robin Cort of RMC, a Woodard & Curran Company May 15, 2017.

City of Walnut Creek. 2017. New Development Projects web page, accessed July 12, 2017, available at: http://www.walnut-creek.org/departments/community-and-economic-development/planning-zoning/new-development-projects

PG&E. 2017. Current Projects web page, accessed October 10, 2017, available at: https://www.pge.com/en_US/safety/electrical-safety/safety-initiatives/transmission-project-overview.page

3.1 Aesthetics

This section addresses aesthetic and visual quality impacts associated with construction and operation of the proposed Project. This section includes a description of visual conditions in the Project area and an evaluation of the Project's potential effects on visual resources using photorealistic visual simulations for publicly accessible viewpoints, which were prepared as part of the Conceptual Architecture and Landscape Design Report that was prepared for the Project, and is included in **Appendix C**. Visual impacts of the project were evaluated in a Technical Memorandum on Aesthetics, which is included in **Appendix D**. Simulated views from private viewpoints, which were developed using a three-dimensional (3D) computer model, are also presented, based on existing visual conditions at the Project site and the surrounding area.

3.1.1 Environmental Setting

Regional Setting

The Project site and surrounding area contains visual resources representative of California's northern Coast Range mountains and inland valley landscapes. Natural features include rolling grass covered hillsides, steep rugged hills and narrow ravines, broad valleys and prominent ridges, meandering tree lined creeks and drainages, and oak woodlands. Within this setting, peaks, open ridgelines and wooded hillsides are prominent landscape features that provide a visual backdrop for the region's urban and suburban development pattern.

Leland Reservoir is located on an approximate 14.5-acre site opposite 1050 Leland Drive, south of Old Tunnel Road in a residential area of the City of Lafayette. The City of Lafayette is primarily a residential community and it is the residential neighborhoods that largely define its character. Residential development is located on either side of the Mt. Diablo Boulevard corridor, along valley floors and on the surrounding hillsides. Residential neighborhoods present a diverse visual environment, offering a variety of housing types, and architecture that is sensitive to the hilly landscape. Most of the City of Lafayette's commercial and institutional development is concentrated in the City's downtown, which is located about one mile west of the Project site along the SR 24 corridor. SR 24 is a major highway that bisects the City of Lafayette, passing through the City from west to east. Areas of the City of Lafayette located in the immediate vicinity of SR 24 are characterized by a more urban visual character that is dominated by the large scale physical features of the highway, in contrast to other parts of the City of Lafayette that retain a development pattern that is smaller in scale and blends in with surrounding natural landscape features. **Figures 2-2** and **2-3** in the Project Description show the Project site within its regional context.

Leland Reservoir Project Site Setting

Leland Reservoir is surrounded by embankments that screen it from view from most of the adjacent streets, including Leland Drive, Old Tunnel Road, Maryola Court, Mars Court, and Windsor Court. The reservoir is about 700 feet south of SR 24, but is not visible from the highway because there is a hill between the freeway and the Project site that obstructs views of the reservoir. There are about a dozen homes on Ruth Court and Sunset Loop, east of Leland Drive, that are at higher elevations and therefore have views of the reservoir site, but not the reservoir itself. Homes at the end of Maryola Court, Mars Court and Windsor Court have backyards that are immediately adjacent to the west side of the reservoir site, but are also screened from the reservoir itself by the intervening embankment. The reservoir is not visible from the Sun Valley Bible Chapel located immediately south of the reservoir site because intervening vegetation and an elevation change between the two locations obscure sight lines from the Chapel to the reservoir. The reservoir itself is only visible from homes at higher elevations at the end of Ruth Court and Sunset Loop, east of the Project site. The site is vegetated with scattered mature native oak trees, along with oak, pine, redwood and eucalyptus trees that were planted by EBMUD or established themselves on the site. The visual character of the site changes slightly due to seasonal patterns that affect the color of vegetation on the embankments that surround the site.

The grasses on the embankments are a golden brown during the dry summer and fall seasons and normally change to green during wetter months of the year. Trees on the site are a combination of deciduous and evergreen species. During the late fall and winter, the deciduous trees lose their leaves, and re-grow them in the spring, resulting in visual character variability during the year. **Figure 2-6** in Chapter 2, Project Description, shows the Leland Reservoir site and its existing features.

The area surrounding Leland Reservoir hosts a native Oak Savannah landscape. The most common tree species on the site are Coast Live Oak and Valley Oak, and other trees include various pine and eucalyptus species. The site's understory is comprised of native grasses. The site's vegetation and elevation above most of the surrounding area are valuable for site screening, and the height and shape of the hills help to visually obscure the reservoir and inhibit public entry. Maintaining these defenses is key in developing both a visual and physical separation between the site and adjacent neighbors. However, steep slopes at the site limit the area available for construction storage, staging and stockpiling of materials, and existing trees constrain construction access and availability of soil stockpiling locations.

3.1.2 Regulatory Framework

This section describes policies and regulations that may apply to the Project. No federal policies are applicable to the Project relative to aesthetics.

State Policies and Regulations

California State Scenic Highways Program

California's Scenic Highway Program was created by the Legislature in 1963. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. SR 24, which passes approximately 700 feet north of the reservoir, is a state designated scenic highway (California Department of Transportation 2017).

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD, as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances (e.g., tree ordinances) for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning, and to consider local environmental protection policies for guidance. At the local level, aesthetic quality is addressed through implementation of General Plan policies and compliance with the City of Lafayette's Tree Ordinance, which provide guidelines for preserving and enhancing the visual character and scenic resources of the area. Applicable local policies regarding aesthetics are identified below.

City of Lafayette General Plan

The City of Lafayette General Plan is a comprehensive, long-range plan for the physical development of the city that identifies goals and policies. The Land Use and Open Space and Conservation Chapters of the General Plan include the following policies that are relevant to the Project:

Chapter I: Land Use

Policy LU-1.1	Scale: Development shall be compatible with the scale and pattern of existing neighborhoods.
Policy LU-2.3:	Preservation of Views: Structures in the hillside overlay area shall be sited and designed to be substantially concealed when viewed from below from publicly owned property. The hillsides and ridgelines should appear essentially undeveloped, to the maximum extent feasible.
Policy LU-15.1	Review Capital and Public Improvements: Review capital and public improvements to ensure that they are designed and built in a manner sensitive to the surrounding area.
Policy LU-15.2	Inter-Agency Coordination: Work with agencies who carry out capital improvements in the City to ensure that they are aware of, and comply with, the city's aesthetic standards and review procedures.

Chapter III: Open Space and Conservation

Policy OS-3.1	Protect Natural Features of the Lands: The character and natural features of hills, steep slopes, riparian areas, woodlands, and open areas will be preserved in as natural a condition as feasible.
Policy OS-3.2	Preserve the predominant views of the hill areas: Require that structures in identified environmentally sensitive areas be substantially concealed by existing vegetation or terrain when viewed from lower elevations, to the maximum extent feasible.
Policy LU-4.1	Infrastructure Design: Public and private infrastructure should reinforce the semi-rural qualities of residential neighborhoods.

City of Lafayette Municipal Code – Tree Ordinance

Title 6: Planning and Land Use, Chapter 6-17

6-1703	Destruction of a Protected Tree: It is a violation of this chapter for any person to remove or destroy a protected tree without a category I or category II permit under Section 6-1706 or 6-1707, or without the approval of an exception under Section 6-1705.
6-1704	Permit Required to Remove a Protected Tree: A category I or category II permit under Section 6-1706 or 6-1707 is required to remove or destroy a protected tree.
6-1707	Permit Category II: Protected Tree on Developed or Undeveloped Property Associated with Development Application: A category II permit is required if the proposed construction may result in the destruction or removal of a protected tree.

EBMUD Standard Construction Specifications

EBMUD’s Standard Construction Specification 01 35 44 (Environmental Requirements), Section 3.7 requires controls on site activities and describes measures that shall be implemented to reduce the potential for damage to native and non-native protected trees, which play an important role in defining the visual character of the Project site. Measures to protect trees as required by the specification include:

- Locations of trees to be removed and protected are shown in the drawings. Pruning and trimming shall be completed by the Contractor and approved by the Engineer. Pruning shall adhere to the Tree Pruning Guidelines of the International Society of Arboriculture.
- Erect exclusion fencing five feet outside of the drip lines of trees to be protected. Erect and maintain a temporary minimum 3-foot high orange plastic mesh exclusion fence at the locations as shown in the drawings. The fence posts shall be six-foot minimum length steel shapes, installed at 10-feet minimum on center, and be driven into the ground. The Contractor shall be prohibited from entering or disturbing the protected area within the fence except as directed by the Engineer. Exclusion fencing shall remain in place until construction is completed and the Engineer approves its removal.
- No grading, construction, demolition, trenching for irrigation, planting or other work, except as specified herein, shall occur within the tree protection zone established by the exclusion fencing installed shown in the drawings. In addition, no excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the tree protection zone.
- In areas that are within the tree dripline and outside the tree protection zone that are to be traveled over by vehicles and equipment, the areas shall be covered with a protective mat composed of a 12-inch thickness of wood chips or gravel and covered by a minimum ¾-inch thick steel traffic plate. The protective mat shall remain in place until construction is completed and the Engineer approves its removal.

EBMUD’s Standard Construction Specification 01 35 44, Section 1.1(B) requires controls on site activities and describe measures that shall be implemented to ensure that the Project site is maintained in as clean a condition as possible. Measures related to construction site maintenance include:

- When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan.
- Excess material shall be disposed of in locations approved by the Engineer consistent with all applicable legal requirements and disposal facility permits.

EBMUD’s Standard Construction Specification 01 74 05 (Cleaning), requires controls on site activities relative to the cleanliness of construction areas:

- At all times maintain areas covered by the Contract and public properties free from accumulations of waste, debris, and rubbish caused by construction operations.
- During execution of work, clean site and public properties and legally dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. All soil and any other material tracked onto the streets by the Contractor shall be cleaned immediately. The Contractor shall comply with all rules and regulations as applicable for its cleaning method.
- Dispose of all refuse off District property as often as necessary so that at no time shall there be any unsightly or unsafe accumulation of rubbish.

3.1.3 Impact Analysis

Methodology for Analysis

For purposes of the analysis, visual resources are generally defined as the natural and built landscape features that can be seen. The overall visual character of a given area results from the combination of natural landscape features, including landform, water, and vegetation patterns, as well as the presence of built features such as buildings, roads, and other structures.

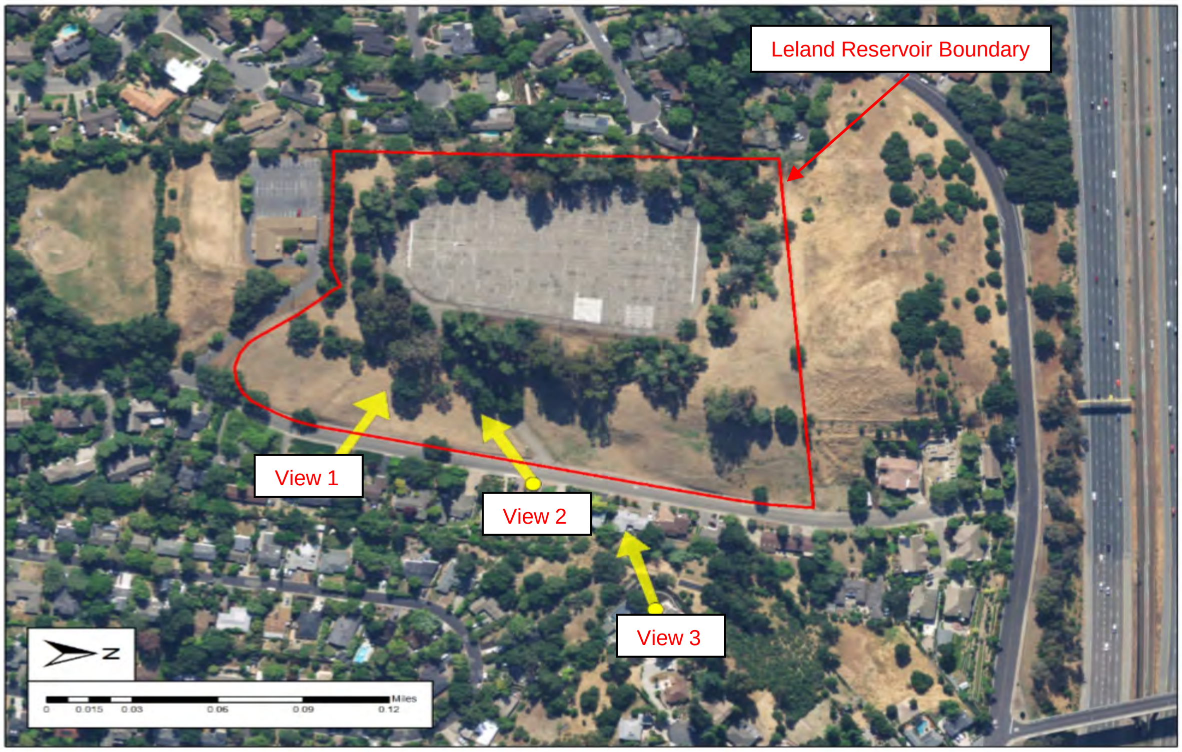
This analysis considers view obstruction, negative aesthetic effects, and light and glare effects. As part of the analysis, computer-generated visual simulations were produced to illustrate conceptual “before” and “after” visual conditions as seen from view locations described below. The visual simulations provide a clear depiction of the location, scale, and general appearance of proposed Project changes. Digitized photographs and computer modeling and rendering techniques were used to prepare the simulation images. The visual analysis is also based on field observations of the Project site and its surroundings, in addition to a review of Project design drawings, and aerial and ground-level photographs of the Project area.

Method for Illustrating Existing and Proposed Conditions

Figure 2-7 in Chapter 2, Project Description, is a plan view rendering of the Project site after Project implementation which illustrates the location and dimensions of the proposed reservoir tanks, the alignment of the road that would surround the tanks, the new site access road, and proposed replacement trees that would be planted as part of the Project.

Computer-generated visual simulations and renderings evaluate a project’s anticipated impact on visual resources, and compare the images of existing views to the simulations of views after project implementation. Visual simulations and renderings were prepared as part of the Conceptual Architecture and Landscape Design Report (Design Report), which is included in **Appendix C**. **Figure 3.1-1** is an aerial image of the existing Project area showing the locations and view directions of viewpoints that were identified as being representative and were evaluated as part of the Design Report. Viewpoints are shown using arrows on the image.

Figure 3.1-1: Existing Conditions and Viewpoints Locations Map



Source: RMC 2017

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Have a substantial, adverse effect on a scenic vista;
2. Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
3. Substantially degrade the existing visual character or quality of the site and its surroundings; or
4. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The significance determination is based on several evaluation criteria, including the extent of Project visibility from sensitive viewing areas such as residential areas; the degree to which the various Project elements would contrast with or be integrated into the existing landscape; the extent of change in the landscape's composition and character; and the number and sensitivity of viewers.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to the Project are identified below, along with a supporting rationale as to why further consideration is unnecessary and a no impact determination is appropriate.

- *Criterion 1: Have a substantial, adverse effect on a scenic vista.* There are no designated scenic vistas in the Project area; therefore, there is no impact.
- *Criterion 2: Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.* Although SR 24 is a state designated scenic highway, the Project site is not visible from SR 24; therefore, there is no impact.

Impacts and Mitigation Measures

Impact AES-1 Substantially degrade the existing visual character or quality of the site and its surroundings (Criterion 3).

The Project would affect the visual character of the Project area both due to short-term disruption during construction and due to the long-term change associated with replacing the reservoir with tanks and removing existing trees. A total of approximately 90 trees would be removed for construction of the Project, sixteen of which are designated "protected" status by the City of Lafayette. Approximately 30 additional hazard trees would be removed from the site prior to Project implementation because some of the trees are dead or dying and thus presents a fire hazard, and some of the trees are structurally unsound and presents safety risks associated with falling branches or potential failure of the entire tree.

Construction activities associated with the Project would require vegetation removal, earthwork, stockpiling of material and the use of heavy equipment. The degree to which construction activities would be noticeable would vary, depending on the views experienced by residents, pedestrians and motorists, and on the type and location of those activities. Pipeline construction, vegetation removal and soil stockpiling on hill embankments would be highly visible to viewers directly adjacent to the work area, and though temporary, would occur over an extended time. The proximity and high visibility of construction activities would be a potentially significant impact of the Project. However, as detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44. Section 3.7, Tree Protection, of Standard Construction Specification 01 35 44, which would ensure that trees on the reservoir site that do not need to be removed for construction would be protected from damage and that trees along Windsor Drive, Condit Road and Leland Drive would not be adversely affected by pipeline construction; tree protection measures included erection of exclusion fencing around trees, and completing any necessary pruning of limbs or roots according to the guidelines of the International Society of Arboriculture. EBMUD Standard Construction Specifications 01 74 05 and 01 35 44, Section 1.1(B) require construction practices that will ensure the site is maintained in as orderly and clean condition as possible throughout the construction period.

Because Section 3.7, Tree Protection, and Section 1.1(B), Site Activities, of Standard Construction Specification 01 35 44, and Standard Construction Specification 01 74 25, Cleaning, have been incorporated into the Project and include measures to maintain an orderly construction site and to protect trees, and because visual disruption during construction would be temporary, the degradation of visual character from construction activities would be less than significant. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Once the pipeline is constructed the visual character of the pipeline alignment along Windsor Drive, Condit Road and Leland Drive would be restored to existing conditions and would be essentially unchanged, other than some minor pruning of trees, similar to what might occur regularly for maintenance of power lines. The new tanks at the reservoir site would be screened from view by the reservoir embankment, which would be remain in place after Project construction. Design of the tanks is thus consistent with Lafayette General Plan policies regarding hillside overlay areas, which state that structures should be designed to be substantially concealed from view when viewed from below from publicly owned property.

However, due to physical changes to the vegetation at the reservoir site resulting from the Project, there would initially be a major alteration in the appearance of the site at completion of construction. The Project’s effect on the visual character and quality of the Project site and its surroundings would be attributable primarily to changes caused by the proposed removal of approximately 90 trees from the site.[1] Views toward the site would be significantly altered due to removal of the many mature trees that currently provide screening and are assets in terms of the area’s visual quality. However, as part of the Project EBMUD would plant 75 coast live oak and valley oak trees on the reservoir site, as described in the Project Description and depicted in **Figure 2-7**. The Project’s impact would be less than significant because replacement vegetation would become established and the site would be restored to be visually comparable to its existing condition. Over time, components of the proposed Project’s landscape design would replicate, to the extent possible, the role vegetation plays in terms of the area’s visual character under current conditions.

Visual changes associated with the Project would be most noticeable in the early years after Project implementation, given that replacement trees would not have grown sufficiently to provide a level of screening and aesthetic value that is similar to current site conditions. Trees would initially be fairly small (approximately 6 to 12 feet in height) because the optimal size for replacement trees is 24-inch box size. Smaller trees, while often better able to respond to transplant stress due to smaller, less constrained root systems, take time to provide the needed vegetative screening. Larger trees, while providing a more immediate visual impact, typically have a slower growth rate and are more commonly affected by transplant stress, root damage, and general structural damage.

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[1] Approximately 30 additional trees would be removed from the site for maintenance purposes, not for reasons directly related to the proposed reservoir replacement Project. Trees removed for maintenance purposes would not be an impact of the Project.

Visual simulations were prepared (see **Figures 3.1-2** through **Figure 3.1-4**) and illustrate conditions as they would appear 15 years after planting of replacement trees. **Figure 3.1-2** (View 1) and **Figure 3.1-3** (View 2) illustrate before and after views toward the Project site from two publicly accessible viewpoints located along Leland Drive, while **Figure 3.1-4** (View 3) presents a rendering of a private view from the backyard of a residence located at 24 Ruth Court. Both the existing and proposed conditions for the view from 24 Ruth Court are based on computer renderings because the area is not publicly accessible. As shown in the simulations, views toward the Project site from View 1 and View 2 would mimic the current tree distribution pattern, and in the case of View 2, a portion of the western storage tank and perimeter security fence would be visible through the replacement vegetation. From View 3, even after 15 years, replacement vegetation would not conceal the proposed Project's infrastructure because it is not possible to screen views from above the site. However, the difference between the site's existing and proposed visual character as viewed from the three Views 15 years after Project completion would not be substantial because the proposed landscape design would result in site conditions that would be very similar to existing conditions relative to visual character and quality.

Significance Determination before Mitigation

Less than Significant

Mitigation Measures

No mitigation measures are required.

Figure 3.1-2: View 1 - Existing and Simulated Views from 1040 Leland Drive

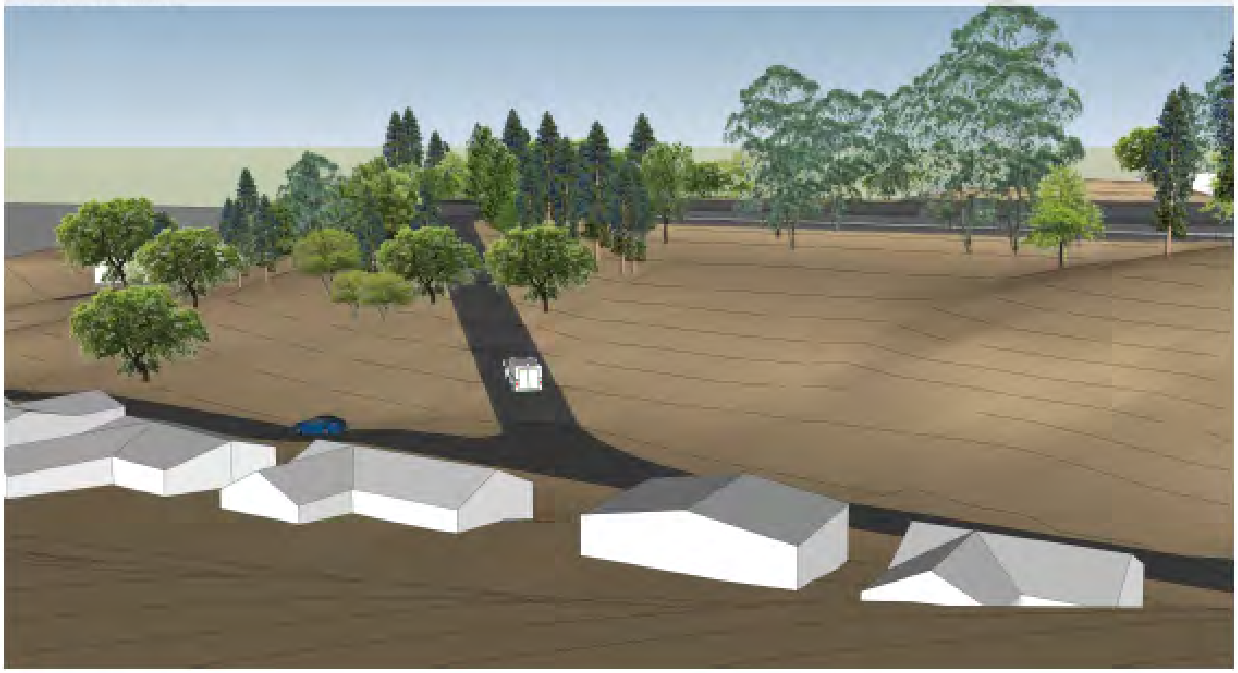
Source: RHAA 2017

Figure 3.1-3: View 2 - Existing and Simulated Views from 1050 Leland Drive

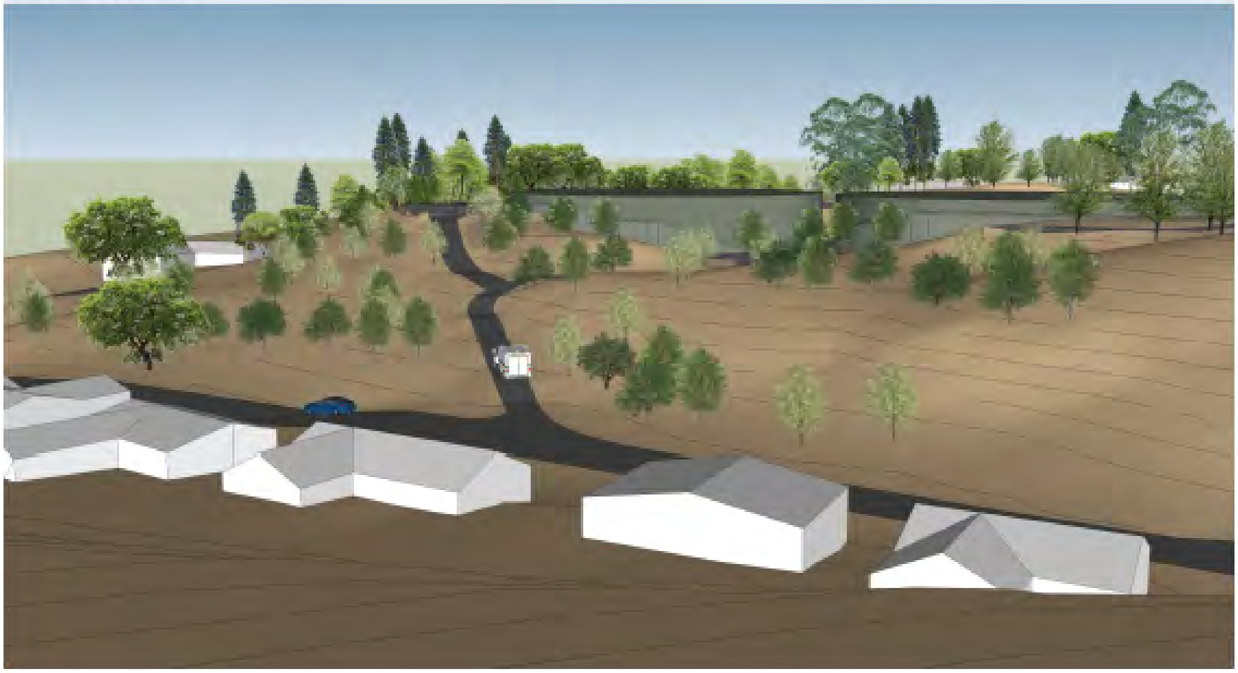
Source: RHAA 2017

Figure 3.1-4: View 3 - Simulated Existing and Future Views from 24 Ruth Court

EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: RHAA 2017

Impact AES-2 Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area (Criterion 4).

The proposed new 36-inch water transmission pipelines would connect to the EBMUD existing water transmission pipelines. The work to connect the new pipelines to existing pipelines would require the excavation of a trench or pit at each connection location: Old Tunnel Road/Windsor Drive, Leland Drive/Meek Place, and at the southern edge of the reservoir site at Leland Drive. The proposed tie-ins would be located within street ROWs. Construction of the connections at Old Tunnel Road/Windsor Drive and Leland Drive/Meek Place is estimated to require a continuous 71- to 76-hour period, and night work would be necessary at those two locations.

Night lighting would be used, but would be removed when the tie-in process is complete. Nighttime construction would affect views from adjacent residences in that it could be visible from residences along Old Tunnel Road, Windsor Drive, Meek Place and Leland Drive. Exposure of nearby residences to nighttime construction lighting would be a potentially significant impact of the Project. Implementation of **Mitigation Measure AES-1** would reduce this impact to a less than significant level because it would ensure that light is directed away from residences so that they would not be exposed to glare from nighttime construction lighting. The Project would not introduce reflective surfaces such as glass or metal that has the potential to reflect light. Therefore, the Project would not result in permanent new sources of glare.

The Project would not include installation of new permanent exterior night lighting fixtures at the Leland Reservoir site. Implementation of **Mitigation Measure AES-1** would ensure that the Project's impact would be less than significant.

Significance Determination before Mitigation

Potentially Significant

Mitigation Measures

Mitigation Measure AES-1: Nighttime Lighting Controls

> To the extent possible, EBMUD will ensure that temporary stationary lighting used during nighttime construction is of limited duration, shielded and directed downward or oriented such that little or no light is directly visible from nearby residences.

Significance Determination after Mitigation

Less than Significant

Cumulative Impact Analysis

The geographical extent for cumulative impacts related to aesthetics includes areas in the vicinity of the Project site from which the Project site may be seen and which can in turn be viewed from the Project site. The cumulative projects listed in the Introduction to Environmental Analysis **Table 3.0-1** are all located between 1,000 feet and one mile away from the Project site. Viewers at the cumulative project sites (Hoedel Court Subdivision, Lafayette Park Terrace, Homes at Deer Hill and Byron Park Expansion) would not be able to see the reservoir site. In addition, existing buildings, vegetation and topography would obstruct views of the proposed water pipeline alignment area, which would experience temporary visual disruption during construction, from the cumulative project sites. Similarly, views from the Project site toward the cumulative project site locations would be obstructed by the same existing physical features.

Viewers located in the vicinity of the Project site and the cumulative project site locations may view the sites while traveling through the area and observe changes to the visual character of the area as a result of the combined effect of the Project and cumulative projects. The Project and all of the cumulative projects listed in **Table 3.0-1** would result in short-term visual impacts during construction, when vacant land would become a construction site. However, the construction period for the Project would not overlap with the construction of the cumulative projects. At the completion of construction, the visual character of the cumulative project sites would be permanently changed from vacant land to developed, while the Project site would ultimately be restored to a visual character similar to its existing condition. The Project's contribution to these changes would be most noticeable over the short term during the Project's construction period and until replacement vegetation becomes mature and established. Implementation of mitigation measure AES-1 and adherence to EBMUD's Standard Construction Specification 01 35 44, Section 1.1(B), Site Activities and Section 3.7, Tree Protection and Standard Construction Specification 01 74 05, Cleaning, would ensure that the Project's cumulative aesthetic impact would be less than significant.

3.1.4 References

California Department of Transportation. 2017. California Scenic Highway Mapping System. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed on May 19, 2017.

City of Lafayette. 2002. City of Lafayette General Plan. Available at: http://www.lovelafayette.org/city-hall/city-departments/planning-building/general-master-specific-plans/general-plan, accessed on May 18, 2017.

RHAA Landscape Architecture + Planning (RHAA). 2017. EBMUD Leland Reservoir Replacement Project: Conceptual Architecture and Landscape Design Report. June 15, 2017. Included as Appendix C of this EIR.

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3.2 Air Quality

This section presents the environmental setting and impact analysis for air quality that could be affected by the proposed Project. Ambient air quality in the Bay Area is described and construction-period emissions are calculated to determine the impacts of the Project. **Appendix E** includes a copy of the Air Quality and Greenhouse Gas Emissions Technical Memorandum prepared for the proposed Project.

3.2.1 Environmental Setting

Climate and Meteorology

The Project area is located within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB has moderate climate for much of the year, although storms generally affect the region from November through April.

Temperatures in the Lafayette area range from summer highs in the mid-80s (degrees Fahrenheit) and winter lows in the upper-30s. The rapid modification of coastal marine air as it moves inland results in temperatures that are about 15 degrees Fahrenheit warmer in the Lafayette area than west of the coastal hills on summer afternoons and about 10 degrees Fahrenheit colder on winter mornings. While the coastal hills create sharp contrasts in temperature within short distances, precipitation is more uniformly distributed and averages about 20 inches per year throughout much of the Bay Area. Annual precipitation varies markedly from year to year. Thus, the rainfall total in one month of a heavy-precipitation year may exceed an entire annual total during a drought condition.

Winds are an important element in characterizing the air quality impact of any project. Wind controls both the microscale dispersion of any locally generated air emissions as well as their regional trajectory. Winds in the Lafayette area are rather complex, because the prevailing onshore winds are southwest to west while the valley topography runs mainly northwest to southeast. During the day, emissions generated in the project vicinity (e.g. from vehicles on SR 24) are funneled in a southeastward direction. At night, emissions are less readily ventilated and travel in more random directions. During the daytime, when the winds travel at an average speed of about 8 miles per hour (mph), there is usually little potential for localized stagnation of air pollutants. Daytime ventilation is thus normally robust in the project area. However, about one-third of the time winds at night are less than 2 to 3 mph. Local radiation temperature inversions during the night (when the ground is cooler than the air) can combine with these light winds to create localized air stagnation near major air pollution emissions sources (e.g., freeways).

Ambient Air Quality

Criteria Air Pollutants

As required by the 1970 federal Clean Air Act (CAA), the United States Environmental Protection Agency (USEPA) initially identified six criteria air pollutants that are pervasive in urban environments and for which state and federal health-based ambient air quality standards have been established. The USEPA calls these pollutants "criteria air pollutants" because the agency has regulated them by developing specific public-health-based and welfare-based criteria as the basis for setting permissible levels. The six criteria air pollutants originally identified by the USEPA are ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Since that time, subsets of particulate matter have been identified for which permissible levels have been established. These include particulate matter of 10 microns in diameter or less (PM_{10}) and particulate matter of 2.5 microns in diameter or less ($PM_{2.5}$). In accordance with the California Clean Air Act (CCAA) and federal CAA, air pollutant standards are identified for the six criteria air pollutants: ozone, CO, PM, NO_2, SO_2, and lead.

The BAAQMD is the regional agency with jurisdiction for regulating air quality within the nine-county SFBAAB. The region's air quality monitoring network provides information on ambient concentrations of criteria air pollutants at various locations in the San Francisco Bay Area. **Table 3.2-1** presents a five-year (2011-2015) summary of the highest annual criteria air pollutant concentrations, collected at the closest air quality monitoring station operated and maintained by the BAAQMD in Concord, approximately 4.4 miles northeast of the Project site. **Table 3.2-1** also compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (state or federal). Concentrations shown in bold indicate an exceedance of a standard.

In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal or state standards. The SFBAAB is designated as either in attainment[1] or unclassified for most criteria pollutants with the exception of ozone, $PM_{2.5}$, and PM_{10}, for which the SFBAAB is designated as non-attainment for either the state or federal standards.

Ozone Precursors. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOCs by some regulating agencies) and nitrogen oxides (NOx). The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Table 3.2-1 shows that, according to published data, the most stringent applicable standards for ozone (state 1-hour standard of 0.090 parts per million [ppm] and the state/federal 8-hour standard of 0.070 ppm) were exceeded in Concord on 1 to 2 days per year in four of the five years between 2011 and 2015. The SFBAAB is listed as non-attainment for ozone.

Carbon Monoxide. CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard accelerations. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in **Table 3.2-1**, the most stringent applicable standards for CO (state 1-hour standard of 20 ppm and the state/federal 8-hour standard of 9 ppm) were not exceeded between 2011 and 2015.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter (PM) is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from man-made and natural sources. Particulate matter is measured in two size ranges: PM_{10} for particles 10 microns in diameter or less, and $PM_{2.5}$ for particles 2.5 microns in diameter or less.[2] In the Bay Area, motor vehicles generate about one-half of the air basin's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of particulates. One component of these particulate emissions is fine particulates, $PM_{2.5}$, which are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects.

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[1] "Attainment" means the region is meeting federal and/or state standards for a specified criteria pollutant. "Non-attainment" means the region does not meet federal and/or state standards for a specified criteria pollutant. "Unclassified" means there are not enough data to determine the region's attainment status for a specified criteria air pollutant.

[2] PM_{10} is often called "coarse" particulate matter. $PM_{2.5}$ is often called "fine" particulate matter.

Table 3.2-1: Summary of Air Quality Monitoring Data (2011–2015) at BAAQMD Monitoring Stations in Concord

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a]				
		2011	2012	2013	2014	2015
Ozone						
- Days 1-Hour Standard Exceeded		2	0	0	1	0
- Maximum 1-Hour Concentration (ppm)	>0.09 ppm[b]	**0.099**	0.093[c]	0.074	**0.095**	0.088
- Days 8-Hour Standard Exceeded		2	2	0	2	2
- Maximum 8-Hour Concentration (ppm)	>0.07 ppm[d,e]	**0.078**	**0.085**	0.062	**0.080**	**0.073**
Carbon Monoxide (CO)						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (ppm)	>20 ppm[b]	1.6	1.2	1.2	1.4	1.4
- Days 8-Hour Standard Exceeded		0	0	0	0	0
- Maximum 8-Hour Concentration (ppm)	>9 ppm[b,d]	1.2	0.8	1.0	1.1	1.4
Suspended Particulates (PM_{10})						
- Days 24-Hour Standard Exceeded		1	0	1	0	0
- Maximum 24-Hour Concentration (µg/m^3)	>50 µg/m^3 [b]	**59**	35	**51**	43	24
Suspended Particulates ($PM_{2.5}$)						
- Days 24-Hour Standard Exceeded		2	0	1	0	0
- Maximum 24-Hour Concentration (µg/m^3)	>35 µg/m^3 [d]	**47.5**	32.2	**36.2**	30.6	31.0
- Annual Average (µg/m^3)	>12 µg/m^3 [b,d]	7.8	6.5	7.6	6.6	8.8
Nitrogen Dioxide (NO_2)						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (ppm)	>0.10 ppm[d]	0.09	0.04	0.04	0.05	0.03

NOTES:

Bold values are in excess of applicable standard.

BAAQMD = Bay Area Air Quality Management District; ppm = parts per million; PM_{10} = particulate matter of 10 microns in diameter or less; $PM_{2.5}$ = particulate matter of 2.5 microns in diameter or less; µg/m^3 = micrograms per cubic meter

All values from BAAQMD Concord air quality monitoring station on Treat Boulevard (approximately 1.6 miles from Project site).

[a] Number of days exceeded is for all days in a given year, except for particulate matter of 10 microns in diameter or less. PM_{10} was monitored every six days prior to 2013 and has been monitored every 12 days effective January 2013. Therefore, the number of days exceeded is out of approximately 60 annual samples for 2011 and 2012 and out of approximately 30 annual samples afterward. $PM_{2.5}$ is monitored continuously (hourly, 365 days per year).

[b] State standard, not to be exceeded.

[c] In 2012, the attainment designation for one-hour ozone was 0.1 ppm for state and 0.095 ppm for federal. The attainment designation can change depending on the three most recent years of monitoring data.

[d] Federal standard, not to be exceeded.

[e] In October 2015, the USEPA implemented a new 8-hour ozone standard of 70 parts per billion (equivalent to 0.070 ppm), which is the same as the California standard.

SOURCE*:* BAAQMD (2011–2015)

Between 2011 and 2015, **Table 3.2-1** shows that an exceedance of the state PM_{10} standard occurred on one monitored occasion in 2011 and 2013 in Concord. It is estimated that the state's 24-hour PM_{10} standard of 50 micrograms per cubic meter (μg/m^3) was exceeded on up to six days each in 2011 and 2013.[3] The state's 24-hour $PM_{2.5}$ standard was exceeded on two days in 2011 and one day in 2013.[4] The federal and state annual average $PM_{2.5}$ standard was not exceeded between 2011 and 2015.

Nitrogen Dioxide. NO_2 is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high pollution days, especially in conjunction with high ozone levels. Currently, the Project area (Contra Costa County) is designated as an attainment area for both state and federal standards.

The USEPA has also established requirements for a new monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites were required in California, three of which are in the Bay Area. These monitors are located in Livermore (Patterson Pass), Oakland (Laney College Freeway), and San Jose (San Jose Freeway). The Oakland station commenced operation in February 2014, the San Jose station commenced operation in September 2014, and the Livermore station commenced operation in April 2015. The new monitoring data may result in a need to change area designations in the future. The California Air Resources Board (CARB) will revise the area designation recommendations, as appropriate, once sufficient new monitoring data become available.

Sulfur Dioxide. SO_2 is a colorless, acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease. As indicated by the BAAQMD's long-term air monitoring, pollutant trends suggest that the SFBAAB currently meets and will continue to meet the state standard for SO_2 for the foreseeable future.

The USEPA has designated the SFBAAB as an attainment area for SO_2. On June 2, 2010, the USEPA strengthened the primary National Ambient Air Quality Standard (NAAQS) for SO_2. The USEPA revised the primary SO_2 standard by establishing a new 1-hour standard at a level of 75 parts per billion (ppb). USEPA's evaluation of the scientific information and the risks posed by breathing SO_2 indicate that this new 1-hour standard will protect public health by reducing people's exposure to high short-term (5-minutes to 24-hours) concentrations of SO_2 (USEPA, 2010).

Lead. Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which put children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California.

On October 15, 2008, the USEPA strengthened the national ambient air quality standard for lead by lowering it from 1.5 μg/m^3 to 0.15 μg/m^3. The USEPA revised the monitoring requirements for lead in December 2010 (USEPA, 2010a) with a focus on airports and large urban areas, resulting in an increase

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[3] PM_{10} concentrations were sampled every sixth day prior to 2013; therefore, actual days over the standard can be estimated to be six times the numbers listed in the table.

[4] $PM_{2.5}$ concentrations are continuously monitored.

in 76 monitors nationally. Lead monitoring stations in the Bay Area are located at Palo Alto Airport, Reid-Hillview Airport (San Jose), and San Carlos Airport. Non-airport locations for lead monitoring are in Redwood City and San Jose.

Sensitive Receptors

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses or parks are also considered sensitive due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience.

There are residences directly adjacent to the western and eastern reservoir site boundaries. Most existing residences to the west are located off Old Tunnel Road and at the ends of Maryola Court, Mars Court, and Windsor Court. Existing residences to the east of the reservoir site are on the east side of Leland Drive. There is one residence located on the west side of Leland Drive, adjacent to the site's northeast boundary. The Meher Schools are located approximately 800 feet south of the reservoir site. There are residences located on Windsor Drive, Condit Road, and Leland Drive, adjacent to the off-site pipeline alignment.

3.2.2 Regulatory Framework

Air Quality Regulations, Plans, and Policies

Federal Regulations

The 1970 federal CAA (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all standards by the deadlines specified in the CAA. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects and are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

The current attainment status for the SFBAAB, with respect to federal standards, is summarized in **Table 3.2-2**. In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal standards (i.e., in attainment), except for ozone and particulate matter (PM_{10} and $PM_{2.5}$, respectively). The Bay Area's attainment status for federal standards is classified as "marginal nonattainment" for 8-hour ozone and "nonattainment" for $PM_{2.5}$ (see **Table 3.2-2**). In response to the USEPA's designation of the overall basin for the 8-hour federal ozone standard, the BAAQMD, ABAG, and MTC were required to develop an ozone attainment plan to meet this standard. The *1999 Ozone Attainment Plan* was prepared and adopted by these agencies in June 1999, and this plan was updated in 2001. The most recent state ozone plan is the Bay Area *2017 Clean Air Plan*. The *2017 Clean Air Plan* was developed as a multi-pollutant strategy to simultaneously reduce emissions and ambient concentrations of ozone, fine particulate matter, toxic air contaminants, as well as greenhouse gases that contribute to climate change.

Table 3.2-2: State and Federal Ambient Air Quality Standards and San Francisco Bay Area Air Basin (SFBAAB) Attainment Status

		State (SAAQS[a])		Federal (NAAQS[b])	
Pollutant	**Averaging Time**	**Standard**	**Attainment Status**	**Standard**	**Attainment Status**
Ozone	1 hour	0.09 ppm	**N**	None	n/a
	8 hour	0.070 ppm	**N**	0.070 ppm[c]	**N**
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9.0 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	n/a	0.053 ppm	A
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	A	0.075	A
	24 hour	0.04 ppm	A	0.14	A
	Annual	n/a	n/a	0.03 ppm	A
Particulate Matter (PM_{10})	24 hour	50 µg/m^3	**N**	150 µg/m^3	U
	Annual[d]	20 µg/m^3	**N**	n/a	n/a
Fine Particulate Matter ($PM_{2.5}$)	24 hour	n/a	n/a	35 µg/m^3	**N**
	Annual	12 µg/m^3	**N**	12 µg/m^3	U/A[e]
Sulfates	24 hour	25 µg/m^3	A	n/a	n/a
Lead	30 day	1.5 µg/m^3	A	n/a	n/a
	Cal. Quarter	n/a	n/a	1.5 µg/m^3	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	n/a	n/a
Visibility-Reducing Particles	8 hour	See Note f	U	n/a	n/a

NOTES:

A = Attainment; **N** = Non-attainment; U = Unclassified; n/a = not applicable, no applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

[a] SAAQS = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

[b] NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM_{10} standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the three-year average of the 98th percentile is less than the standard.

[c] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. EPA will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the ozone level in the area.

[d] State standard = annual geometric mean.

[e] In December 2012, the USEPA strengthened the annual $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) from 15.0 to 12.0 micrograms per cubic meter (µg/m^3). In December 2014, the USEPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard was April 15, 2015.

[f] Statewide visibility-reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCE: BAAQMD (2017)

State Regulations

California Clean Air Act

While the federal CAA established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. The state of California had already established its own air quality standards when federal standards were established, and because of the unique meteorological conditions in California, there is considerable diversity between the state and national ambient air quality standards, as shown in **Table 3.2-2**. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent.

In 1988, the state of California passed the CCAA (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or non-attainment, but based on state ambient air quality standards rather than the federal standards. As indicated in **Table 3.2-2**, the SFBAAB is designated as "non-attainment" for state ozone, PM_{10}, and $PM_{2.5}$ standards. The SFBAAB is designated as "attainment" for other pollutants.

Regulation of Toxic Air Contaminants

For Toxic Air Contaminants (TACs), both the USEPA and the CARB recognize that air pollution affects the public's health, especially sensitive groups, and can result in respiratory and cardiovascular effects. Section 41700(a) of the California Health and Safety Code prohibits the discharge, from any source, of quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property.

In 2005, CARB approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles, which altered five sections of Title 13 of the California Code of Regulations. The changes relevant to the proposed Project are in Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling, which limits idling of a vehicle's primary diesel engine for greater than five minutes in any location (with some exceptions) or operation of a diesel-fueled auxiliary power system within 100 feet of residential areas.

Emission Standards for New Off-Road Equipment. Prior to 1994, there were no standards to limit the amount of emissions from off-road equipment. In 1994, the USEPA established emission standards for hydrocarbons, nitrogen oxides, carbon monoxide, and particulate matter to regulate new pieces of off-road equipment. These emission standards came to be known as Tier 1. Since that time, increasingly more stringent Tier 2, Tier 3, and Tier 4 (interim and final) standards were adopted by the USEPA, as well as by the CARB. Each adopted emission standard was phased in over time. New engines built in and after 2015 across all horsepower sizes must meet Tier 4 final emission standards. In other words, new manufactured engines cannot exceed the emissions established for Tier 4 final emissions standards. Out of the estimated 161,420 pieces of construction equipment used statewide in 2014, 59 percent are Tier 2 and above.

Verified Diesel Emission Control Strategies (VDECS). Since the tiered emission standards described in the previous paragraph only apply to new engines and off-road equipment can last several years, verified diesel emission control strategies (VDECS) were developed to help reduce emissions from existing engines. VDECS are designed primarily for the reduction of diesel particulate matter emissions and have been verified by the CARB. There are three levels of VDECS. The most effective VDECS (a device, system, or strategy used to achieve the highest level of pollution control from an existing off-road vehicle) is the Level 3 VDECS. Tier 4 engines are not required to install VDECS since they already meet the emissions standards for lower tiered equipment with installed controls.

In July 2007, the CARB adopted the In-Use Off-Road Diesel Vehicle Regulation to reduce diesel particulate matter and nitrogen oxides emissions from in-use existing off-road diesel vehicles in California. This regulation includes:

- Equipment labeling requirements
- Annual reporting of equipment
- Five-minute (30 seconds within 100 feet of schools) idling limit (applies to off-road and on-road diesel vehicles)
- Restrictions on adding older and dirtier Tier 0 and Tier 1 vehicles to construction fleets.

Local Policies and Standard Specifications

Bay Area Air Quality Management District

The BAAQMD is the regional agency with jurisdiction over the nine-county SFBAAB, which includes San Francisco, Alameda, Contra Costa, Marin, San Mateo, Santa Clara, and Napa Counties and portions of Sonoma and Solano Counties. The BAAQMD is responsible for attaining and maintaining air quality in the SFBAAB within federal and state air quality standards, as established by the federal CAA and the CCAA, respectively. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the SFBAAB and to develop and implement strategies to attain the applicable federal and state standards. The BAAQMD does not have authority to regulate emissions from motor vehicles.

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The CAA and the CCAA require plans to be developed for areas that do not meet air quality standards. The most recent air quality plan, the *2017 Clean Air Plan*, was adopted by the BAAQMD on April 19, 2017 (BAAQMD, 2017). The *2017 Clean Air Plan* updates the *2010 Clean Air Plan*, pursuant to air quality planning requirements defined in the California Health and Safety Code. To fulfill state ozone planning requirements, the *2017 Clean Air Plan* control strategy is to include all feasible measures to reduce emissions of ozone precursors – reactive organic gases (ROG) and nitrogen oxides (NOx) – and reduces transport of ozone and its precursors to neighboring air basins. The *2017 Clean Air Plan* includes a multi-pollutant strategy to simultaneously reduce emissions and ambient concentrations of ozone, fine particulate matter, toxic air contaminants, as well as greenhouse gases that contribute to climate change.

The *2017 Clean Air Plan*'s control strategy includes 85 control measures that apply to stationary sources, transportation sources, energy production, buildings, agriculture, natural and working lands, waste management, water, and super-greenhouse gas (GHG). The key priorities of the control strategy are to: (1) reduce emissions of criteria air pollutants and toxic air contaminants from all key sources; (2) reduce emissions of super-GHG pollutants such as methane; (3) decrease demand for fossil fuels by increasing efficiency and reducing demand; and (4) decarbonize our energy system. The *2017 Clean Air Plan* represents the most current applicable approved air quality plan for the SFBAAB. Consistency with the *2017 Clean Air Plan* is the basis for determining whether the Project would conflict with or obstruct implementation of air quality plans.

In June 2010, BAAQMD adopted CEQA significance thresholds and updated the previous CEQA Guidelines. These 2010 thresholds include quantitative CEQA significance thresholds for emissions of criteria pollutants, ozone precursors, and TACs during project construction and operations. The thresholds are designed to establish the level at which the BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. These thresholds were challenged in court, and in view of the Supreme Court's opinion, the BAAQMD initiated an update of the 2010 CEQA Guidelines to reflect new or revised requirements in the state CEQA Guidelines, recent court decisions, improved analytical methodologies, and new mitigation strategies. The BAAQMD issued an interim update (dated May 2017). This update includes thresholds of significance consistent with those adopted in 2010, but does not address outdated references, links, analytical methodologies, or other technical information. It should be noted in an opinion issued on December 17, 2015, the California Supreme Court held that CEQA does not generally require an analysis of the impacts of locating development in areas subject to environmental hazards unless the project would exacerbate existing environmental hazards. The Supreme Court also held that public agencies remain free to conduct this analysis regardless of whether it is required by CEQA. The BAAQMD has advised local agencies that the thresholds are not mandatory and agencies should apply them only after determining that they reflect an appropriate measure of a project's impacts.

EBMUD Standard Construction Specifications

EBMUD's Standard Construction Specification 01 35 44 (Environmental Requirements) (EBMUD March 2016) includes practices and procedures for minimizing air quality impacts including dust control and monitoring, emissions control, and use of BAAQMD-compliant architectural coatings, as described below.

Submittal of Dust Control and Monitoring Plan. EBMUD Standard Construction Specification 01 35 44, Section 1.3(E) requires that the contractor submit a Dust Control and Monitoring Plan detailing the means and methods for controlling and monitoring dust generated by demolition and other work on the site for the Engineer's acceptance prior to any work at the jobsite. The specification requires that the plan shall:

- Comply with all applicable regulations including but not limited to the BAAQMD visible emissions regulation[5] and Public Nuisance Rule[6].
- Include items such as measures to control fugitive dust emissions generated by construction activities.
- Outline best management practices for preventing dust emissions, provide guidelines for training of employees and procedures to be used during operations and maintenance activities.
- Include measures for the control of paint overspray generated during the painting of exterior surfaces.
- Detail the equipment and methods used to monitor compliance with the plan.

Dust Control. EBMUD Standard Construction Specification 01 35 44, Section 3.3(B) requires the Contractor to implement all necessary dust control measures, including but not limited to the following:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered minimum two times per day or as directed by the Engineer.

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[5] BAAQMD Regulation 6, Particulate Matter and Visible Emissions, limits the quantity of particulate matter in the atmosphere through the establishment of limitations on emission rates, concentration, visible emissions and opacity.

[6] BAAQMD Regulation 1-301, Public Nuisance, limits air contaminants which cause a public nuisance to any considerable number of persons or the public.

- Water and/or coarse rock all dust-generating construction areas as directed by Engineer to reduce the potential for airborne dust from leaving the site.
- Water and/or cover soil stockpiles daily.
- Cover all haul trucks entering/leaving the site and trim their loads as necessary.
- Using wet power vacuum street sweepers (dry power sweeping is prohibited) to:
    - Sweep all paved access road, parking areas and staging areas at the construction site daily or as often as necessary.
    - Sweep public roads adjacent to the site at least twice daily or as often as necessary.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Gravel or apply non-toxic soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Site accesses to a distance of 100 feet from the paved road shall be treated with 12-inches of compacted coarse rock.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- Wind breaks (e.g., fences) shall be installed on the windward sides(s) of actively disturbed areas of construction. Wind breaks should have a maximum 50 percent air porosity.
- The simultaneous occurrence of excavation, grading, and ground disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- All vehicle speeds shall be limited to 15 mph or less on the construction site and any adjacent unpaved roads.

Dust Monitoring During Demolition and Construction. EBMUD Standard Construction Specification 01 35 44, Section 3.3(C) requires the Contractor shall provide air monitoring per the Dust Control and Monitoring Plan along the perimeter of the job site. A minimum of 4 stations, one on each side of the EBMUD property, shall be established, capable of continuous measurement of total particulate concentration when any dust generating activity is occurring. Dust monitoring shall include:

- Contractor shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark as or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

- Contractor shall not emit from any source for a period or periods aggregating more than three minutes in an hour an emission equal to or greater than 20% opacity as perceived by an opacity sensing device, where such device is required by Air Quality Management District regulations.
- All environmental and personal air sampling equipment shall be in conformance with the Association of Industrial Hygiene and National Institute of Safety and Health (NIOSH) standards.
- All analysis shall be completed by a California Department of Health Services certified laboratory for the specific parameters of interest.
- The Contractor shall provide to the Engineer, within 72 hours of sampling, all test results.

Dust Control System Compliance. EBMUD Standard Construction Specification 01 35 44, Section 3.3(D) requires the dust control system to comply with the Dust Control and Monitoring Plan and any applicable laws and regulations.

Air Quality and Emissions Control. EBMUD Standard Construction Specification 01 35 44, Section 3.4(A) requires implementation of the following control measures:

- The Contractor shall ensure that line power is used instead of diesel generators at all construction sites where line power is available.
- The Contractor shall ensure that for operation of any stationary, compression- ignition engines as part of construction, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards.
- Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) shall be electrically powered unless the Contractor submits documentation and receives approval from the Engineer that the use of such equipment is not practical, feasible, or available. All portable engines and equipment units used as part of construction shall be properly registered with the California Air Resources Board or otherwise permitted by the appropriate local air district, as required.
- Contractor shall implement standard air emissions controls such as:
  - Minimize the use of diesel generators where possible.
  - Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations. Clear signage shall be provided for construction workers at all access points.
  - Minimize the idling time of diesel powered construction equipment to five minutes.
  - Follow applicable regulations for fuel, fuel additives, and emission standards for stationary, diesel-fueled engines.
  - Locate generators at least 100 feet away from adjacent homes and ball fields.
  - Perform regular low-emission tune-ups on all construction equipment, particularly haul trucks and earthwork equipment.

Architectural Coatings. EBMUD Standard Construction Specification 01 35 44, Section 3.4(B) requires that architectural coatings shall be used in compliance with appropriate Volatile Organic Compound limits as established in the Bay Area Air Quality Management District's Regulation 8, Rule 3, and any amendments thereto.

3.2.3 Impact Analysis

Methodology for Analysis

Construction-related Emissions

This air quality impact analysis considers construction-related impacts associated with the proposed Project. Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with the proposed Project would generate emissions of criteria air pollutants and precursors. Construction-related emissions are evaluated consistent with methodologies outlined in the 2017 BAAQMD CEQA Guidelines for assessing and mitigating air quality impacts (BAAQMD, 2017) including quantification of the Project's construction-related exhaust emissions and comparison to the daily criteria pollutant emissions significance thresholds in order to determine the significance of a Project's impact on regional air quality. The Project's off-road, construction-related emissions were estimated using the equipment mix and operating durations provided by EBMUD. The CalEEMod emissions estimator model (Version 2016.3.2) was used to estimate off-road equipment emissions. However, because of the characteristics of the Project's on-road construction-related vehicular traffic (different from construction of a typical residential or commercial development project), the Project's on-road, construction-related worker, haul, and vendor truck emissions were more accurately modeled using vehicle miles estimated by EBMUD and EMFAC2014 emission factors.[7] Model results are discussed below under Impact AIR-1.

A screening-level health risk analysis was conducted to determine cancer and non-cancer risks from Project-related construction activities at the closest sensitive receptor and modeling results are discussed under Impact AIR-2. The EPA AERSCREEN air dispersion model was used to evaluate concentrations of diesel particulate matter (DPM) and PM2.5 from diesel exhaust.[8]

Consistent with the BAAQMD CEQA Guidelines, this analysis assumes potential health risk and hazard impacts could occur at sensitive receptors located within 1,000 feet of emission sources. Thus, human health risks and hazards associated with Project construction are calculated at the Maximally-Exposed Individual (MEI) within the 1,000-foot zone of influence of the Project site. This analysis evaluates risk and hazard impacts on the MEI due to the proposed Project's construction-related toxic air contaminant (TAC) emissions, primarily as DPM in combination with other existing major sources of DPM, such as freeways. Emissions from other projects within 1,000 feet of the Project site, which could be under construction at the same time as the proposed Project, are considered in the cumulative impact analysis (see Impact AIR-5).

Operational Emissions

The BAAQMD CEQA Guidelines also provide significance thresholds for criteria pollutant and GHG emissions associated with Project operations. Project facilities would not include any new air pollutant emission sources and therefore, the potential for the Project to generate operational emissions increases would be limited to mobile sources (i.e., service vehicles) associated with maintenance activities. Since no substantial changes in operations and maintenance activities would occur at the reservoir site, there

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[7] Modeling assumptions and model outputs are included in the Air Quality Technical Memorandum that was prepared for this Project and is included in **Appendix E**.

[8] Health risk screening assumptions and model outputs are included in the Air Quality Technical Memorandum that was prepared for this Project and is included in **Appendix E**.

would be no increase in existing operational criteria pollutant emissions, health risks, and GHG emissions. Therefore, no further analysis of operational emissions is included below.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines*, an impact on air quality and greenhouse gas emissions would be considered significant if the Project would:

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

The BAAQMD (2017) recommends the following thresholds for construction-related and operational criteria pollutant emissions which have been used in the air quality and greenhouse gas emissions analysis to determine whether the proposed Project's air pollutant emissions would significantly affect the SFBAAB's regional air quality (both at a project level and cumulatively):

- 54 pounds/day NO_X and ROG
- 82 pounds/day PM_{10}
- 54 pounds/day $PM_{2.5}$

In addition to establishing the above significance thresholds for criteria pollutant emissions, BAAQMD (2017) also recommends the following quantitative thresholds to determine the significance of construction-related and operational emissions of toxic air contaminants from individual project and cumulative sources on cancer and non-cancer health risks and have been applied in the air quality and greenhouse gas emissions analysis to construction-related criteria air pollutant emissions only since there would be no change in operational emissions associated with Project implementation:

- Increased cancer risk of >10.0 in a million for individual projects and >100 in a million (from all local sources) for cumulative sources.
- Increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute) for individual projects and >10.0 Hazard Index (from all local sources) for cumulative sources.
- Ambient $PM_{2.5}$ increase: >0.3 $\mu g/m^3$ annual average for individual projects and >0.8 $\mu g/m^3$ annual average (from all local sources) for cumulative sources.

Impacts and Mitigation Measures

Impact AIR-1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (Criterion 1)

Project pipeline construction would involve cutting the pavement, excavating the trench, removing/ stockpiling the soils, installing the pipeline, backfilling the trench, and repaving. Project reservoir construction would entail site grading/preparation for equipment and truck access into the reservoir area, demolition of the existing reservoir, construction of the replacement dual tanks, installation of a storm drain, and restoration of the Project site (including landscaping). Emissions from the Project's construction equipment and vehicles would be generated from multiple sources, including heavy mobile equipment and delivery/haul trucks, and worker vehicles.

Average daily emissions by construction year that would be associated with construction of each Project element are presented in **Table 3.2-3**. Emissions from on-road vehicle and off-road equipment are calculated using different emission models (as described above under *Methodology for Analysis*) and, thus, are presented separately. Construction-related criteria pollutant emissions from off-road equipment were calculated for the Project using the BAAQMD-recommended CalEEMod model (CalEEMod Version 2016.3.2). On-road vehicle emissions were calculated using EMFAC2014 emission factors. As indicated in **Table 3.2-3**, construction of proposed pipelines, storm drains, and the replacement reservoir would not exceed BAAQMD significance thresholds for criteria pollutants, and therefore, the Project's construction-related criteria air pollutant emissions would have a less-than-significant impact on air quality.

Table 3.2-3: Project Construction-related Criteria Pollutant Emissions

	Criteria Pollutants (pounds per day)				
Construction Activities by Year	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
2022					
Pipeline in Public Rights-of-Way (Installation)					
- Off-road Equipment	0.54	6.51	4.44	0.23	0.22
- On-road Vehicles	0.21	1.74	5.46	0.29	0.13
Total (2022)	***0.75***	***8.25***	***10.90***	***0.52***	***0.35***
2023					
Pipeline in Public Rights-of-Way (paving) and Reservoir Demolition					
- Off-road Equipment	1.55	15.00	13.19	0.62	0.58
- On-road Vehicles	0.32	2.28	5.93	0.50	0.19
Total (2023)	***1.87***	***17.28***	***19.12***	***1.12***	***0.77***
2024					
Tank Construction					
- Off-road Equipment	0.25	1.93	2.46	0.11	0.10
- On-road Vehicles	0.18	1.55	3.71	0.51	0.22
Total (2024)	***0.43***	***3.48***	***6.17***	***0.62***	***0.32***
2025					
Tank Construction (piping/valves, testing), Pipeline on Reservoir Site, Storm Drain Installation, and Site Restoration					
- Off-road Equipment	0.10	1.56	0.89	0.04	0.04
- On-road Vehicles	0.09	0.84	1.65	0.18	0.08
Total (2025)	***0.19***	***2.54***	***2.55***	<***0.28***	<***0.18***
Significance Thresholds (pounds per day)	54	-[a]	54	82	54

NOTES: Based on pipeline progression rate of 80 feet per day.

[a] There is no daily emissions threshold for CO. If localized carbon monoxide estimated emissions exceed 550 pounds/day, more detailed analysis is required. Therefore, emissions below this threshold indicate that CO emissions would be less than significant.

SOURCE: CalEEMod and EMFAC2014 outputs (Orion Environmental Associates, 2017)

Whether or not a project's emissions exceed the BAAQMD significance thresholds, the BAAQMD recommends that all projects implement the *Basic Construction Mitigation Measures*, and these are typically included as mitigation measures. As detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Sections 1.3E, Dust Control and Monitoring Plan, 3.3B, Dust Control, and 3.4A, Air Quality and Emissions Control, of Standard Construction Specification 01 35 44 require BAAQMD-recommended measures addressing dust and emissions controls. Therefore, no additional mitigation is required to include BAAQMD-recommended measures.

Because Sections 1.3E, Dust Control and Monitoring Plan, 3.3B, Dust Control, and 3.4A, Air Quality and Emissions Control, of EBMUD's Standard Construction Specification 01 35 44, Environmental Requirements, have been incorporated into the Project and include specified dust control BMPs to minimize short-term construction-related emissions, the Project construction impacts related to construction-related criteria air pollutant emissions would be less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required.

Impact AIR-2: Expose sensitive receptors to substantial pollutant concentrations (Criterion 2)

Project construction would utilize diesel-powered equipment such as excavators, dozers, loaders, backhoes, and cranes. Operation of such equipment would generate emissions of TACs, including DPM and $PM_{2.5}$.

Given the Project's construction duration and proximity to sensitive receptors, there is the potential for the Project's construction-related DPM emissions to exceed the BAAQMD's risk and hazard significance thresholds of 10 excess cancer cases in a million, a hazard index (HI) of 1 for chronic and acute non-cancer risks, and an annual $PM_{2.5}$ concentration of 0.3 micrograms per cubic meter (μg/m^3). Therefore, a screening-level individual cancer analysis was conducted to determine the cancer and non-cancer health risks from Project-related construction activities at the closest sensitive receptor (see *Methodology for Analysis* discussion above for a description of the methodology for this analysis). More recent research has determined that young children are substantially more sensitive to DPM exposure risk. The DPM exposure risk from construction exhaust thus depends upon the age of the receptor population. However, even with the application of ASFs, the exposure risk at residences for the highest risk group (babies) would 4.94 in a million. Thus, the maximum individual cancer risk would be well below the 10-in-a-million significance threshold for all age groups.

Pipeline construction would progress along pipeline alignments at a rate of about 80 feet per day (approximately two weeks of exposure at any given receptor), while reservoir demolition/construction would occur at one location for over two years. The only areas where equipment would operate for any length of time at one location would be the reservoir site. Therefore, the MEI for this analysis is the group of residences located closest to and downwind of the reservoir site, which are residences located along the east side of Leland Drive and adjacent to the reservoir site.

Estimated increases in cancer risk, non-cancer chronic and acute hazards, and $PM_{2.5}$ concentrations are broken down by Project component in **Tables 3.2-4, 3.2-5,** and **3.2-6**, respectively. As indicated in these tables, Project-related construction activities would result in a maximum excess cancer risk of 4.94 in a million (for infants and pregnant women in their last trimester), chronic non-cancer risk of 0.024 HI, acute non-cancer risk of 0.136 HI, and $PM_{2.5}$ concentration of 0.115 μg/m^3.

As shown in **Tables 3.2-4** through **3.2-6**, the Project's construction-related DPM emissions would be well below BAAQMD project-level thresholds of significance for cancer and non-cancer risks as well as $PM_{2.5}$ concentrations, and therefore, the Project's health risks from DPM would be less than significant.

Operation of Project facilities would not be a source of TACs or $PM_{2.5}$ emissions because there would be no substantial changes in operations and maintenance activities at the reservoir site. Therefore, there would be no operational risk and hazard impacts associated with operation of the Project.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Table 3.2-4: Project Construction-related Cancer Health Risks by Component

	Excess Cancer Risk (cancer cases per one million population)			
Age Group	**Reservoir[a]**	**Pipeline[b]**	**Storm Drain[b]**	**Total**
Infant (0-2 years) and Pregnant Women (last trimester)[c]	4.659	0.187	0.094	4.94
Child (2-14 years)[c]	1.398	0.056	0.028	1.482
Adult[c]	0.466	0.019	0.009	0.494
Significance Threshold				10

NOTES:

[a] Assumes exposure to entire 3¼ years of construction (2022-2025).

[b] Assumes exposure for 12.5 days at an individual location along the pipeline alignment assuming construction would progress at a rate of 80 feet per day.

[c] If exposure occurs in the first several years of life, an age sensitivity factor (ASF) of 10 is applied to account for higher sensitivity of infants than adults and children. For toddlers though mid-teens, the ASF is 3 to account for higher sensitivity of children than adults.

SOURCE: AERSCREEN outputs (Orion Environmental Associates, 2017)

Table 3.2-5: Project Construction-related Non-cancer Health Risks by Component

	Non-Cancer Risk (hazard index or HI)			
Risk	**Reservoir**	**Pipeline**	**Storm Drain**	**Total**
Non-Cancer Chronic Hazard	0.022	0.001	0.001	0.024
Non-Cancer Acute Hazard	0.126	0.005	0.005	0.136
Significance Threshold				1

SOURCE: AERSCREEN outputs (Orion Environmental Associates, 2017)

Table 3.2-6: Project Construction-related PM2.5 Concentration by Component

	Average Annual PM2.5 Concentration (µg/m³)			
Risk	Reservoir	Pipeline	Storm Drain	Total
PM2.5 Concentration	0.109	0.004	0.002	0.115
Significance Threshold				0.3 µg/m³
SOURCE: AERSCREEN outputs (Orion Environmental Associates, 2017)				

Impact AIR-3: Conflict with or obstruct implementation of the applicable air quality plan (Criterion 3)

The most recently adopted air quality plan in the SFBAAB is the BAAQMD's *2017 Clean Air Plan* whose primary goals are to protect public health and protect the climate. The *2017 Clean Air Plan* includes a wide range of control measures, which consist of actions to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs. Numerous measures address reduction of several pollutants: ozone precursors, particulate matter, air toxics, and/or GHGs. Other measures focus on a single type of pollutant, super GHGs such as methane and black carbon, or harmful fine particles that affect public health.

As indicated in Impacts AIR-1 (**Table 3.2-3**), AIR-2 (**Tables 3.2-4, 3.2-5,** and **3.2-6**), and GHG-1 (**Table 3.7-1**), the Project's construction-related criteria pollutant, TAC, and GHG emissions would not exceed threshold levels (consistent with BAAQMD CEQA Guidelines), indicating that Project-related emissions would not have a significant impact on regional air quality or climate change, and would not pose significant health risks to the public. Heavy-duty vehicles used by EBMUD and its contractors for Project construction would comply with applicable diesel emission standards for heavy-duty on-road and off-road engines. Therefore, the Project would not conflict with the *2017 Clean Air Plan's* measures requiring use of cleaner diesel-fueled engines. Additionally, as detailed in the Project Description, a number of EBMUD standard practices and procedures applicable to all EBMUD projects have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Sections 1.3E, Dust Control and Monitoring Plan, 3.3B, Dust Control, and 3.4A, Air Quality and Emissions Control, of Standard Construction Specification 01 35 44, Environmental Requirements, require BAAQMD-recommended measures addressing dust and emissions controls. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. Incorporation of these dust and air quality emission controls, which are consistent with BAAQMD-recommended *Basic Construction Mitigation Measures*, would further reduce the Project's construction-related criteria pollutant emissions.

For these reasons, the Project would not hinder the Plan's ability to meet its primary goals to reduce emissions and harmful pollutants, safeguard public health, and reduce GHG emissions. Therefore, the Project would not conflict with or obstruct implementation of the *2017 Clean Air Plan.*

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact AIR-4: Create objectionable odors affecting a substantial number of people (Criterion 4)

During construction, diesel exhaust from construction equipment would generate some odors at various locations within and around the vicinities of the Project reservoir site and pipeline alignment. Residential uses are located as close as 80 feet west (generally upwind) and 400 feet east (generally downwind) from construction work areas at the reservoir site. Although diesel exhaust odors would be generated in the reservoir site vicinity over the 3+ year construction duration, such setbacks in combination with prevailing wind conditions would help minimize the potential for nuisance odors at the closest receptors even though perceptible diesel odors could occur. However, such construction-related nuisance odors would be temporary, varying from day to day with the level of construction activity and meteorological conditions (i.e., dispersion by winds, etc.), and would cease after Project construction is complete. Thus, construction activities at the reservoir site are not expected to create objectionable odors affecting a substantial number of people, and this impact would be less than significant.

Existing residences are located much closer (as close as 40 feet) to the Project pipeline alignment and these residences, particularly those located downwind of the pipeline alignment, would be subject to perceptible diesel exhaust odors. Despite their proximity, each receptor would be subject to nuisance diesel odors for less than two weeks (10 work days). Given this short duration, construction activities along the pipeline alignment are not be expected to create objectionable odors affecting a substantial number of people, and this impact would be less than significant.

As detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Section 3.4A, Air Quality and Emissions Control, of Standard Construction Specification 01 35 44 limits idling time of diesel engines and minimize use of diesel generators. Such limits would help to further minimize these temporary construction-related nuisance odor effects. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language

Odors would not be emitted during operation of the proposed replacement reservoir or pipeline, just as no odors are associated with operation of the existing reservoir and pipelines.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

Impact AIR-5: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors) (Criterion 5)

Cumulative Criteria Air Pollutant Emissions. By definition, regional air pollution is largely a cumulative impact. Emissions from past, present, and future projects contribute to the region's adverse air quality on a cumulative basis. No single project is sufficient in size to, by itself, result in non-attainment of air quality standards. Instead, a project's individual emissions are considered to contribute to existing cumulative air quality impacts (BAAQMD, 2017). The Project-level thresholds for criteria air pollutants are based on levels that would result in a cumulatively considerable net increase in criteria air pollutants if they are exceeded. Projects that would result in criteria pollutant emissions below these significance thresholds would result in a less than cumulatively considerable increase in criteria air pollutants. As shown in **Table 3.2-3**, the Project's construction-related emissions would not exceed the BAAQMD's construction-related criteria air pollutant significance thresholds (see Impact AIR-1 above). Therefore, because the Project's emissions (Impact AIR-1) would not exceed the project-level thresholds for criteria air pollutants, the proposed Project would not result in a cumulatively considerable contribution to regional air quality impacts, a less-than-significant cumulative impact.

Cumulative Health Risks. BAAQMD CEQA Guidelines require a determination of cumulative health risk impacts. Therefore, in addition to Project construction, possible local stationary or vehicular source emissions must be added to the concentration to determine the cumulative total. Specifically, the CEQA Guidelines require that existing stationary and mobile emissions sources within 1,000 feet of the Project area also be considered. Any potential cumulative health risk would, therefore, derive from Project activities plus any existing identified risk sources within the Project vicinity.

The BAAQMD has developed a Google Earth application that maps the locations of all stationary sources in the region that the BAAQMD permits. For each source, the application lists the name of the source and the conservative screening level cancer risk and $PM_{2.5}$ concentration values. According to BAAQMD records (BAAQMD, 2012), there are no permitted stationary sources within 1,000 feet of the Project site. One mobile source, SR 24, that carries a volume over 10,000 average daily traffic (ADT) and is located approximately 1,000 feet from the Project's MEI, was included in the cumulative analysis. There is also one proposed six-lot subdivision at the end of Hoedel Court, which is located 1,000 feet west of the Project site. Although construction is estimated to occur prior to 2022, DPM emissions associated with construction of that project would contribute to cumulative health risks for residences located in the Project vicinity. Therefore, health risks associated with these sources have been included to determine the cumulative health risks. **Table 3.2-7** presents cumulative health risks (cancer risk, annual average $PM_{2.5}$ emissions, and non-cancer (chronic and acute) hazards) associated with these sources.

As indicated in **Table 3.2-7**, the cumulative or combined health risks from exposure of sensitive receptors in the Project vicinity to existing and proposed sources within 1,000 feet of the MEI would not exceed the BAAQMD's cumulative health risk significance thresholds. Therefore, cumulative health risks would be less than significant and the Project's contribution to cumulative health risks would be less than cumulatively considerable.

Project facilities would not be a source of TACs or $PM_{2.5}$ emissions because there are no emissions sources (i.e., diesel-fueled equipment), and therefore, operation of the Project would not contribute to cumulative risk and hazard impacts.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Table 3.2-7: Cumulative Cancer and Non-Cancer Risks and $PM_{2.5}$ Concentrations

Source	Cancer Risk (cases in one million)	Average Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)	Chronic Hazard (HI)	Acute Hazard (HI)
SR 24[a]	9.70	0.092	0.009	0.011
Proposed Project (worst-case)[b]	4.94	0.115	0.024	0.136
Hoedel Subdivision (Construction)[c]	13.30	0.310	0.056	0.361
Cumulative Risk (Maximum)	27.94	0.517	0.198	0.508
Significance Threshold	100	0.8	1	1

NOTES:

[a] Health risks at 1,000 feet south of SR 24, which approximately coincides with MEI location.

[b] Total Project emissions, which includes emissions associated with construction of the pipelines, reservoir, and storm drain.

[c] The CalEEMod defaults for the Hoedel project assume all six homes would be built simultaneously and completed in 10 months, but it is likely that construction would occur over a longer period of time. Therefore, construction-related emissions associated with this project should be considered very conservative and are likely overestimated.

SOURCES: BAAQMD, 2015 for SR 24; Tables, 3.2-4, 3.2-5, and 3.2-6 (above) for Proposed Project; CalEEMod for Hoedel Subdivision.

3.2.4 References

Bay Area Air Quality Management District (BAAQMD), *2017 Clean Air Plan, Spare the Air, Cool the Climate*, April 2017. Available online at http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans. Accessed on May 11, 2017.

BAAQMD, *Ambient Air Quality Standards & Attainment Status*. January 5, 2017. Available online at: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status. Accessed on May 18, 2017.

BAAQMD, *California Environmental Quality Act Air Quality Guidelines*. May 2017. Available online at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed on May 18, 2017.

BAAQMD, *Annual Bay Area Air Quality Summaries*. 2011–2015. Available online at: http://www.baaqmd.gov/about-air-quality/air-quality-summaries. Accessed on March 18, 2017.

BAAQMD, *Highway Screening Analysis Tool*, Link 1071 (6 ft elevation), April 16, 2015. Available online at: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools. Accessed on May 25, 2017.

BAAQMD, *Stationary Source Screening Analysis Tool*, Contra Costa County, May 30, 2012. Available online at: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools. Accessed on March 21, 2017.

EBMUD. 2016. Standard Specification Number 01 35 44, Environmental Requirements, March 2, 2016.

Orion Environmental Associates, 2017. *Technical Memorandum (Final), Leland Reservoir Replacement Project, Air Quality and Greenhouses Gases*. July 17. Available for public review at EBMUD, 375 11th Street, Oakland, CA 94607, Monday through Friday, 8:00 a.m. to 4:30 p.m.

USEPA, *Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide*, June 2, 2010. Available online at https://www.epa.gov/so2-pollution/2010-primary-national-ambient-air-quality-standards-naaqs-sulfur-dioxide. Accessed on May 18, 2017.

USEPA, *Fact Sheet Revisions to Lead Ambient Air Quality Monitoring Requirements*, 2010a. Available online at https://www.epa.gov/lead-air-pollution/2010-lead-pb-air-monitoring-requirements-2013-method-determination-lead-pb-total. Accessed on May 18, 2017.

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3.3 Biological Resources

This section presents the physical and regulatory setting for biological resources within the study area, which includes the Project area and adjacent areas[1]. The impact analysis is based on a Biological Assessment prepared by EBMUD, which is included in **Appendix F**, and a Tree Inventory for the Leland Reservoir Site, which is included in **Appendix G**. This Section considers the potential for the Project to adversely affect biological resources. Biological resources include plant and wildlife species, especially those considered special-status species (including rare, threatened, or endangered species), sensitive biological communities, and sensitive habitats (e.g., streams and wetlands).

3.3.1 Definitions

Definitions are collated from those used in the Biological Resources Assessment prepared by EBMUD (2016); those used by federal, state and local regulatory agencies; the language of applicable federal, state and local regulations; and from the CEQA guidelines.

Diameter at Breast Height (dbh): diameter of a tree trunk measured 4.5 feet above the ground. For multi-stemmed trees, dbh is calculated as two-thirds the sum of aggregated stem diameters.

Special status species. For the purpose of this document, special status species include:

- Plant, fish and wildlife species listed as Threatened or Endangered under the Federal Endangered Species Act (FESA; 50 CFR 17), and species that are candidates for listing under the statute;
- Species protected by California Fish and Game Code (CFGC), including nesting birds and Fully Protected[2] species;
- Plant, fish and wildlife species listed as Threatened or Endangered under the California Endangered Species Act (CESA); and the laws and regulations for implementing CESA as defined in CFGC Section 2050 et seq. and the California Code of Regulations (CCR) 14 CCR Section 670.1 et seq., and candidates for listing under the statute (CFGC Section 2068);
- Species meeting the definition of ‘Rare’ or ‘Endangered’ under CEQA Guidelines 14 CCR Section 15125 (c) and/or 14 CCR Section 15380, including plants listed on California Native Plant Society (CNPS) Lists 1A, 1B, 2A, 2B, 3 and 4;
- U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern;
- Species of Special Concern, as designated by California Department of Fish and Wildlife (CDFW) and required by 14 CCR Section 15380;
- Avian species protected under the Migratory Bird Treaty Act (MBTA) of 1912; and/or
- Other species considered to be sensitive or important by resource agencies and/or the scientific community.

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[1] The term ‘adjacent areas’ for the purpose of biological resource analysis is contingent on both the special status species and sensitive resources that may be present within the region (within a 5-mile radius, for the purpose of this analysis), and the likelihood of the project to impact those resources. As species differ in their sensitivities and responses to disturbances (for example, a nesting bald eagle is afforded an 0.5-mile buffer while a house finch is afforded a 15-50 foot buffer), a fixed distance from the project area cannot be assigned to delineate ‘adjacent areas.’

[2] Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except for necessary scientific research and relocation of the bird species for the protection of livestock. Fully Protected species are identified in CFGC SectionSections 3511, 4700, 5050 and 5515.

Sensitive Biological Community: These communities are of limited distribution within the state, county or region and are typically vulnerable to the environmental effects of projects (CDFW 2009). Wetlands, lakes, streams and riparian areas typically qualify as sensitive biological communities due to their rarity and importance to a wide variety of common and special status plants and wildlife. Special status biological communities and habitats are protected under federal regulations such as the Clean Water Act (CWA), state regulations such as the Porter-Cologne Act, the CDFW Streambed Alteration Program, and CEQA, or local ordinances or policies (City or County Tree Ordinances, Special Habitat Management Areas, and General Plan Elements).

The list of high priority vegetation types is maintained by the California Vegetation Classification and Mapping (VegCAMP) program. Natural communities with state ranks S1-S3 are considered as sensitive natural communities under CEQA.

The Contra Costa County General Plan Conservation Element provides an inventory of 41 significant ecological resource areas that would qualify as sensitive biological communities under CEQA (Contra Costa County Department of Conservation and Development 2005).

Protected Tree:

Per City of Lafayette Code of Ordinances, Chapter 6-17, Tree Protection, Definition ‘Q,’ “Protected tree” means a tree on public or private developed property meeting the following standards:

1. Developed property. Located on a developed property, that has a trunk diameter of twelve-inches or more, and that is one of the following species:

- coast live oak (*Quercus agrifolia*)
- canyon oak (*Quercus chrysolepis*)
- blue oak (*Quercus douglasii*)
- white oak (*Quercus garryana*)
- black oak (*Quercus kelloggii*)
- valley oak (*Quercus lobata*)
- interior live oak (*Quercus wislizenii*)
- California bay (*Umbellularia californica*)
- California buckeye (*Aesculus californica*)
- madrone (*Arbutus menziesii*)

Jurisdictional Waters:

Jurisdictional waters are classified as either “Waters of the United States” or “Waters of the state:”

> **Waters of the United States.** The U.S. Army Corps of Engineers (Corps) regulates “Waters of the United States (U.S.)” under Section 404 of the CWA. “Waters of the U.S.” are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “other waters” and are often characterized by an ordinary high water mark (generally naturally-occurring lakes, rivers, and streams). The placement of fill material into Waters of the U.S. (including wetlands) generally requires an individual or nationwide permit from the Corps under Section

404 of the CWA, and a water quality certification from the State Water Resources Control Board under Section 401 of the CWA (discussed below).

Waters of the state. The term “Waters of the state” is defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state,” which necessarily includes Waters of the U.S. The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters which have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes “isolated” wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the state are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the state, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the state, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Wildlife Movement Corridors:

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992). Wildlife movement corridors are considered sensitive by resource and conservation agencies. In general, any activities in or adjacent to defined wildlife movement corridors (e.g., riparian corridors, areas that are contiguous with adjacent open space areas) that could potentially disturb, restrict movement or activity, disrupt natal areas, or facilitate increased predation of wildlife species would be considered a significant adverse impact.

3.3.2 Data Collection

Literature and Database Review

Information used in the preparation of this section was obtained from a Biological Resources Assessment (EBMUD 2016). A desktop review of available information was performed prior to site surveys to determine special status species and sensitive habitats with potential to occur within the Project area and adjacent areas.

In preparation of the Biological Resources Assessment (2016), EBMUD performed California Natural Diversity Data Base (CNDDB) records searches within two miles of the Project area, and reviewed the following resources:

- California Department of Fish and Wildlife (CDFW) CNDDB records (CDFW-CNDDB 2016 as referenced in EBMUD Assessment 2016)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) Trust Resource Report (USFWS 2016, as referenced in EBMUD Assessment 2016)
- California Native Plant Society (CNPS) Electronic Inventory records (CNPS, 2012, as referenced in EBMUD Assessment 2016)

In addition, a desktop review of the following resources was performed:

- CNDDB records within the Project area and a 5-mile radius[3];
- CNPS Inventory of Rare Plants, USGS 7.5-minute quadrangles (3812212 Benicia, 3812211 Vine Hill, 3812118 Honker Bay, 3712282 Briones Valley, 3712281 Walnut Creek, 3712188 Clayton, 3712272 Oakland East, 3712271 Las Trampas Ridge, and 3712178 Diablo)
- Cornell eBird range maps and dynamic sighting reports (Sullivan *et al.* 2009, eBird 2012).;
- USFWS IPaC Trust Resource Report (USFWS 2017a), which provides results for
    - Federally Threatened and Endangered Species,
    - USFWS Critical Habitats, and
    - USFWS Birds of Conservation Concern; and
- USFWS National Wetlands Inventory (USFWS 2017b).
- CDFW California Streams database (CDFW)

Surveys

As part of the facilities planning for the Project, EBMUD Natural Resources Department staff performed an assessment of biological resources for the Project on March 9, 2010. The assessment included a reconnaissance-level field survey to examine the Leland Reservoir site, assess the potential of the Project to impact special status species, and document the presence of sensitive biological resources. On May 17, 2016, EBMUD Natural Resources Department staff conducted a second reconnaissance-level field survey of the Leland Reservoir site to determine if there were any changes in site conditions or additional biological concerns from the previous March 9, 2010 site visit (EBMUD 2016). The 2016 site visit included a site habitat assessment to determine what vegetation types, wildlife habitats and potentially sensitive biological communities may be present within the Project area.

In July 2016, an inventory of trees within the Leland Reservoir site was completed (see **Appendix G**). A total of 467 trees were surveyed. Trees were identified by species and given a conditional rating from 1 to 7 with 1 indicating optimal tree health. Trees were inventoried based on their condition, health, diameter at breast height (dbh), crown spread, and native species status.

In October 2017, a pedestrian survey of the pipeline alignment along Windsor Drive, Condit Road and Leland Drive was performed to assess biological concerns associated with trenching, staging and pipeline installation within the roadways.

3.3.3 Environmental Setting

Regional Setting

The Project Area is located in western Contra Costa County within the City of Lafayette, approximately 1.5 miles east of downtown Lafayette and 1.2 miles west of downtown Walnut Creek. The region possesses a Mediterranean climate, typified by long, hot, dry summers and mild winters that provide precipitation in the form of intense rain events. Western Contra Costa County demonstrates predominately hill-and-valley topography, with flatter areas restricted to the valley floors. Wildlife habitats in the region are dominated by annual grassland/oak woodland mosaic, with riparian vegetation occurring along stream corridors, and scrub-shrub and chaparral vegetation on exposed xeric hillsides. Human development is prominent within the region, including the towns of Moraga, Orinda, Lafayette,

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[3] The CNDDB relies on reported, positive occurrences of special status species, and is a commonly used tool for determining which species may occur in a region. A 5-mile search radius was used for the 2017 desktop review to provide a larger regional context, as a 2-mile radius search of the CNDDB may not adequately sample the regional flora and fauna.

and Walnut Creek, but large tracts of undeveloped land are present outside of urban and suburban areas, including parks, limited-access watersheds, and ranch lands. Mt. Diablo, a prominent, extinct 3,848-foot volcano approximately 8 miles east of the Project area, influences microclimates throughout Contra Costa County.

Project Area Setting

Construction of the Project would occur within the existing reservoir site and within public ROW where the new pipeline would be installed. The approximate 14.5-acre Leland Reservoir site consists of the existing open-cut, concrete-lined, covered reservoir (occupying about 4.5 acres of the site), assorted trees and shrubs surrounding the reservoir, and annual grassland located to the north, east and south. The reservoir is atop a ridgeline, with a taller unnamed ridge located to the north, but both ridgelines are isolated by surrounding development and roadways and thus do not provide a movement corridor. The reservoir site is within a Hillside Overlay District as defined in the City of Lafayette General Plan, and the ridge to the north of the site is considered a “Class II Ridge” by the City of Lafayette. Steep topography is present to the northwest, west, south and east of the reservoir. A single-lane access road is located on site between the reservoir and Leland Drive to the east. Outside of the reservoir area, suburban houses, associated developments, and surface streets surround the parcel on all four sides. SR 24, an eight-lane highway, runs east-west approximately 0.1 mile north of the Leland Reservoir site.

Trees surrounding the reservoir include coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), Canary Island pine (*Pinus canariensis*), Monterey pine (*P. radiata*), foothill pine (*P. sabiniana*), blue gum eucalyptus (*Eucalyptus globulus*) and red ironbark (*E. sideroxylon*), generally in decreasing order of prevalence. There are also oak trees at the perimeter of the site adjacent to Leland Drive including three valley oaks adjacent to the roadway near its intersection with Patty Way, where pipeline connections would be constructed. The dominant soil type at the reservoir area is Los Osos Clay Loam 30 to 50 percent slope, depth 20-40 inches which is a well-drained soil type that is typically dry in the first vertical foot below the surface during the dry season (May-October).

The approximately 2,700-linear-foot pipeline alignment in public ROW is depicted in **Figure 2-3**, and would be installed in paved roadway adjacent to urban habitat types. An open trench would be excavated to install a 36-inch diameter pipeline within the public ROW on Windsor Drive, Condit Road and Leland Drive.

Within the pipeline alignment along Leland Drive and Condit Road, the soil type beneath the asphalted roadway is Los Osos Clay Loam 15 to 30 percent slope. Between the intersection of Leland Drive and Meek Place and the intersection of Condit Road and Windsor Drive, several pine (*Pinus* spp.) and coast live oak trees overhang the roadway.

Within the Windsor Road portion of the alignment, ornamental trees, valley oak, coast live oak, and assorted pine trees are present in residential yards. One heritage valley oak, two pines, three coast live oaks, and one blue elderberry tree (*Sambucus mexicanus*) overhang the roadway.

In total, the 16.6-acre Project construction area includes the 14.5-acre Leland Reservoir site and the 2.1-acre work area associated with the pipeline alignment.

Vegetation

Three major wildlife habitat types – defined by vegetative cover under the California Wildlife Habitat Relationships System – exist within the Project area: urban/developed, coastal oak woodland (oak savannah), and non-native annual grassland. These habitats cover about 10 acres of the Project site (excluding the approximately 4.5-acre covered reservoir and 2.1 acres of paved roadway). The Biological Resources Assessment identifies the reservoir area as an ‘Urban’ wildlife habitat type (Mayer and Laudenslayer 1998) based on the presence of exotic and native species, and the developed infrastructure of the reservoir (EBMUD 2016). The Classification and Assessment with Landsat of Visible Ecological

Groupings (CalVeg) database (Existing Vegetation – CalVeg 2014) indicates the presence of 'Annual Grassland' in addition to the 'Urban' wildlife habitat type within the Project area. Coast live oak and valley oak trees present within and adjacent to the Project area in a low-density, savannah mosaic with an annual grassland understory comprise the coastal oak woodland habitat type. The habitat types in the Project area are described below.

Non-Native Annual Grassland

Non-native grassland is dominated by a sparse to dense cover of non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands as a result of human disturbance. However, where not completely out-competed by weedy non-native plant species, scattered native wildflower species and native perennial grass species, considered remnants of the original vegetation, may also be common. This community occurs on fine-textured, usually clay soils, which are moist or waterlogged during the winter rainy season and very dry during the summer and fall. Germination occurs with the onset of the late fall rains while growth, flowering, and seed-set occur from winter through spring. With a few exceptions, the plants are dead through the summer and fall dry season, persisting as seeds. This community usually occurs below 3,000 feet but reaches 4,000 feet in the Tehachapi Mountains and interior San Diego County, and intergrades with coastal prairie along the Central Coast (Holland 1986).

Non-native annual grassland provides habitat for a wide variety of wildlife species for foraging and movement. While some species use non-native annual grassland for breeding, resting and refuge (such as California ground squirrel [*Otospermophilus beechyi*] and western meadowlark [*Sturnella neglecta*]), others are dependent on adjacent landscape features and/or habitat types that may provide more structural complexity, such as caves, woody plants, rock outcrops, and ponds (Mayer and Laudenslayer 1988).

Non-native annual grassland is found on the hillsides surrounding the reservoir (including the slope east-southeast of the reservoir where the pipeline alignment is located), and is the dominant vegetative land cover in areas that are not covered with impervious surfaces (i.e., the reservoir and access road) within the reservoir area. Non-native annual grassland is found both in open settings as well as in the understory of the wooded areas surrounding the reservoir.

Coastal Oak Woodland

Oak woodland is a highly variable habitat type found throughout coastal California, which varies in species composition, canopy height, and canopy density depending on environmental conditions. In xeric, interior settings, coast live oak (*Q. agrifolia*) intersperses with valley oak (*Q. lobata*), blue oak (*Q. douglasii*), and foothill pine (*Pinus sabiniana*) (Mayer and Laudenslayer 1988). The overstory consists of deciduous and evergreen hardwoods, 15 to 70 feet tall, interspersed with sub-dominant conifers. The understory is dominated by non-native annual grasses, but also supports scattered shrubs, including buckthorn (*Rhamnus* spp.).

Oak woodlands provide habitat for many wildlife species: acorns are important food sources for birds and mammals; branches and canopies provide nesting, resting and refuge habitat for birds, mammals and reptiles; and shade provided by the canopies provides thermal refugia during hot Mediterranean summers, and protection from wind and rain during winter storms. Barrett (1980) reports that at least 60 species of mammals use oaks to complete their life history, and Verner (1980) reports 110 avian species of birds that can be present in oak woodland during breeding season.

At the reservoir site, the oak woodland habitat type is found on the slopes north, west and south of the reservoir. Review of 1939 aerial photos of the reservoir site shows that historically, there were only two or three oak trees on the site, so the site did not originally support oak woodland habitat. Some of the oak trees that are currently present established themselves on the site following reservoir construction.

Urban

Urban wildlife habitats are extremely variable, as they encompass vegetated and non-vegetated areas, and are by definition heavily anthropogenically influenced. Under the California Wildlife Habitat Relationships system, five types of vegetative cover are included in the 'Urban' habitat type: tree grove, street strip, shade tree/lawn, lawn, and shrub cover.

In conjunction with adjacent coastal oak woodland habitat, Urban habitats are suitable for a variety of common wildlife species, including scrub jay (*Aphelocoma californica*), house finch (*Haemorhous mexicanus*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), small rodents such as fox squirrel *(Sciurus niger)* and deer mouse *(Peromyscus maniculatus)*, and reptiles such as garter snake (*Thamnophis sirtalis*) and western fence lizard (*Sceloporus occidentalis*).

Within the Project area, non-native trees such as eucalyptus (blue gum eucalyptus [*Eucalyptus globulus*] and red ironbark [*Eucalyptus sideroxylon*]), almond (*Prunus dulcis*), cherry plum (*Prunus cerasifera*), Carolina cherry laurel (*Prunus caroliniana*) and Canary Island pine (*Pinus canariensis*) are present in the overstory of the reservoir area, with non-native firethorn (*Pyracantha* spp.) present in the understory of the reservoir area. This habitat type intergrades with coastal oak woodland on the slopes north, west and south of the reservoir. Native valley oak, coast live oak, and blue elderberry trees are present alongside and occasionally overhanging the roadways along Leland Drive, Condit Road, and Windsor Drive. Non-native ornamental tree species and pine trees are present adjacent to the project area, in residential yards, adjacent to work areas in roadways along the pipeline alignment. Of the five types of vegetative cover included in the 'Urban' habitat type, the dominant type along the pipeline alignment is 'shade tree/lawn,' followed by 'street strip.'

Sensitive Biological Communities

The City of Lafayette Tree Protection Ordinance extends protections to a narrow list of trees (including seven members of the genus *Quercus*) measuring 12 inches or more dbh on developed properties. As defined in this section, trees subject to protection by local ordinance qualify as a sensitive biological community. However, as described above, the reservoir site did not originally support a natural oak woodland community. Accordingly, the functionality of the oak trees within the vicinity of the reservoir as a sensitive biological community is diminished when analyzed in this context, particularly when coupled with the isolation of the Project area from intact oak woodlands.

Jurisdictional Waters

No formal wetland jurisdictional delineation was performed for this Project because no potential wetland areas were identified in the Project area. The Biological Resources Assessment did not identify any potentially jurisdictional waters within the area that would be affected by Project construction (EBMUD 2016). Review of the CDFW California Streams database (CDFW 2016) and USFWS National Wetlands Inventory (USFWS 2017b) supported the conclusion that there are no known waters, wetlands or other potentially jurisdictional features present.

The Project site is about 700 feet east of Reliez Creek, which is a tributary of Las Trampas Creek. Local storm drain facilities that capture stormwater from the reservoir site discharge to Reliez Creek.

Wildlife Corridors and Nursery Sites

The reservoir is surrounded by dense residential developments to the east and west, a church and school to the south, and on the north by a vacant property adjacent to the eight-lane highway SR 24. Thus, the

Project area and ridgeline on the vacant property to the north of the site do not act as a corridor for terrestrial wildlife. There are no jurisdictional waters within the area that would be affected by Project construction so accordingly the Project area does not contain a corridor for aquatic life.

Trees provide roosting, foraging and nesting habitat for avian wildlife species. In July 2016 trees on the reservoir site were inventoried to determine their health and prioritize their preservation. A total of 467 trees were counted and surveyed on the reservoir site (see **Appendix G**, Tree Inventory). Trees were identified by species and given a conditional rating from 1 to 7 with 1 indicating optimal tree health. Trees were inventoried and given a conditional rating based on their condition, health, diameter at breast height (dbh), crown spread, and native species status. Additional arborist comments related to removal, pruning recommendations, and structural weaknesses were included in the tree inventory. Trees adjacent to the pipeline alignment were not included in this inventory, as no tree removals for the alignment are expected.

Special-Status Plants

A total of 63 special-status plant species were identified during the desktop review of CNPS, CNDDB and IPaC databases. Each species was then evaluated for potential to occur within the Project area based on habitat requirements and elevation range. Of the 63 species that were initially identified, 40 species were determined to have no potential to occur within the Project area due to the lack of suitable habitat. A majority of the rare plants identified are specialists within specific habitat types that are not present on the Project area, including chaparral, scrub, vernal pools, riparian and/or wetlands, alkaline soils, sandy soils, and serpentine soils. The remaining 23 species were all identified to have a low potential to occur within the Project area, due to the presence of annual grassland and oak woodland vegetation, which correspond to ‘valley and foothill grassland’ and ‘cismontane woodland’ habitat types used by CNPS. Special status plants and their potential to occur are listed in **Table 3.3-1**.

The desktop review indicated that there are no known records of special-status plant species within the Project area, and no special-status plant species were observed during reconnaissance-level site surveys. The relative size and isolation of the habitat provided by the vegetated portions of the Project area do not provide high-quality habitat for rare plants. The dominance of non-native annual grasses in the tree understory reduces habitat quality further. The grasslands are also subject to routine maintenance in the form of mowing and grazing by goats for fire suppression.

Although focused rare plant surveys have not been performed within the Project area, the likelihood of special-status plants occurring within the reservoir site is very low because the Project site does not contain any habitat suitable to support the sensitive and special status plant species identified in **Table 3.3-1**. The Project site is landscaped and regularly maintained. The habitats present within the Project site are characteristic of disturbed and urban habitats and are dominated by planted landscape and other non-native species (EBMUD 2016). The Project area is not within any USFWS critical habitat for plant species (USFWS 2017a).

Table 3.3-1:Special-Status Plant Species with Potential to Occur in Project Area

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
bent-flowered fiddleneck	*Amsinckia lunaris*	- / - / 1B.2	Mar-Jun	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland (Elev. 5 -1640 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Mt. Diablo manzanita	*Arctostaphylos auriculata*	- / - / 1B.3	Jan-Mar	Chaparral (sandstone), Cismontane woodland (Elev. 440 -2135 ft.)	No potential to occur. No suitable habitat.
Contra Costa manzanita	*Arctostaphylos manzanita ssp. laevigata*	- / - / 1B.2	Jan-Mar(Apr)	Chaparral (rocky) (Elev. 1410 -3610 ft.)	No potential to occur. No suitable habitat.
pallid manzanita	*Arctostaphylos pallida*	FT / CE / 1B.1	Dec-Mar	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub (Elev. 605 -1525 ft.)	No potential to occur. No suitable habitat.
alkali milk-vetch	*Astragalus tener var. tener*	- / - / 1B.2	Mar-Jun	Playas, Valley and foothill grassland (adobe clay), Vernal pools (Elev. 0 -195 ft.)	No potential to occur. No suitable habitat (soil type, elevation).
heartscale	*Atriplex cordulata var. cordulata*	- / - / 1B.2	Apr-Oct	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy) (Elev. 0 -1835 ft.)	No potential to occur. No suitable habitat (soil type)
big-scale balsamroot	*Balsamorhiza macrolepis*	- / - / 1B.2	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland (Elev. 295 -5100 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
big tarplant	*Blepharizonia plumosa*	- / - / 1B.1	Jul-Oct	Valley and foothill grassland (Elev. 95 -1655 ft.)	Low potential to occur in annual grassland habitat in Project area.
round-leaved filaree	*California macrophylla*	- / - / 1B.2	Mar-May	Cismontane woodland, Valley and foothill grassland (Elev. 45 -3935 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	- / - / 1B.2	Apr-Jun	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland (Elev. 95 -2755 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
chaparral harebell	*Campanula exigua*	- / - / 1B.2	May-Jun	Chaparral (rocky, usually serpentinite) (Elev. 900 - 4100 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Congdon's tarplant	*Centromadia parryi ssp. congdonii*	- / - / 1B.1	May-Oct(Nov)	Valley and foothill grassland (alkaline) (Elev. 0 -755 ft.)	Low potential to occur in annual grassland habitat in Project area.
soft bird's-beak	*Chloropyron molle ssp. molle*	FE / CR / 1B.2	Jul-Nov	Marshes and swamps (coastal salt) (Elev. 0 -10 ft.)	Low potential to occur in annual grassland habitat in Project area.
robust spineflower	*Chorizanthe robusta var. robusta*	FE / - / 1B.1	Apr-Sep	Chaparral (maritime), Cismontane woodland (openings), Coastal dunes, Coastal scrub (Elev. 5 -985 ft.)	No potential to occur. No suitable habitat.
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	- / - / 2B.1	Jul-Sep	Marshes and swamps Coastal, fresh or brackish water (Elev. 0 -655 ft.)	No potential to occur. No suitable habitat.
Franciscan thistle	*Cirsium andrewsii*	- / - / 1B.2	Mar-Jul	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub (Elev. 0 -490 ft.)	No potential to occur. No suitable habitat.
Presidio clarkia	*Clarkia franciscana*	FE / CE / 1B.1	May-Jul	Coastal scrub, Valley and foothill grassland (serpentinite) (Elev. 80 - 1100 ft.)	No potential to occur. No suitable habitat.
Mt. Diablo bird's-beak	*Cordylanthus nidularius*	- / CR / 1B.1	Jun-Aug	Chaparral (serpentinite) (Elev. 1965 -2625 ft.)	No potential to occur. No suitable habitat.
Hospital Canyon larkspur	*Delphinium californicum ssp. interius*	- / - / 1B.2	Apr-Jun	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub (Elev. 635 -3595 ft.)	No potential to occur. No suitable habitat.
western leatherwood	*Dirca occidentalis*	- / - / 1B.2	Jan-Mar(Apr)	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland (Elev. 80 -1395 ft.)	No potential to occur. No suitable habitat.
Lime Ridge eriastrum	*Eriastrum ertterae*	- / - / 1B.1	Jun-Jul	Chaparral (openings or edges) (Elev. 655 -950 ft.)	No potential to occur. No suitable habitat.

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
Tiburon buckwheat	*Eriogonum luteolum var. caninum*	- / - / 1B.2	May-Sep	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland (Elev. 0 -2295 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Mt. Diablo buckwheat	*Eriogonum truncatum*	- / - / 1B.1	Apr-Sep(Nov-Dec)	Chaparral, Coastal scrub, Valley and foothill grassland (Elev. 5 -1150 ft.)	Low potential to occur in annual grassland habitat in Project area.
Jepson's coyote thistle	*Eryngium jepsonii*	- / - / 1B.2	Apr-Aug	Valley and foothill grassland, Vernal pools (Elev. 5 -985 ft.)	No potential to occur. No suitable habitat.
Contra Costa wallflower	*Erysimum capitatum var. angustatum*	FE / CE / 1B.1	Mar-Jul	Inland dunes (Elev. 5 -65 ft.)	No potential to occur. No suitable habitat.
San Joaquin spearscale	*Extriplex joaquinana*	- / - / 1B.2	Apr-Oct	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland (Elev. 0 -2740 ft.)	No potential to occur. No suitable habitat.
minute pocket moss	*Fissidens pauperculus*	- / - / 1B.2		North Coast coniferous forest (damp coastal soil) (Elev. 30 -3360 ft.)	No potential to occur. No suitable habitat.
fragrant fritillary	*Fritillaria liliacea*	- / - / 1B.2	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland (Elev. 5 -1345 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
dark-eyed gilia	*Gilia millefoliata*	- / - / 1B.2	Apr-Jul	Coastal dunes (Elev. 5 -100 ft.)	No potential to occur. No suitable habitat.
Toren's grimmia	*Grimmia torenii*	- / - / 1B.3		Chaparral, Cismontane woodland, Lower montane coniferous forest (Elev. 1065 -3805 ft.)	No potential to occur. No suitable habitat.
Diablo helianthella	*Helianthella castanea*	- / - / 1B.2	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland (Elev. 195 -4265 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Brewer's western flax	*Hesperolinon breweri*	- / - / 1B.2	May-Jul	Chaparral, Cismontane woodland, Valley and foothill grassland (Elev. 95 -3100 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
Loma Prieta hoita	*Hoita strobilina*	- / - / 1B.1	May-Jul(Aug-Oct)	Chaparral, Cismontane woodland, Riparian woodland (Elev. 95 -2820 ft.)	No potential to occur. No suitable habitat.
Santa Cruz tarplant	*Holocarpha macradenia*	FT / CE / 1B.1	Jun-Oct	Coastal prairie, Coastal scrub, Valley and foothill grassland (Elev. 30 -720 ft.)	No potential to occur. No suitable habitat.
Kellogg's horkelia	*Horkelia cuneata var. sericea*	- / - / 1B.1	Apr-Sep	Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub (Elev. 30 -655 ft.)	No potential to occur. No suitable habitat.
Carquinez goldenbush	*Isocoma arguta*	- / - / 1B.1	Aug-Dec	Valley and foothill grassland (alkaline) (Elev. 0 -65 ft.)	No potential to occur. No suitable habitat.
Northern California black walnut	*Juglans hindsii*	- / - / 1B.1	Apr-May	Riparian forest, Riparian woodland (Elev. 0 -1445 ft.)	No potential to occur. No suitable habitat.
Contra Costa goldfields	*Lasthenia conjugens*	FE / - / 1B.1	Mar-Jun	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools (Elev. 0 -1540 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	- / - / 1B.2	May-Jul(Aug-Sep)	Marshes and swamps (freshwater and brackish) (Elev. 0 -15 ft.)	No potential to occur. No suitable habitat.
Mason's lilaeopsis	*Lilaeopsis masonii*	- / CR / 1B.1	Apr-Nov	Marshes and swamps (brackish or freshwater), Riparian scrub (Elev. 0 -35 ft.)	No potential to occur. No suitable habitat.
Delta mudwort	*Limosella australis*	- / - / 2B.1	May-Aug	Marshes and swamps (freshwater or brackish), Riparian scrub (Elev. 0 -10 ft.)	No potential to occur. No suitable habitat.
Hall's bush-mallow	*Malacothamnus hallii*	- / - / 1B.2	(Apr)May-Sep(Oct)	Chaparral, Coastal scrub (Elev. 30 -2495 ft.)	No potential to occur. No suitable habitat.
Oregon meconella	*Meconella oregana*	- / - / 1B.1	Mar-Apr	Coastal prairie, Coastal scrub (Elev. 820 -2035 ft.)	No potential to occur. No suitable habitat.
Mt. Diablo cottonweed	*Micropus amphibolus*	- / - / 3.2	Mar-May	Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland (Elev. 145 -2705 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
San Antonio Hills monardella	*Monardella antonina ssp. antonina*	- / - / 3	Jun-Aug	Chaparral, Cismontane woodland (Elev. 1045 - 3280 ft.)	Low potential to occur in oak woodland habitat in Project area.
woodland woolythreads	*Monolopia gracilens*	- / - / 1B.2	(Feb)Mar-Jul	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland (Elev. 325 -3935 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Lime Ridge navarretia	*Navarretia gowenii*	- / - / 1B.1	May-Jun	Chaparral (Elev. 590 - 1000 ft.)	No potential to occur. No suitable habitat.
shining navarretia	*Navarretia nigelliformis ssp. radians*	- / - / 1B.2	(Mar)Apr-Jul	Cismontane woodland, Valley and foothill grassland, Vernal pools (Elev. 210 -3280 ft.)	Low potential to occur in annual grassland and oak woodland habitat in Project area.
Antioch Dunes evening-primrose	*Oenothera deltoides ssp. howellii*	FE / CE / 1B.1	Mar-Sep	Inland dunes (Elev. 0 -100 ft.)	No potential to occur. No suitable habitat.
Mt. Diablo phacelia	*Phacelia phacelioides*	- / - / 1B.2	Apr-May	Chaparral, Cismontane woodland (Elev. 1640 - 4495 ft.)	No potential to occur. No suitable habitat.
San Francisco popcornflower	*Plagiobothrys diffusus*	- / CE / 1B.1	Mar-Jun	Coastal prairie, Valley and foothill grassland (Elev. 195 -1180 ft.)	Low potential to occur in annual grassland habitat in Project area.
Marin knotweed	*Polygonum marinense*	- / - / 3.1	(Apr)May-Aug(Oct)	Marshes and swamps (coastal salt or brackish) (Elev. 0 -35 ft.)	No potential to occur. No suitable habitat.
adobe sanicle	*Sanicula maritima*	- / CR / 1B.1	Feb-May	Chaparral, Coastal prairie, Meadows and seeps, Valley and foothill grassland (Elev. 95 -785 ft.)	No potential to occur. No suitable habitat.
rock sanicle	*Sanicula saxatilis*	- / CR / 1B.2	Apr-May	Broadleafed upland forest, Chaparral, Valley and foothill grassland (Elev. 2030 -3855 ft.)	No potential to occur. No suitable habitat.
chaparral ragwort	*Senecio aphanactis*	- / - / 2B.2	Jan-Apr(May)	Chaparral, Cismontane woodland, Coastal scrub (Elev. 45 -2625 ft.)	Low potential to occur in oak woodland in Project area.

Common Name	Scientific Name	Status (FESA/ CESA/ CNPS	Blooming Period	Habitat	Potential for Occurrence
most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	- / - / 1B.2	(Mar)Apr-Sep(Oct)	Chaparral, Cismontane woodland, Valley and foothill grassland (Elev. 310 -3280 ft.)	Low potential to occur in annual grassland habitat in Project area.
Mt. Diablo jewelflower	*Streptanthus hispidus*	- / - / 1B.3	Mar-Jun	Chaparral, Valley and foothill grassland (Elev. 1195 -3935 ft.)	Low potential to occur in annual grassland habitat in Project area.
slender-leaved pondweed	*Stuckenia filiformis ssp. alpina*	- / - / 2B.2	May-Jul	Marshes and swamps (assorted shallow freshwater) (Elev. 980 - 7055 ft.)	No potential to occur. No suitable habitat.
Suisun Marsh aster	*Symphyotrichum lentum*	- / - / 1B.2	(Apr)May-Nov	Marshes and swamps (brackish and freshwater) (Elev. 0 -10 ft.)	No potential to occur. No suitable habitat.
saline clover	*Trifolium hydrophilum*	- / - / 1B.2	Apr-Jun	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools (Elev. 0 -985 ft.)	No potential to occur. No suitable habitat.
coastal triquetrella	*Triquetrella californica*	- / - / 1B.2		Coastal bluff scrub, Coastal scrub (Elev. 30 - 330 ft.)	No potential to occur. No suitable habitat.
caper-fruited tropidocarpum	*Tropidocarpum capparideum*	- / - / 1B.1	Mar-Apr	Valley and foothill grassland (alkaline hills) (Elev. 0 -1495 ft.)	No potential to occur. No suitable habitat.
oval-leaved viburnum	*Viburnum ellipticum*	- / - / 2B.3	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest (Elev. 705 -4595 ft.)	Low potential to occur in oak woodland habitat in Project area.

Key to Status:

FE – Federally Endangered	CE – California Endangered
FT – Federally Threatened	CT – California Threatened
	CR – California Rare (Section 15380 CEQA)

CNPS 1A – Presumed Extinct by CNPS
CNPS 1B – Rare, threatened or endangered in CA and Elsewhere
CNPS 2 – Rare, threatened or endangered in CA but more common elsewhere
CNPS 3 – More information needed, considered under CEQA Guidelines Section 15125 (c) and/or Section 15380
CNPS Threat Extensions

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Special-Status Fish and Wildlife

A total of 47 special-status fish and wildlife species were identified during the desktop review of CNDDB and IPaC databases. Each species was then evaluated for potential to occur within the Project area based on species' range and habitat requirements. **Table 3.3-2** summarizes that evaluation. Of the 47 special-status fish and wildlife species identified, 33 species were determined to have no potential to occur due to the lack of suitable habitat. Aquatic species, such as fish and vernal pool invertebrates, were categorically excluded due to the lack of aquatic habitat (Refer to **Figure 3.9-1** in the Hydrology and Water Quality Section for project location with respect to aquatic habitats).

The Project area is not within any USFWS critical habitat for fish or wildlife species (USFWS 2017a).

Brief life history accounts for state- and federally-listed wildlife species are provided in the Biological Resources Assessment. No state- or federally-listed wildlife species have the potential to occur within the Project area due to the lack of suitable habitat. No special-status amphibian, reptile or invertebrate special status species have the potential to occur within the Project area due to the lack of suitable habitat.

One special-status mammal species (San Francisco dusky-footed woodrat [*Neotoma fuscipes annectens*]) was identified as having moderate potential to occur within the Project area. The San Francisco dusky-footed woodrat is a subspecies of the common dusky-footed woodrat (*N. fuscipes*), and is California Species of Special Concern (CDFW 2017). San Francisco dusky-footed woodrats are endemic to the San Francisco Bay Area south of the San Francisco Bay Delta and west of the Central Valley. Dusky-footed woodrats build large, conspicuous nests of sticks and leaves at the base of, or in, a tree, around a shrub, or near hillsides that may measure up to 8 feet in diameter and 8 feet in height (English 1923), which are used for shelter and rearing young. Dusky-footed woodrats are found in forested habitats with moderate canopy coverage and variable understories, and can be found in close proximity to human developments. No nests were observed on-site during surveys; however, the Project area contains suitable habitat and is within the range of the subspecies.

Three special status mammal species (pallid bat [*Antrozous pallidus*], Townsend's big-eared bat [*Corynorhinus townsendii*], and American badger [*Taxidea taxus*]) have low potential to occur within the Project area, however neither species nor signs of their presence were observed during 2010 and 2016 reconnaissance-level surveys. Roosting habitats for special status bat species may be present in the Project area. These bat species typically use buildings, trees, bridges, and rock crevices for roost habitat. American badgers require large amounts of open habitat and dig large, identifiable subterranean dens, which were not observed during the site surveys. Accordingly, these three mammal species are not considered to be present in the Project area.

Nine special-status avian species identified in CNDDB and IPaC databases have the potential to occur within the Project area: rufous-crowned sparrow (*Aimophila ruficeps*), oak titmouse (*Baeolophus inornatus*), Lawrence's goldfinch (*Carduelis lawrencei*), bald eagle (*Haliaeetus leucocephalus*), Lewis' woodpecker (*Melanerpes lewis)*, Yellow-billed magpie (*Pica nuttalli*), Nuttall's woodpecker (*Picoides nuttallii*), Allen's hummingbird (*Selasphorous sasin*), and Rufous hummingbird (*Selasphorus rufus*). Of these nine species, three species are unlikely to nest within the Project area (bald eagle, Lewis' woodpecker, and rufous hummingbird) because suitable nesting habitat is not present. The remaining six avian species have the potential to nest within the Project area because potentially suitable nesting habitat is present. The Biological Resources Assessment identified several additional raptor species - American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), Cooper's hawk (*Accipiter cooperii*), northern saw-whet owl (*Aegolius acadicus*), red-tailed hawk (*Buteo jamaicensis*), western screech owl (*Megascops kennicottii*), sharp-shinned hawk (*Accipiter striatus*), and long-eared owl (*Asio otus*) – that may nest within the Project area, and nesting great horned owls (*Bubo virginianus*) were detected within the Project area. Nesting habitat for additional common bird species protected by the MBTA and California Fish and Game Code Section 3503 is also present within the Project area.

Table 3.3-2. Special-Status Wildlife Species Evaluated for Potential to Occur in the Project Area

Common Name	Scientific Name	Status	Habitat Requirements	Potential for Occurrence
Amphibians				
California tiger salamander	*Ambystoma californiense*	FT, CT	Requires vernal pools/seasonal ponds, or fishless permanent ponds for breeding and presence of fossorial mammal burrows located within 1.7 miles of breeding pond for upland habitat.	No potential to occur. No suitable habitat. Isolated from all known occurrences
California red-legged frog	*Rana draytonii*	FT, SSC	Shrubby or emergent riparian vegetation closely associated with deep still or slow moving water	No potential to occur. No suitable habitat. Isolated from all known occurrences
Reptiles				
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, CT	Chaparral, northern coastal sage scrub, and coastal sage with scattered rocky outcrops	No potential to occur. No suitable habitat present, isolated from known occurrences by urban habitat.
Giant garter snake	*Thamnophis gigas*	FT, CT	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals & irrigation ditches. This is the most aquatic of the garter snakes in California.	No potential to occur. No suitable habitat
Birds				
Tricolored Blackbird	*Agelaius tricolor*	CCE, SSC, BCC	Breeding colonies require a nearby source of water, suitable nesting substrate, and natural grassland, woodland, or agricultural cropland biomes in which to forage.	No potential to occur. No suitable habitat
Rufous-crowned Sparrow	*Aimophila ruficeps*	BCC	Dry, open hillsides covered with grasses, rocks, and scattered shrubs, including coastal sagebrush, open chaparral, scrub oaks, pinyon pine, and other woody plants. Dense woody growth is unsuitable.	Low potential to occur. No rocks or shrub-scrub habitat
Bell's sparrow	*Amphispiza belli*	BCC	Breed in coastal sagebrush, chaparral, and other open, scrubby habitats.	No potential to occur, no scrub habitat on site.
Short-eared Owl (wintering)	*Asio flammeus*	SSC, BCC	Large areas of open grassland. The short-eared owl nests on ground in prairies, hayfields or even stubble fields.	No potential to occur. No suitable habitat
Western burrowing owl	*Athene cunicularia*	SSC, BCC	Flat to moderately-sloped annual grassland with California ground squirrel (*Otospermophilus beechyi*) burrows. Avoids wooded areas.	No potential to occur. No potential to occupy site. No suitable burrows observed.

Common Name	Scientific Name	Status	Habitat Requirements	Potential for Occurrence
Oak Titmouse	*Baeolophus inornatus*	BCC	Warm, open, dry oak or oak-pine woodlands. Many will use scrub oaks or other brush as long as woodlands are nearby. Nests in cavities.	High potential to occur. Oak woodland and open spaces provide suitable foraging habitat.
Swainson's Hawk (breeding)	*Buteo swainsoni*	CT, SSC, BCC	Swainson's Hawk breeding habitat includes shrub-steppe areas with scattered trees, large shrubs and riparian areas. They will often feed in agricultural areas.	No potential to occur. Species not known to nest in western Contra Costa, no foraging habitat present.
Costa's hummingbird	*Calypte costae*	SSC, BCC	Desert and semi-desert, arid brushy foothills and chaparral, in migration and winter also in adjacent mountains and in open meadows and gardens.	No potential to occur. No suitable habitat
Lawrence's Goldfinch (breeding)	*Carduelis lawrencei*	BCC	Open woodlands, chaparral, and weedy fields. Extremely nomadic with respect to breeding areas. Nest consists of loose cup of leaves and grass stems, with lichen where available, placed at mid-height in a tree.	High potential to occur. Suitable foraging and nesting habitat within Project area. Species known to occur within region.
Snowy Plover (wintering)	*Charadrius alexandrinus*	FT, SSC, BCC	Barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs, and ponds.	No potential to occur. No suitable habitat
Mountain plover (wintering)	*Charadrius montanus*	SSC, BCC	Breeds on open plains at moderate elevations. Winters in short-grass plains and fields, plowed fields, and sandy deserts	No potential to occur. No suitable habitat
Olive-sided flycatcher (breeding)	*Contopus cooperi*	SSC, BCC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Winters at forest edges and clearings where tall trees or snags are present.	No potential to occur. No suitable habitat
Yellow rail (wintering)	*Coturnicops noveboracensis*	SSC, BCC	Shallow marshes, and wet meadows; in winter, drier fresh-water and brackish marshes, as well as dense, deep grass, and rice fields. Nests typically occur in shall marshes, with sedges (*Carex* spp.) as the principal vegetation component.	No potential to occur. No suitable habitat
Prairie falcon	*Falco mexicanus*	CDFW WL, BCC	Nests high in cliffs. Forages over open grasslands.	No potential to nest onsite. Grassland may constitute low-quality foraging habitat.

Common Name	Scientific Name	Status	Habitat Requirements	Potential for Occurrence
American peregrine falcon	*Falco peregrinus anatum*	FP, BCC	Nests in cliffs or tall anthropogenic structures (bridges, towers, buildings). Forages in open areas, including grasslands, lake margins and tidelands.	No potential to nest onsite. Limited, isolated open habitat may constitute low-quality foraging habitat.
Black oystercatcher	*Haematopus bachmani*	BCC	Rocky seacoasts and islands, less commonly sandy beaches.	No potential to occur. No suitable habitat
Bald eagle	*Haliaeetus leucocephalus*	BGEPA CE, BCC	Typically nest in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible.	Low potential to occur. Frequently observed at Lafayette Reservoir 2.85 miles west of Project area. No foraging habitat within Project area, historic nests absent from Project area.
Least bittern (breeding)	*Ixobrychus exilis*	SSC, BCC	Freshwater or brackish marshes with tall emergent vegetation	No potential to occur. No suitable habitat
Black rail (breeding)	*Laterallus jamaicensis coturniculus*	CT, FP, BCC	Nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation.	No potential to occur. No suitable habitat
Short-billed Dowitcher (wintering)	*Limnodromus griseus*	BCC	Breeds in muskegs of taiga to timberline, and barely onto subarctic tundra. Winters on coastal mud flats and brackish lagoons.	No potential to occur. No suitable habitat
Marbled godwit (wintering)	*Limosa fedoa*	BCC	Breeds in marshes and flooded plains, in migration and winter also on mudflats and beaches.	No potential to occur. No suitable habitat
Lewis' woodpecker (wintering)	*Melanerpes lewis*	BCC	Open woodland. Nests in cavities.	Moderate potential to occur (nesting and foraging)
Long-billed Curlew (wintering)	*Numenius americanus*	CDFW WL, BCC	Summers in areas of western North America with sparse, short grasses, including shortgrass and mixed-grass prairies as well as agricultural fields. After their young leave the nest they may move to areas with taller, denser grasses. In winter, they migrate to the coasts and to interior Mexico, where you can find them in wetlands, tidal estuaries, mudflats, flooded fields, and occasionally beaches.	No potential to occur. No suitable habitat
Fox Sparrow (wintering)	*Passerella iliaca*	BCC	Winters within densely thicketed habitats.	No potential to occur. No suitable habitat
Yellow-billed Magpie	*Pica nuttalli*	BCC	Resides in oak savanna, open areas with large trees, and along streams. This species also forages in grassland, pasture, fields, and orchards. Nests are placed high in large trees and small colonies.	Moderate potential to nest in large trees in Project area

Common Name	Scientific Name	Status	Habitat Requirements	Potential for Occurrence
Nuttall's woodpecker	*Picoides nuttallii*	BCC	residents in oak woodlands from around 900–5,500 feet elevation. Though primarily restricted to oak woodlands in California, Nuttall's Woodpeckers also use wooded suburban areas and woodlands near streams, e	Moderate potential to occur in scattered oaks and surrounding suburban areas.
Ridgway's (California Clapper) Rail	*Rallus longirostris obsoletus*	FE, CE, FP	Restricted to tidal marshes of San Francisco Bay.	No potential to occur. No suitable habitat.
Allen's hummingbird (breeding)	*Selasphorous sasin*	BCC	Breed in narrow strip of coastal forest, scrub and chaparral along the west coast. Males defend territories.	High potential to occur. Species observed from Project vicinity in 2015 and 2017.
Rufous hummingbird (migrating)	*Selasphorus rufus*	BCC	Migrates between Washington/British Columbia and Mexico. Common species at feeders, or nectaring flowers.	Low potential to occur. Species does not nest within Project area.
Black-chinned sparrow (breeding)	*Spizella atrogularis*	BCC	During breeding season, Black-chinned Sparrows can be found in arid brushlands on rugged mountain slopes from sea level to almost 2,700 m	No potential to occur. No suitable habitat
California least tern	*Sterna antillarum browni*	FE, CE, FP, CDFW: WL	Open beaches without vegetation.	No potential to occur. No suitable habitat.
Lesser yellowlegs (wintering)	*Tringa flavipes*	BCC	Breeds in open boreal forest with scattered shallow wetlands. Winters in wide variety of shallow fresh and saltwater habitats.	No potential to occur. No suitable habitat
Invertebrates				
Obscure bumble bee	*Bombus caliginosus*	none	Coastal prairies and meadows in the Coast Range. Found in proximity to food plants (*Ceanothus, Cirsium, Clarkia, Keckiella, Lathyrus, Lotus, Lupinus, Rhododendron, Rubus, Trifolium,* and *Vaccinium)*	No potential to occur. No suitable habitat
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo county. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*	No potential to occur. No suitable habitat

Common Name	Scientific Name	Status	Habitat Requirements	Potential for Occurrence
Callippe silverspot butterfly	*Speyeria callippe*	FE	Restricted to the northern coastal scrub of the San Francisco peninsula. Host plant *is Viola pedunculata*. Most adults found on east-facing slopes; males congregate on hilltops in search of females.	No potential to occur. No suitable habitat
Mammals				
pallid bat	*Antrozous pallidus*	SSC, WBWG: H	Roosts in structures, crevices, caves. Forages over open areas.	Low potential to roost onsite. May forage in open areas of Project area.
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC, WBWG: H	Roosts in caves, tunnels, buildings or other man-made structures. Varied foraging habitat. Most abundant in mesic habitats.	Low potential to roost onsite. May forage in open areas of Project area.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	SSC	Builds conspicuous nest of sticks and leaves on ground in proximity to wooded areas, or in trees.	Low potential to occur. Suitable habitat present, species not observed.
American badger	*Taxidea taxus*	SSC	Large areas of open grassland, open scrub, chaparral and savannah with dry, friable soils.	Low potential to occur. No badger sign observed, Project area too small and too isolated to support population.

Key to Status	
FE – Federal Endangered FT – Federal Threatened BGEPA – Bald and Golden Eagle Protection Act BCC – USFWS Bird of Conservation Concern	CE – California Endangered CT – California Threatened FP – CDFW Fully Protected CCE – California Candidate Endangered CDFW: WL – Watch List SSC – CDFW Species of Special Concern WBWG:H – Western Bat Working Group High Priority

3.3.4 Regulatory Framework

Federal Regulation

Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act

The USFWS implements the Endangered Species Act (ESA) (16 U.S. Code [USC] Section 1531 et seq.), MBTA (16 USC Section 703-712), and the Bald and Golden Eagle Protection Act (16 USC Section 668 668d). Under these acts, the USFWS has jurisdiction over migratory birds, candidate species and species proposed or listed as threatened or endangered. All birds native to North America are protected under the MBTA, which prohibits killing, possessing or trading migratory birds, nests, and eggs except as otherwise provided in 16 USC Section 703-712 (e.g., regulated take of game species). Enacted in 1973, the ESA prohibits take, possession, sale, or transport of proposed, candidate, or listed species. "Take" is broadly defined as "…the action of harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct." Projects that would result in take of any species federally listed as threatened or endangered are required to obtain authorization from the National Marine Fisheries Service and/or USFWS through Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of the ESA, depending on whether the federal government is involved in permitting or funding the project. The Section 7 authorization process does not apply to the Project as it has no federal nexus; but if the project would involve take of listed species, the Section 10(a) process, which allows take of endangered species or their habitat in nonfederal activities, would apply to the Project because it is a nonfederal action.

Clean Water Act, Section 404

Under Section 404 of the Clean Water Act (CWA), the USACE and the USEPA regulate the discharge of dredge or fill material into waters of the United States, including wetlands and lakes, rivers, streams, and their tributaries. For regulatory purposes, "wetlands" are defined as areas "…inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated solid conditions" (333 CFR 328.3, 40 CFR 230.3). Applicants must obtain a permit from the USACE under Section 404 of the CWA for all discharges of dredge or fill material into wetlands or jurisdictional other waters of the United States before proceeding with a proposed action. There are no waters of the United States in or immediately adjacent to the Project site that would be potentially impacted by discharge of dredge or fill material and therefore the Project would not require a CWA Section 404 permit.

Clean Water Act, Section 401

Under Section 401 of the CWA, every applicant seeking a Section 404 permit is required to obtain water quality certification which is issued by the state and is intended to verify that the proposed activity will comply with state water quality standards.

State Regulations

State CEQA Guidelines Section 15380

State CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain criteria. Section 15380(b) addresses projects that may significantly affect a species that is not yet listed by the USFWS or the CDFW but is under consideration for listing (e.g., a candidate species). CEQA enables an agency to protect a species from significant project impacts until the respective government agencies have an opportunity to list the species as protected, if warranted. In general, plants appearing on the CNPS List 1 (plants believed to be extant and rare, threatened, or endangered plants in California), List 2 (rare, threatened, or endangered plants in California but more numerous elsewhere), and CNPS List 3 (Review List/More Information Needed) are considered to meet CEQA's Section 15380 criteria. Impacts on these species therefore would be considered significant and would require mitigation.

California Endangered Species Act

The CDFW is responsible for administering CESA. Section 2080 of the CFGC prohibits take of any species that the Fish and Wildlife Commission determines to be an endangered species or a threatened species. However, CESA does allow for take that is incidental to otherwise lawful development projects.

Sections 2081(b) and (c) of CESA allow the CDFW to issue an Incidental Take Permit for a state-listed threatened and endangered species only if specific criteria are met. These criteria are reiterated in Title 14 of CCR, Sections 783.4(a) and (b):

- The authorized take is incidental to an otherwise lawful activity.
- The effects of the authorized take are minimized and fully mitigated.
- The measures required to minimize and fully mitigate the effects of the authorized take:
    - Are roughly proportional in extent to the effect of the taking on the species.
    - Maintain the applicant's objectives to the greatest extent possible.
    - Are capable of successful implementation.
- Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures.
- Issuance of the permit will not jeopardize the continued existence of a state-listed species.

2081 Incidental Take Permits cannot be issued for species that are "fully protected" under state law. Several state-listed species also are listed as threatened or endangered under the ESA. Section 2080.1 allows the CDFW to make a determination that a federal incidental take authorization for a species also listed by the state is consistent with CESA. Section 2080.1 consistency cannot be issued for federally listed species that are fully protected under state law.

Native Plant Protection Act and Lake or Streambed Alteration Agreement

Under the Native Plant Protection Act (Fish and Game Code Section 1900 et seq.), the CDFW must establish criteria for determining whether a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the Native Plant Protection Act, the owner of land where a rare or endangered native plant is growing is required to notify the CDFW at least 10 days in advance of changing the land use, to allow for salvage of rare or endangered plants.

Under Section 1602 of the CFGC (referred to as the Lake or Streambed Alteration Agreement), the CDFW regulates activities that would alter the flow—or change or use any material from the bed, channel, or bank—of any perennial, intermittent or ephemeral river, stream, or lake. Each of these activities requires a permit (a Section 1602 permit). Section 1602 requires the CDFW to be notified of any activity that might affect lakes and streams, and identifies the process through which an applicant can come to an agreement with the state regarding the protection of these resources—both during and following construction. Because there are no water bodies on the Project site, a Streambed Alteration Agreement would not be required.

Fish and Game Code—Sections 3503, 3503.5, and 3513

CFGC Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird—except as otherwise provided by the CFGC or any regulation made pursuant thereto. Fish and Game Code Section 3503.5 protects all birds of prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA. These regulations could require that vegetation removal or construction near nest trees be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by the CDFW and/or the USFWS.

Local Policies and Regulations

City of Lafayette General Plan

The Open Space and Conservation Element of the General Plan include the following policies that are relevant to the Project area:

Goal OS-3: Maintain the semi-rural character and beauty of the city by preserving its open and uncluttered natural topographic features.

- Policy OS-3.1 Protect natural features of the lands: The character and natural features of hills, steep slopes, riparian areas, woodlands, and open areas will be preserved in as natural a condition as feasible.:
  - Program OS-3.1.1: Ensure that grading does not detract from the natural forms of hillsides and that development retains the ecological characteristics of the site. This includes prominent geological features, individual trees, woodland, riparian vegetation, rock outcroppings, streams, ponds, drainage swales, and other natural features. Minimize the disturbance or removal of vegetation.
  - Program OS-3.1.2: Limit the scarring and cutting of hillsides caused by grading, especially for long roads and driveways.
- Policy OS-3.2 Preserve the predominant views of the hill areas: Require that structures in identified environmentally sensitive areas be substantially concealed by existing vegetation or terrain when viewed from lower elevations, to the maximum extent feasible. The Viewing Evaluation Map, on file at the City offices, illustrates areas within the city from which views will be considered.
  - Program OS-3.2.1: Require structures in identified environmentally sensitive areas be located away from prominent locations such as hilltops, knolls and open slopes, wherever feasible.

Goal OS-4: Preserve areas with important biotic resources.

- Policy OS-4.2 Ridgelines: Protect native vegetation along ridgelines.
  - Program OS-4.2.1: Require new planting to be predominantly native species indigenous to the area and appropriate to the immediate plant community, (grassland, chaparral, and oak woodland), within ridgeline protection areas.
  - Program OS-4.2.2: Develop and distribute a list of native plants suitable for use in ridgeline plant communities.
- Policy OS-4.3 Woodlands: Preserve existing woodlands and their associated vegetation.
  - Program OS-4.3.1: Expand the City's *Tree Protection Ordinance* to include protection for significant native trees and woodlands.

    - Program OS-4.3.2: Require replacement and maintenance of native trees and/or woodland areas when a project results in the loss of woodland habitat. Replace trees accidentally damaged or removed during construction with trees substantially larger than normally required.
    - Program OS-4.3.3: Consider establishing an in-lieu mitigation program to allow off-site replacement of trees damaged or removed for development.
- Policy OS-4.5 Biotic Resource Analysis: Require a biotic resource analysis prior to development of properties located within, or adjacent to, identified environmentally sensitive areas. *The general location of environmentally sensitive land, which includes riparian areas, wildlife corridors, steep hillsides, and major ridgelines, is indicated on Map III-1: Hillside Overlay Area. This map is not intended to be exhaustive, and should be used as a guide to locating environmentally sensitive land in the Lafayette Planning Area. It may be supplemented by additional information provided by specific plans, EIR's and other documents or studies.*
    - Program OS-4.5.1: Require development proposals, for land in or adjacent to an environmentally sensitive area, to develop a Biotic Resource Analysis of the property. This analysis shall determine the presence and location of threatened and endangered plant and animal species, and other information relevant to the preservation of significant biotic resources.

Lafayette Tree Protection Ordinance

The City of Lafayette Code of Ordinance, Chapter 6, sections 1701-13, provide the guidelines for tree protection for projects covered under City land use ordinances. The purpose of the plan is to preserve and protect trees within City limits, following the destruction of valley oak, madrone, buckeye, and black walnut trees for human development. The Lafayette Tree Protection Ordinance recognizes that preservation of trees is beneficial for many reasons, one of which is the intrinsic habitat value provided by native trees. The Lafayette Tree Protection Ordinance provides a method to apply for permits to modify/remove trees, defines ‘protected’ trees (as referenced in Section 3.3.1), requires mitigation for removal of trees, and allows for punitive damages when protected trees are removed out of compliance with the chapter. Pursuant to California Government Code Section 53091, EBMUD, as a local agency and utility district serving a broad regional area, is not subject to local tree ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning, and to consider local environmental protection policies for guidance.

The following permit requirements for tree protection and replacement would apply to a private project impacting protected trees on developed or undeveloped property associated with a development application:

> E. Permit condition. An approved category II permit shall include a condition where the applicant shall guarantee the health and vigor of each protected tree to be preserved during construction as provided in subsection (F) of this section and shall enter into a landscape maintenance agreement with the City assuring the long-term maintenance of the protected trees. The applicant shall replace a protected tree that is removed or destroyed without approval as provided in section 6-1710.
>
> F. Tree protection during construction. The applicant shall comply with the following requirements:
>
> 1. Before the start of construction, the applicant shall install fencing per City specifications at the perimeter of the protected area, or other area identified in an arborist report, of each protected tree to be preserved as shown on the approved construction plans. The

Director[4] shall inspect and approve the fencing and its location before the issuance of a development permit.

2. No construction may occur within the perimeter of the protected area unless approved as a condition of the application. The Director may require an arborist to be present to observe the construction and prepare a report identifying further requirements for tree protection upon completion of construction.
3. No construction may occur within the perimeter of the protected area until pruning of the tree required for access of construction equipment is completed under the supervision of an arborist.
4. Under each circumstance where an arborist is required to supervise or observe construction, the arborist may require additional mitigation measures or halt construction if necessary to protect the subject trees. The applicant shall pay the costs of an arborist's supervision or observation.
5. The parking or storing of vehicles, construction trailers, equipment and material shall not be allowed within the perimeter of the protected area of a tree to be preserved.

G. <u>Protected tree replacement.</u> When the removal or destruction of a protected tree is permitted, the applicant shall comply with the following requirements:

1. For each six-inches or its fraction of the diameter of the tree to be removed, two (2) 15-gallon trees shall be planted. If the tree that is removed is listed in subsections 6-1702(P)(1) and 6- 1702(P)(3), each replacement tree shall be:
    a. The same genus and species as the removed or destroyed tree; or
    b. An alternative species approved by the Director.
2. The Director may require larger trees for the benefit of the project. In addition, the Director, Design Review Commission, Planning Commission or City Council may substitute a lesser number of larger trees or another species based on the finding from an arborist that such a substitution will be more beneficial to the health and vigor of other protected trees on the property. The following qualify as substitution ratios.
    a. One (1) 24" box sized tree equals two (2) 15-gallon replacement trees;
    b. One (1) 36" box sized tree equals four (4) 15-gallon replacement trees;
    c. One (1) 48" box sized tree equals eight (8) 15-gallon replacement trees;

    d. One (1) 60" box sized tree equals sixteen (16) 15-gallon replacement trees; or
    e. One (1) 72" box sized tree equals thirty-two (32) 15-gallon replacement trees
3. If the property associated with the development application cannot accommodate a replacement tree, as a condition of the permit, the applicant shall make an in-lieu payment of an amount set by resolution by the City Council for each 15-gallon replacement tree. The in-lieu payment shall be used by the City for a tree education and planting program. The Director may waive the in-lieu payment when the protected tree is not a native species.
4. The Director, Design Review Commission, Planning Commission or City Council may reduce the amount of required replacement trees at its discretion due to the project's site conditions and if it finds that the reduction will be beneficial to the health and vigor of other protected trees on the property.
5. If the City approves a tree removal request as part of a major tree removal project, the mitigation shall be the payment or planting, or combination thereof, equal to the full appraised value of the trees removed. The value of replacement trees shall be as set forth on the City's adopted fee schedule. The appraised value shall be determined by the City based on the *Council of Tree & Landscape Appraisers Guide for Plant Appraisal*.

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[4] "Director" means the City of Lafayette Planning and Building Department Director or the Director's designee.

EBMUD Standard Construction Specifications

EBMUD Standard Construction Specification 01 35 44 (Environmental Requirements) sets forth the contract requirements for environmental compliance to which construction crews must adhere, including provisions for protection of water quality during construction. These measures minimize polluted runoff that could adversely affect aquatic biological resources in Reliez Creek, where stormwater from the Project site discharges. EBMUD also requires protection of biological resources during construction.

Standard Construction Specification 01 35 44 stipulates that the construction crew shall be responsible for maintaining compliance with applicable federal, state and local requirements. The requirements include preparation of plans that outline procedures to be followed to ensure effective stormwater/non-stormwater management and documentation of compliance. EBMUD reviews submittals for conformance with the requirements of the contract document and specified laws and regulations. Sections of Standard Construction Specification 01 35 44 that require planning documents and procedures related to protection of water quality and biological resources during construction are described below.

- **Controls on Site Activities, Section 1.1(B).** EBMUD requires that activities on the construction site are controlled to prevent discharge of contaminated stormwater. Applicable requirements include:
  - No debris including, but not limited to, demolition material, treated wood waste, stockpile leachate, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into storm drains or surface waters or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan.
- **Stormwater Pollution Prevention Plan (SWPPP), Section 1.3 (A)(2)**. The contractor shall be responsible for complying with the requirements of the Construction General Permit. Before the start of construction, the contractor must submit a SWPPP that describes measures that shall be implemented to prevent the discharge of contaminated storm water runoff from the jobsite. Contaminants to be addressed include, but are not limited to, soil, sediment, concrete residue, pH less than 6.5 or greater than 8.5, and chlorine residual and all other contaminants known to exist at the jobsite location.
- **Water Control and Disposal Plan, Section 1.3(B).** The Contractor shall submit a detailed Water Control and Disposal Plan for EBMUD's acceptance prior to any work at the jobsite. The plan shall comply with requirements of all applicable discharge permits, including SWRCB Order WQ 2014-0194-DWQ/General Order No. CAG 140001 – NPDES Permit for Drinking Water System Discharges; SWRCB ORDER NO. 2012-0006-DWQ NPDES NO. CAS000002 – Construction General Permit; and Sanitary Sewer Discharge Permit. Contractor shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation into receiving waters.
  - **Drinking Water System Discharges.** Contractor shall submit a plan that includes estimated flow rate and volume of all proposed discharges to surface water, including discharges to storm drains. All receiving waters shall be clearly identified. Contractor shall track discharges and comply with applicable monitoring requirements. Drinking water system discharges shall be dechlorinated and shall have acceptable turbidity and pH.
  - **Non-Stormwater Discharges**. Contractor shall develop plan for containment, handling, treatment (as necessary), and disposal of discharges such as groundwater (if encountered),

runoff water used for dust control, stockpile leachate, tank heel water, wash water, saw cut slurry, test water, and construction water or any other liquid that has been in contact with any interior surface of District facilities. A containment, handling, treatment and disposal design and sampling and analysis plan shall be approved by EBMUD before the start of construction.

  - **Sanitary Sewer Discharges**. Superchlorinated discharges from pipeline disinfection shall be sent to the sanitary sewer system. Discharge plan shall include sampling and analytical program in conformance with the Sanitary Sewer Discharge Permit. Contractor must provide documentation to EBMUD that discharge has been authorized by the applicable agency.

- **Construction and Demolition Waste Disposal Plan, Section 1.3(C).** Prior to construction, the contractor must prepare a Construction and Demolition Waste Disposal Plan and submit a copy of the plan for EBMUD's acceptance prior to disposing of any material (except for water wastes which shall be addressed in the Water Control and Disposal Plan). The plan shall identify how the contractor will remove, handle, transport, and dispose of all materials required to be removed in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. The contractor shall procure the necessary permits required by the local, state, and federal agencies having jurisdiction over the handling, transportation, and disposal of construction and demolition waste and include a list of reuse facilities, recycling facilities and processing facilities that will be receiving recovered materials. The plan must identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the state of California and local ordinance and regulations) and list the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials. The plan must also identify each type of waste material to be reused, recycled or disposed of, and estimate the amount, by weight and shall include the sampling and analytical program for characterization of any waste material, as needed, prior to reuse, recycle or disposal. Materials or wastes shall only be disposed of at facilities approved of by EBMUD. Prior to disposition of wastes, contractor must submit permission to reuse, recycle, reclaim, or dispose of material from reuse, recycling, reclamation, or disposal site owner along with any other information needed by EBMUD to evaluate the acceptability of the proposed reuse, recycling, or disposal site. Contractor shall disclose all information pertinent to the characterization of the material or waste to EBMUD.

- **Protection of Native and Non-Native Protected Trees, Section 3.7**
  - Tree Protection
    - Locations of trees to be removed and protected are shown in the drawings. Pruning and trimming shall be completed by the Contractor and approved by the Engineer. Pruning shall adhere to the Tree Pruning Guidelines of the International Society of Arboriculture.
    - Erect exclusion fencing five feet outside of the drip lines of trees to be protected. Erect and maintain a temporary minimum 3-foot high orange plastic mesh exclusion fence at the locations as shown in the drawings**.** The fence posts shall be six-foot minimum length steel shapes, installed at 10-feet minimum on center, and be driven into the ground. The Contractor shall be prohibited from entering or disturbing the protected area within the fence except as directed by the Engineer. Exclusion fencing shall remain in place until construction is completed and the Engineer approves its removal.
    - No grading, construction, demolition, trenching for irrigation, planting or other work, except as specified herein, shall occur within the tree protection zone established by the

exclusion fencing installed shown in the drawings. In addition, no excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the tree protection zone.

        - In areas that are within the tree dripline and outside the tree protection zone that are to be traveled over by vehicles and equipment, the areas shall be covered with a protective mat composed of a 12-inch thickness of wood chips or gravel and covered by a minimum ¾-inch thick steel traffic plate. The protective mat shall remain in place until construction is completed and the Engineer approves its removal.
        - Tree roots exposed during trench excavation shall be pruned cleanly at the edge of the excavation and treated to the satisfaction of a certified arborist provided by the District.
        - Any tree injured during construction shall be evaluated as soon as possible by a certified arborist provided by the District.

- **Protection of Birds Protected Under the Migratory Bird Treaty Act and Roosting Bats, Section 3.8**
    - The District will conduct biological reconnaissance in advance of construction and will conduct biologic monitoring during construction as necessary.
    - Protected Species
        - If protected species or suitable habitat for protected species is found during biological reconnaissance surveys:
            - Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by the District of up to one-day for site supervisors, foreman and project managers and up to 30-minutes for non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District-designated location, conducted by a qualified biologist provided by the District. The program will discuss all sensitive habitats and sensitive species that may occur within the project work limits, including the responsibilities of Contractor’s construction personnel, applicable mitigation measures, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing or performing construction work, all Contractor personnel shall:
                - Sign a wallet card, provided by the Engineer, verifying that all Contractor construction personnel have attended the appropriate level of training relative to their position; have read and understood the contents of the environmental training; and shall comply with all project environmental requirements.
                - Display an environmental training hard hat decal (provided by the District after completion of the training) at all times.
            - Birds Protected under the Migratory Bird Treaty Act (MBTA):
                - It is unlawful to pursue, hunt, take, capture, or kill any migratory bird without a permit issued by the U.S. Department of the Interior.
                - If construction commences between February 1 and August 31, during the nesting season, the District will conduct a preconstruction survey for nesting birds within 7 days prior to construction to ensure that no nest will be disturbed during construction.

  - If active nests of migratory bird species (listed in the MBTA) are found within the project site, or in areas subject to disturbance from construction activities, an avoidance buffer to avoid nest disturbance shall be constructed. The buffer size will be determined by the District in consultation with California Department of Fish and Wildlife (CDFW) and is based on the nest location, topography, cover and species' tolerance to disturbance.
  - If an avoidance buffer is not achievable, a qualified biologist provided by the District will monitor the nest(s) to document that no take of the nest (nest failure) has occurred. Active nests shall not be taken or destroyed under the MBTA and, for raptors, under the CDFW Code. If it is determined that construction activity is resulting in nest disturbance, work should cease immediately and the Contractor shall notify the Engineer who will consult with the qualified biologist and appropriate regulatory agencies.
  - If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the avoidance buffer for active nests may be removed. Nests initiated during construction (while significant disturbance from construction activities persist) may be presumed to be unaffected, and only a minimal buffer, determined by District's biologist, would be necessary.

- Roosting Bats**:**
  - If construction commences between March 1 and July 31, during the bat maternity period, the District will conduct a preconstruction survey for roosting bats within two weeks prior to construction to ensure that no roosting bats will be disturbed during construction.
  - If roosting surveys indicate potential occupation by a special-status bat species, and/or identify a large day roosting population or maternity roost by any bat species within 200 feet of a construction work area, a qualified biologist provided by the District will conduct focused day- and/or night-emergence surveys, as appropriate.
  - If active maternity roosts or day roosts are found within the project site, or in areas subject to disturbance from construction activities, an avoidance buffers shall be constructed. The buffer size will be determined by the District in consultation with CDFW.
  - If a non-breeding bat roost is found in a structure scheduled for modification or removal, the bats shall be safety evicted, under the direction of a qualified biologist provided by the District in consultation with CDFW to ensure that the bats are not injured.
  - If preconstruction surveys indicate that no roosting is present, or potential roosting habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by roosting bats, or that are located outside the avoidance buffer for active roosting sites may be removed. Roosting initiated during construction is presumed to be unaffected, and no buffer would be necessary.

3.3.5 Impact Analysis

Methodology for Analysis

Based on the literature review and site surveys described above the potential for individual species to occur on the project site was evaluated based on the range, habitat requirements, life history, potential barriers to dispersal from occupied habitat, and confirmed observations in the vicinity of the Project. If a species' range did not include the Project area, if significant physical barriers to dispersal were identified between the Project area and known occurrences, or if no suitable habitat was identified within the Project area, the species was determined to have no potential to occur. Species with a low potential to occur are those with ranges that overlap the Project area, but do not have a high likelihood of dispersing/moving to and from the Project area, require specific habitat elements for a critical element of their life history that are not apparent in the Project area, require specific environmental factors that are not apparent in the Project area, and have low quality habitat within the Project area. Species with a moderate potential to occur are those with ranges that overlap the Project area, have the capability of dispersing/moving to and from the Project area, utilizing elements of habitat within the Project area for a critical element of their life history, and have low to moderate quality habitat within the Project area. Species with a high potential occur include those species directly observed in the Project area, or those with ranges overlapping the Project area and moderate to high-quality habitat within the Project area.

After the potential for species to occur within the Project area was determined, species potential use of habitat within the Project area was evaluated (e.g., breeding, movement, foraging) to determine how disturbances associated with constructing the Project might impact species.

Areas of the Project site that currently support vegetation, and where vegetation removal, grading, excavation, or soil stockpiling would take place were considered to result in disruption of the existing habitat that is present on the reservoir site. Construction of pipelines in public ROW would take place within existing paved roads and would not disrupt existing habitat.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
3. 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;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.* There is no riparian habitat or sensitive natural community in the Project area.
- *Criterion 3: 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*. No wetlands are present within the Project area, so the Project would have no impact on wetlands.
- *Criterion 4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites*: The Project area does not constitute a wildlife corridor because it is surrounded by urban development, and thus no wildlife corridors would be affected by Project construction; about four acres of habitat for urban wildlife would be disturbed during construction, but habitat would remain on about six acres of the site during construction. Potential impacts to migratory birds and special status bats are addressed under Impact BIO-1, and loss of trees is addressed in Impact BIO-3. Substantial amounts of high-value wildlife corridor habitat for migratory birds and other wildlife are located outside of the Project area, to the northwest in East Bay Regional Park District (EBRPD) Briones Regional Park and to the south in EBMUD watershed lands and EBRPD Las Trampas Regional Wilderness.
- *Criterion 6: Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan*. There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other local, regional, or state habitat conservation plans within the Project area. There would be no impacts associated with conflicts with a Habitat Conservation Plan or Natural Community Conservation Plan.

Impacts and Mitigation Measures

Impact BIO-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Criterion 1).

Special-Status Plants. Twenty-three special status plant species were identified as having low potential to occur within the Project area, and a floristic survey that would identify special-status plants during their blooming periods has not been conducted. The absence of special-status plant species cannot be confirmed without conducting a floristic survey in accordance with CNPS protocols. Despite the low likelihood of occurrence, if special-status plant species exist within the footprint of ground disturbing activities, they could be adversely impacted, which would be considered a potentially significant impact. Implementation of **Mitigation Measure BIO-1a** would ensure that special-status plants are protected, either by avoiding areas supporting sensitive species or by relocation or restoration, which would mitigate this impact to a less than significant level.

Significance Determination before Mitigation

Potentially Significant.

Mitigation Measure

Mitigation Measure BIO-1a: Preconstruction Rare Plant Survey

In the year prior to commencing ground-disturbing activities, a qualified botanist will conduct a floristic plant survey in vegetated areas to be disturbed by Project activities including the reservoir embankment, soil stockpile area, new access road, new storm drain, new inlet/outlet pipeline, construction trailer site and any other areas where vegetation would be removed. Surveys will be conducted in accordance with CNPS and CDFW rare plant survey guidelines. Surveys will be conducted during the flowering period(s) when species are most readily identifiable.

- If no special-status plant species are identified, no further mitigation is required.

- If special-status plant species are found during the surveys, the qualified botanist will flag and map any observed sensitive plant species for avoidance where feasible. EBMUD will notify CDFW, USFWS, and/or CNPS of the preconstruction survey results, depending on the status of species encountered. EBMUD will employ the following measures:

    - Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD of up to one day for site supervisors, foremen and project managers and up to 30 minutes for nonsupervisory Contractor personnel. Contractor construction personnel will receive a worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the sensitive plant species in the Project vicinity, including natural history and habitat, the general protection measures to be implemented to protect the species, and a delineation of the limits of the work areas. Contractor construction personnel will be required to sign documents stating that they understand that take of special-status plant species and destruction or damage of their habitat may be a violation of state and/or federal law.

    - Project boundaries will be delineated and flagged prior to construction by the Contractor. All construction activities will be conducted within the delineated Project boundaries.

    - Staging areas and construction access points will be delineated in the field away from sensitive plant species, and all staging will occur within these designated areas.

    - Sensitive plant species will be avoided or minimized by limiting ground disturbance where sensitive plants occur. Disturbance shall be avoided by establishing a visible buffer zone around the plant localities and maintaining the buffer throughout construction.

    - If construction activities cannot be altered to avoid special-status plants, EBMUD will relocate the affected population and/or restore similar habitat in another location, either on the Leland Reservoir site or off site, in coordination with a qualified biologist and the appropriate resource agencies. EBMUD will salvage the affected plants and transplant them to a similar habitat in the Project vicinity. The reestablished population should achieve a 1:1 ratio (transplanted:re-established) after two years. If this performance criterion cannot be met, an in-lieu fee will be paid to the state CNPS program, or as otherwise required by CESA and/or FESA.

- If plants listed under CESA and/or FESA are discovered and cannot be avoided, the Project will require take coverage under Section 2081 of CFGC and Section 10 of the ESA.

- Mitigation for sensitive plant species may include: repairing, rehabilitating or restoring the impacted area; preserving in-situ populations on site; or by providing offsite compensation. Offsite compensation may include the permanent protection of an offsite population through a conservation easement or the purchase of mitigation banking credits at a 1:2 ratio.

Significance Determination after Mitigation

Because Mitigation Measure BIO-1a requires EBMUD to conduct preconstruction surveys for sensitive plants, and either avoid or relocate any affected population in coordination with appropriate regulatory agencies, the potential for significant construction-related impacts on sensitive plants would be reduced to less than significant.

Nesting Special Status Bird Species. Several raptors, including the American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo virginianus*), northern saw-whet owl (*Aegolius acadicus*), red-tailed hawk (*Buteo jamaicensis*), western screech owl (*Megascops kennicottii*), sharp-shinned hawk (*Accipiter striatus*), and long-eared owl (*Asio otus*) may nest on or near the Project area. Disruption of nesting special status avian species could occur as a result of tree removal or increased human activity (e.g., due to the use of heavy equipment and human traffic) during the breeding season (approximately February through August). Construction activities could result in direct mortality or disturb nesting avian species and lead to nest abandonment or poor reproductive success. EBMUD Standard Specification 01 35 44, Section 3.8, Protection of Birds Protected Under the Migratory Treaty Act and Roosting Bats, has been incorporated into the Project, as detailed in the Project Description, and includes provisions for preconstruction nesting bird surveys, avoidance of construction during the nesting season, and delineation of avoidance buffer zones. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. With implementation of these procedures impacts to migratory birds, including destruction of potential nesting habitat, eggs or occupied nests, direct mortalities of young, and the abandonment of nests with eggs or young birds prior to fledging, would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Special Status Bat Species. Roosting habitats for special status bat species may be present in the Project area. These species typically use buildings, trees, bridges, and rock crevices for roost habitat. Construction activities may result in the removal or disturbance of hibernation or maternal roost sites due to tree removal, ground disturbance, noise or human intrusion. This is a potentially significant impact as it may result in direct mortality and reduction in reproductive success. EBMUD Standard Specification 01 35 44, Section 3.8, Protection of Birds Protected Under the Migratory Treaty Act and Roosting Bats, has been incorporated into the Project, as detailed in the Project Description and includes provisions for preconstruction roosting bat surveys during the maternity season, avoidance of maternal roosts during the maternal season, delineation of avoidance buffer zones, and eviction of non-maternal roosts prior to structure modification or removal. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. With implementation of these procedures impacts to roosting bats, including destruction of potential roosting habitat, occupied roosts, direct mortalities of young, and the abandonment of roosts with non-volant young, would be less than significant.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required.

San Francisco Dusky-footed Woodrat. Vegetation removal and ground disturbing Project activities in wooded habitat may disturb San Francisco dusky-footed woodrats, a California species of special concern, if present in the Project area at the time of construction. Though neither the species nor their nests were detected during site surveys, the Project area contains suitable habitat and the species can disperse to the Project area through adjacent suburban areas. This would be a potentially significant impact. Implementation of **Mitigation Measure BIO-1b** would ensure that woodrats, if present, are protected, either by avoidance or by relocation, which would mitigate this impact to a less than significant level.

Significance Determination before Mitigation

Potentially Significant.

Mitigation Measures

Mitigation Measure BIO-1b: Avoidance or minimization measures for the San Francisco dusky-footed woodrat:

- Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD. Contractor construction personnel will receive worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the San Francisco dusky-footed woodrat, including natural history and habitat, a review of the status of the species, the general protection measures to be implemented to protect the San Francisco dusky-footed woodrat, and a delineation of the limits of the work areas. Contractor construction personnel will be required to sign documents stating that they understand the training and consequences of impacting the species or its habitat.
- A preconstruction survey will be performed by a qualified biologist (EBMUD) within seven days prior to the start of ground-disturbing activities to identify the locations of active San Francisco dusky-footed woodrat nests within the Project boundary. Any woodrat nests detected will be mapped and flagged for avoidance by the qualified biologist (EBMUD).
- If active nests are determined to be present, avoidance measures will be implemented first. Because San Francisco dusky-footed woodrats are year-round residents, avoidance mitigation is limited to restricting Project activities to avoid direct impacts to San Francisco dusky-footed woodrats and their active nests to the extent feasible. A minimum ten-foot buffer should be maintained between Project construction activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if, in the opinion of a qualified biologist (EBMUD), removing the nest would be a greater impact than that anticipated as a result of Project activities.
- If an unoccupied woodrat nest is found within the Project site and it cannot be avoided, the nest should be disassembled by hand by a qualified biologist (EBMUD). The nest materials should be relocated off site to prevent rebuilding.
- If occupied nests are found within the Project site, and a litter of young is found or suspected, the nest shall be left alone for two to three weeks before a recheck to verify that young are capable of

independent survival before proceeding with nest dismantling. Dismantling shall be done by hand, allowing any animals to escape either along existing woodrat trails or toward other available habitat.

- EBMUD will notify CDFW of any nests, unoccupied or occupied, before they are dismantled. Because Mitigation Measure BIO-1b requires preconstruction dusky-footed woodrat surveys, avoidance measures and buffer zones for active nests, and mitigations for both occupied and unoccupied nests, implementation of Mitigation Measure BIO-1b would reduce impacts, due to short-term construction, on the San Francisco dusky-footed woodrat to less than significant levels.

Significance Determination after Mitigation

Because Mitigation Measure BIO-1b requires EBMUD to conduct preconstruction surveys for dusky-footed woodrat, and either avoid or relocate any affected wood rat nests, the potential for significant construction-related impacts on dusky-footed woodrat would be reduced to less than significant.

Impact BIO-2 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Criterion 5).

The City of Lafayette General Plan Open Space and Conservation Element includes several goals, policies and programs relevant to the Project area. As designed, the Project is consistent with the goals, policies and programs of the general plan. Although the Project would temporarily disturb the reservoir site, vegetation on the northern and western sides of the site would not be disturbed, and after completion of construction, vegetation on the site would be restored. During construction wildlife may be displaced within the site and small numbers of resident wildlife may leave the site but displacement is not expected to be widespread. The natural topography of the ridgeline north of the reservoir would not be disturbed. Also, as shown on the Reservoir Conceptual Plan (**Figure 2-7** in the Project Description), after construction, the topography on the Project site would be similar to existing conditions. Because the project would avoid impacts to the adjacent ridgeline and would restore trees on the reservoir site, the Project would thus be consistent with the City's goals to maintain open space and preserve sensitive biotic resources in ridgelines and woodlands.

The City of Lafayette Tree Protection Ordinance is not applicable to the Project because, pursuant to California Government Code Section 53091, EBMUD, as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances for projects involving facilities that would produce, generate, store, or transmit water. As the zoning ordinances implement the general plan through detailed development regulations, the exemption provided by Section 53091 is functionally extended to the general plan. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning, and to consider local environmental protection policies for guidance.

Tree removal is necessary for Project construction at the reservoir site and it has also been determined that some trees at the reservoir site should be removed for safety reasons (hazardous limbs and fire fuel load). No tree removal would be needed for construction of the pipelines within public ROW along Windsor Drive, Condit Road or Leland Drive.

Approximately twenty-five (25) trees at the reservoir site are proposed to be removed for safety reasons (e.g., trees that are likely to drop limbs or pose a threat to fire prevention management due to the high oil content of their species or fuel load of their branches). One of the trees to be removed for safety reasons is considered a Protected Tree. Tree removal for safety considerations is not considered to be an impact of the Project because the trees would have to be removed even if the Project is not implemented.

During construction, soil would need to be stockpiled on site. Steep topography limits the locations where stockpiling is feasible; therefore, trees in identified stockpiling locations would be removed.

Approximately ninety (90) trees are slated to be removed due to construction, including those that would interfere with the replacement of site infrastructure. Of these approximately 90 trees to be removed, sixteen (16) qualify as Protected Trees (oak trees 12 inches or greater dbh).

As part of the Project, EBMUD would revegetate disturbed soils using a native grass mix (*Bromus carinatus*, California brome; *Elymus glaucus*, blue wildrye; *Vulpia microstachys*, three weeks fescue; and *Trifolium obtusiflorum*, native clover), and plant seventy-five (75) replacement oaks (*Q. lobata*, valley oak and *Q. agrifolia*, coast live oak) in 24-inch boxes. Section 6-1707 (G)(1) of the Lafayette Tree Ordinance provides requirements for replanting as a function of dbh for each tree for projects subject to the ordinance. Using the Lafayette Tree Ordinance as a guideline, projects covered by the ordinance with identical tree impacts would require the planting of 130 replacement trees in 15-gallon containers, or 65 trees in 24-inch boxes (per Section 6-1707(G)(2)(a). As the Project would replant 75 oak trees (24-inch box size), where only 65 24-inch boxes are required by the Tree Protection Ordinance, the oak replanting plan exceeds the requirements provided by the Tree Protection Ordinance.

Construction activities at the reservoir site and along the pipeline alignment may impact trees that would not be removed pursuant to Project activities by incidental damage, altered hydrology, soil compaction within the root zone (generally beneath the dripline of the canopy), and altered microclimatological conditions, which is a potentially significant impact. Because there are a number of trees very close to the edge of the roadway, pipeline construction could affect several pines and coast live oaks on Condit Road, a large valley oak, three coast live oaks and an elderberry on Windsor Drive, and three valley oaks near the intersection of Patty Way and Leland Drive, all of which would require pruning of roots and tree limbs.

As detailed in the Project Description, implementation of EBMUD Standard Specification 01 35 44, Section 3.7, would ensure protection of trees during construction by installing exclusion fencing around trees to be protected, avoiding work within the tree protection zone, careful pruning of any tree roots within the excavation zone, and careful pruning of tree limbs that may be damaged by heavy equipment, therefore this impact would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

Cumulative impacts on biological resources include those within the Project area, potential impacts adjacent to the Project area, and potential impacts of other projects within the vicinity (provided in **Table 3.0-1**). Four nearby projects (Hoedel Court Subdivision, Lafayette Park Terrace, Homes at Deer Hill and Byron Park Expansion) affecting 28.49 acres are considered in the analysis of cumulative impacts.

Impacts to biological resources associated with the Project include the potential disturbance to special-status plant species (if present), potential disturbance to nesting birds (if present), temporary reduction in habitat available for nesting birds during construction, potential disturbance to roosting special status bats (if present), and removal of potential roosting habitat for special-status bat species. These effects are relatively minor, temporary, restricted to the Project area, and would be less than significant after implementing Mitigation Measures BIO-1a and BIO-1b.

The area surrounding the Project is dominated by human development, including residential housing, public streets, and a major highway. Following completion of the Project, the site would be restored with grasses and trees, which would provide habitat similar to existing conditions. Accordingly, the disturbance associated with the Project would not significantly change habitat values for plant and wildlife species within the area.

The impacts to biological resources in the Project area are minor, as they take place over a relatively small area, over a short duration of time, and are offset by EBMUD Standard Specifications included in the Project Description and the mitigation measures proposed within this document. Accordingly, no impacts to special status species are anticipated. Impacts associated with temporary ground disturbance in annual grassland habitat are limited in time and space, and the ground squirrel community is expected to repopulate the project area following completion. Impacts to habitat value as a result of tree removal or modification are similarly limited in time and space, as the replanting plan will replace or improve the habitat value offered by the trees removed. Therefore, the impacts to biological resources in the Project area do not contribute to cumulative effects when taking into consideration effects from nearby projects because of the measures taken to offset the temporary habitat disturbance associated with this projectProject, and the replacement of habitat and habitat value associated with the replacement of vegetation proposed as part of the Project landscaping plan.

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3.4 Cultural Resources

This section presents the physical and regulatory setting for cultural resources within the study area, which includes the Project reservoir site and pipeline alignment and adjacent land uses. This section is based on a Cultural Resources Assessment Report, which is included as **Appendix H**. The impact analysis considers the potential for the Project to adversely affect cultural resources, including historic resources, archaeological resources, human remains and paleontological resources.

3.4.1 Data Collection

Literature and Database Review

A records search for the Project was conducted at the Northwest Information Center at Sonoma State University (NWIC) (File No. 15-1701). The records search included a review of cultural resource and excavation reports and recorded cultural resources located within a ¼-mile radius of the Project area. The records search also included a review of the Office of Historic Preservation's "Directory of Historic Property Data File for Contra Costa County" and "Archaeological Determinations of Eligibility" for Contra Costa County. A total of nine cultural resources studies have been conducted within ¼-mile of the Project area. None of these studies include or cross any portion of the Project facilities.

Surveys

A pedestrian archaeological reconnaissance survey was conducted and the entire exposed ground surface within the Project area was examined for the presence of historic or prehistoric site indicators.

3.4.2 Environmental Setting

Prehistoric Archaeological Background

Regional Prehistory

Native American inhabitation of the San Francisco Bay Area is estimated to date back to about 8000 B.C, with several prehistoric time periods being identified. A tentative chronological sequence for the area includes five periods: Paleoindian (8000-6000 B.C.), Lower Archaic (6000-3000 B.C.), Middle Archaic (3000-500 B.C.), Upper Archaic (500 B.C.-A.D. 800), and Lower Emergent (A.D. 800-1500).

Local Prehistory

The earliest inhabitants of the portion of the San Francisco Bay area that includes the reservoir site and pipeline alignment are known to have inhabited the area from at least 3000 B.C. The Rossmoor[1] Site in Walnut Creek is a Native American occupation site with burials that also has deeply buried components that have been dated from over 3000.B.C. to 1000 B.C. The prehistoric inhabitants of the area around present-day Lafayette and Walnut Creek were almost completely dependent on local resources, and did not appear to have established trade networks. Prehistoric sites in the local area are characterized by a predominance of habitation sites located at or near the confluence of a major drainage and a tributary. Several sites are located on natural levees along the banks of major drainages. Burial sites are most commonly integrated within villages, though some burial areas have been found off site or at the end of villages. Native American archaeological sites in this portion of Contra Costa County tend to be situated within creek floodplains and are often buried under alluvium of varying thicknesses.

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[1] The Rossmoor area of Walnut Creek is a little over ½ mile from the Project area.

Ethnographic Background

The Project area lies within the region occupied by the Ohlone or Costanoan group of Native Americans. It appears that ancestors of the Ohlone arrived in the San Francisco Bay area between 2550 B.C. and A.D. 500[2], having moved south and west from the Sacramento-San Joaquin Delta. The Ohlone diet included acorns; seeds and berries; and meat from deer, elk, bear, rabbit and squirrel. The arrival of the Spanish in the 1770s led to a rapid reduction in Native American populations. The surviving Ohlone were brought into missions and became agricultural laborers.

Historical Background

Several Spanish expeditions in the 1770s eventually led to the establishment of the first mission in the San Francisco Bay Area in 1776: the Mission San Francisco de Asis (Mission Dolores). Following Mexican independence from Spain in 1821, control of Spain's North American colonial outposts was ceded to the Republic of Mexico. Beginning in 1834, secularization resulted in former mission lands being parceled out in large land grants. Many of the land grants became cattle ranches run for the hide and tallow trade. The Project area was part of the 3,329-acre Rancho Acalanes granted to Candelario Valencia, who sold it to Elam Brown in late 1847.

During the Mexican-American war, California was conquered by the United States, and was officially annexed in 1848. Shortly after the signing of the Treaty of Guadalupe Hidalgo the discovery of gold caused a major inflow of immigrants to Northern California. In 1848, Elam Brown built the first of three homes in today's Lafayette as well as a horse-drawn gristmill and steam-powered mill, making Lafayette the first community in central Contra Costa County. The area remained primarily agricultural until the population began to increase in the mid-20th century.

Beginning in 1913, and continuing until 1957, train service from Oakland to Sacramento ran through Lafayette's downtown station. Lafayette's population increased steadily after the Caldecott Tunnel opened in 1937, allowing traffic to flow between Oakland/Berkeley and Contra Costa County. The largest population growth occurred in the 1950s and 1960s when Lafayette's population almost tripled from 7,000 to 20,000.

EBMUD was founded in 1923, and shortly thereafter acquired water rights to the Mokelumne River. By the end of the 1920s, EBMUD had constructed Pardee Dam, the Mokelumne Aqueduct and the Lafayette Reservoir, which was designed as a terminal storage reservoir (a reservoir that serves as a buffer between average annual and peak daily demands). A second Mokelumne Aqueduct was constructed in 1950 to serve population growth in the East Bay, and in 1955 the Leland Reservoir was built.

Paleontological Resources

The base of the existing Leland Reservoir is founded on weathered sedimentary rock of the Briones Formation (Graymer *et al.* 1994), which is known to contain fossils (U.S. Geologic Survey 2017). However, the Project would be constructed within the existing reservoir basin, which is already disturbed, and within nearby road rights-of-way, which have also been disturbed for road construction and utility installation. Paleontological resources are thus not expected to be present in either the reservoir site or along the pipeline alignment.

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[2] Archaeological evidence suggests the 2550 B.C. arrival, but linguistic evidence suggests arrival around A.D. 500 and the different estimates have not been resolved.

3.4.3 Regulatory Framework

Federal Policies and Regulations

National Historic Preservation Act

First authorized by the Historic Sites Act of 1935, the National Register of Historic Places (NRHP) was established by the National Historic Preservation Act (NHPA) of 1966, as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations [CFR] 36 Section 60.2). NRHP recognizes both historic-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the NRHP, a resource must be significant relative to American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior 2002):

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP listing (U.S. Department of the Interior 2002).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior 2002). NRHP recognizes seven factors that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven factors. Thus, the retention of the specific factors of integrity is paramount for a property to convey its significance. The seven factors that define integrity are: location, design, setting, materials, workmanship, feeling, and association.

State Policies and Regulations

The state of California implements NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of NHPA on a statewide level. OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code [PRC] Section 5024.1[a]). The criteria for eligibility to CRHR are based on NRHP factors (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, NRHP.

“Historical resource” is a resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP as well as some California State Landmarks and Points of Historical Interest (Public Resources Code [PRC], Section 21084.1 and CEQA Guidelines, Section 15064.5 [a], [b]).

A "Unique Archaeological Resource" means 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:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person. (Public Resources Code, Section 21083.2].

Properties of local significance that have been designated under a local preservation ordinance (e.g., local landmarks or landmark districts) or that have been identified in a local resources inventory may be eligible for listing in the CRHR and are presumed to be “historical resources” for purposes of CEQA (Public Resources Code, Section 5024.1 and California Code of Regulations, Title 14, Section 4850). A lead agency should consider a locally significant resource potentially eligible for the CRHR unless it has been demolished, lost substantial integrity, or there is other significant evidence indicating that it is not eligible for listing.

Lead agencies must evaluate any listed or potential cultural resources in accordance with the criteria of the CRHR. The CRHR (Public Resources Code Section 5024.1) is a listing of properties that are to be protected from substantial adverse change, and it includes properties that are listed, or have been formally determined to be eligible for listing in the NRHP, State Historical Landmarks, and eligible Points of Historical Interest. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or cultural heritage of California or the United States;

(2) It is associated with lives of persons important in our past;

(3) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values; or

(4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California, or the nation.

A resource that is not listed in or determined to be eligible for listing in the CRHR, not included in local register or historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant. This provision is intended to give a lead agency discretion to determine that a resource of historic significance exists where none had been identified before and to apply the requirements of Public Resources Code Section 21084.1 to properties that have not previously been formally recognized as historic.

California Environmental Quality Act

CEQA requires a lead agency to determine if a project will have a significant effect on the environment and to assess possible impacts. In terms of cultural resources, a project is considered to have a significant effect if it would disrupt or adversely affect one or more properties of historic or cultural significance to the community (Public Resources Code, Section 21084.1 and CEQA Guidelines). Section 21083.2 also requires agencies to determine whether proposed projects would have an effect on “unique archaeological resources” (see definition of “unique archaeological resources” above).

Assembly Bill 52

Assembly Bill 52 (AB 52) took effect July 1, 2015, and established a formal consultation process for California Native American Tribes. AB 52 requires a lead agency to consult with a tribe that requests consultation and is traditionally and culturally affiliated with the geographic area in which the proposed project would be located. To be notified of such proposed projects, tribes must first request notification from the lead agency. When a tribe has requested notice, the lead agency is required to contact the tribe within 14 days of deciding to undertake a project in the geographic area of interest to that tribe. Tribes that wish to consult regarding the project must respond to the lead agency within 30 days. Consultation may include discussion of issues such as the appropriate level of environmental review for the proposed project, the significance of the proposed project’s potential impacts to tribal cultural resources, and the availability of mitigation measures of project alternatives that could lessen effects of the project, if any, on tribal cultural resources. EBMUD has received no requests from Native American tribes for consultation under AB 52.

California Health and Safety Code

Section 7505.5(b) of the California Health and Safety Code requires that in the event of discovery of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the county coroner has been notified. The coroner must investigate the remains, and if it is determined that the remains are Native American, the coroner must call the Native American Heritage Commission (NAHC) within 24 hours. The NAHC must then immediately notify the Most Likely Descendant.

California Native American Graves Protection and Repatriation Act

Section 8010 et seq. of the California Health and Safety Code establishes a consistent state policy requiring Native American remains to be protected consistent with the Native American Graves Protection and Repatriation Act. The federal act addresses the rights of lineal descendants, Indian Tribes, and Native Hawaiian organizations to Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony.

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protection policies as guidance.

City of Lafayette General Plan

The Land Use Chapter of the General Plan includes the following policy that is relevant to the Project site:

***Goal LU-22:* Preserve archaeological and historic resources.**

- Policy LU-22.1: Preserve Archaeological Resources: Protect archaeological resources.

- Program LU-22.1.1: Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified archaeologist.
- Program LU-22.1.2: Continue to refer projects to Sonoma State University's Northwest Archaeological Resource Center.
- Program LU-22.1.5: … development applications within 200 feet of a stream shall be required to have a records search and, if necessary, a field survey conducted.
- Program LU-22.1.6: When a site has been identified as having value as an archaeological resource, development shall be situated or designed to avoid impact on archaeological resources.
- Program LU-22.1.7: In the event archaeological resources are uncovered on any construction project in the City, all work must be halted and an evaluation undertaken by a qualified archaeologist.

EBMUD Standard Construction Specifications

EBMUD Standard Construction Specification 01 35 44 (Environmental Requirements), sets forth the contract requirements for environmental compliance to which construction crews must adhere. Section 3.9 defines provisions for protection of cultural and paleontological resources during construction. The contractor would be required to comply with the following:

- Conform to the requirements of statutes as they relate to the protection and preservation of cultural and paleontological resources. Unauthorized collection of prehistoric or historic artifacts or fossils along the Work Area, or at Work facilities, is strictly prohibited.
- Before beginning construction, all Contractor construction personnel shall attend a cultural resources training course provided by the District of up to two-hours for site supervisors, foreman, project managers, and non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District designated location, conducted by a qualified archaeologist provided by the District or by District staff. The program will discuss cultural resources awareness within the project work limits, including the responsibilities of Contractor's construction personnel, applicable mitigation measures, confidentiality, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing or performing construction work, all Contractor personnel shall sign an attendance sheet by the Engineer verifying that they have attended the appropriate level of training; have read and understood the contents of the training; have read and understood the contents of the "Confidentiality of Information on Archaeological Resources" (Section 00 73 00); and shall comply with all project environmental requirements.
- In the event that potential cultural or paleontological resources are discovered at the site of construction, the following procedures shall be instituted:
    - Discovery of prehistoric or historic-era archaeological resources requires that all construction activities shall immediately cease at the location of discovery and within 100 feet of the discovery.
        - The Contractor shall immediately notify the Engineer who shall engage a qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel and shall not recommence work until authorized to do so by the Engineer.
        - The District will retain a qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical

resource as defined by CEQA [or a historic property as defined by the National Historic Preservation Act of 1966, as amended], construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the District, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric, who shall be identified by the Native American Heritage Commission [NAHC]). In consultation with the District, the archaeologist (and Native American representative) will determine when construction can resume.

  - Discovery of human remains requires that all construction activities immediately cease at the location of discovery, and within 100 feet of the discovery.
    - The Contractor shall immediately notify the Engineer who will engage qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel and shall not recommence work until authorized to do so by the Engineer.
    - The District will contact the County Coroner to determine whether or not the remains are Native American. If the remains are determined to be Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects.

- Discovery of paleontological resources requires that all construction activities immediately cease at, and within 100 feet of the location of discovery.
  - The Contractor shall immediately notify the Engineer who will engage a qualified paleontologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the Engineer and shall not recommence work until authorized to do so by the Engineer.
- The District will retain a qualified paleontologist to inspect the findings within 24 hours of discovery. The qualified paleontologist, in accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), will assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and management. If it is determined that construction activities could damage a paleontological resource as defined by the Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), construction shall cease in an area determined by the paleontologist until a salvage, treatment, and future monitoring and management plan has been prepared, approved by the District, and implemented to the satisfaction of the paleontologist. In consultation with the District, the paleontologist will determine when construction can resume.
- If the District determines that the find requires further evaluation, at the direction of Engineer, Contractor shall suspend all construction activities at the location of the find and within a larger radius, as required.

3.4.4 Impact Analysis

Methodology for Analysis

An inventory of cultural resources was performed by a qualified cultural resources specialist from William Self Associates (WSA). WSA did an extensive review of background information and surveyed both the reservoir site and pipeline alignments. Because the pipeline alignment in the public ROW is completely paved, no native soil is visible along the pipeline alignment. For the reservoir site, WSA completed a pedestrian survey using survey transects of not more than 20-meter intervals. All exposed ground surfaces within the Project area were examined for the presence of historic or prehistoric site indicators. Historic site indicators include, but are not limited to foundations, fence lines, ditches, standing buildings, objects or structures such as sheds, or concentrations of materials at least 50 years in age, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons or leather shoes), or refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings). Prehistoric site indicators include, but are not limited to areas of darker soil with concentrations of ash, charcoal, bits of animal bone (burned or unburned), shell, flaked stone, ground stone, or human bone. Because the existing Leland Reservoir is over 45 years old, it was recorded on a California Department of Parks and Recreation Primary Record Form.

- WSA also provided information about the Project to the following representatives of Native American groups, and requested input regarding any concerns regarding the Project:
- Amah/Mutsun Tribal Band, Irene Zwierlein;
- Indian Canyon Mutsun Band of Costanoan, Katherine Erolinda Perez; Ann Marie Sayers;
- Wilton Rancheria, Raymond Hitchcock, Chairperson;
- Muwekma Ohlone Indian Tribe of the SF Bay Area, Rosemary Cambra; and
- Ohlone Indian Tribe, Andrew Galvan.

Irene Zwierlein recommended that all construction crews be given “cultural resource and sensitivity training” and Ann Marie Sayers recommended that Native American monitors be used in addition to archaeological monitors.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* and with AB 52, a cultural resource impact would be considered significant if the Project would:

1. Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5;
2. Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5;
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
4. Disturb any human remains, including those interred outside of dedicated cemeteries; or
5. Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.

Impacts and Mitigation Measures

Impact CUL-1 Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5 (Criterion 1).

The only historic built resource in that would be affected by Project construction is the Leland Reservoir itself, which was evaluated for its eligibility for listing in the CRHR. Although the reservoir is more than 50 years old, it does not meet other criteria for listing: 1) it is not associated with events that have made significant a contribution to the broad patterns of California’s history because it represents a later expansion of an already existing system of water storage; 2) it is not associated with the lives of people considered important to California’s past because no historically notable individuals participated in its design or construction; 3) as a utilitarian structure built with available materials it does not embody the distinctive characteristics of a type, period, region or method of construction, nor does it represent the work of an important creative individual or possess high artistic values; and 4) it is not likely to yield information important in history. The reservoir is thus not recommended as eligible for the CRHR (WSA 2016). Demolition and replacement of the reservoir is thus not considered to be a significant impact related to historical resources. Most of the homes near the reservoir and along the pipeline alignment are more than 50 years old, but none would be affected by Project construction.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact CUL-2 Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5 (Criterion 2).

The archaeological survey of the Project area did not identify any evidence of previously unrecorded archaeological resources and the records search results indicated that no previously recorded archaeological resources were located on the Leland Reservoir site or along the pipeline alignment. It is highly unlikely that previously unknown archaeological sites are present in the areas that would be disturbed by construction because both the reservoir site and pipeline alignment have been disturbed extensively by construction of the existing reservoir and existing utilities within the public right-of-way (ROW). However, excavation associated with construction activities could potentially disturb unknown archaeological sites during construction. If encountered, construction could inadvertently damage these resources. However, as detailed in the Project Description, EBMUD’s Standard Construction Specification 01 35 44, Environmental Requirements, Section 3.9, Protection of Cultural and Paleontological Resources, requires that staff be trained to recognize cultural resources and that, if resources are encountered, construction must be stopped so that cultural resources can be evaluated and protected. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. With implementation of required steps that address inadvertent discovery of cultural resources as specified in statutory law and ensure that appropriate protections are afforded to tribal cultural resources resulting potential impacts associated with discovery of previously unknown resources would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measure

No mitigation measures are required.

Impact CUL-3 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Criterion 3).

The infrastructure improvements included in the Project would be constructed in a previously disturbed road ROW or on the disturbed land at the Leland Reservoir site. Because these areas have been previously disturbed, soils in these areas are not expected to contain fossils. However, in the unlikely event that fossils are encountered during construction, impacts could be potentially significant. As detailed in the Project Description, EBMUD’s Standard Construction Specification 01 35 44, Environmental Requirements, Section 3.9, Protections of Cultural and Paleontological Resources, requires that staff be trained to recognize paleontological resources and that, if resources are encountered, construction must be stopped so that paleontological resources can be evaluated and protected. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. Implementation of these protections for paleontological resources would reduce potential impacts associated with discovery of previously unknown paleontological resources to a less than significant level.

Significance Determination before Mitigation

Less than significant.

Mitigation Measure

No mitigation measures are required.

Impact CUL-4 Disturb any human remains, including those interred outside of dedicated cemeteries (Criterion 4).

Due to the extent of previous disturbance, both the reservoir site and pipeline alignment have a very low likelihood of containing previously undiscovered human remains. However, excavation associated with construction activities could potentially result in the inadvertent exposure of Native American human remains during construction. Because EBMUD’s Standard Construction Specification 01 35 44, Environmental Requirements, Section 3.9, Protection of Cultural and Paleontological Resources has been incorporated into the Project and specifies that construction activities shall immediately cease if human remains are encountered during construction and suitable measures would be implemented to ensure appropriate treatment of the human remains potential impacts associated with discovery of human burials are less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measure

No mitigation measures are required.

Impact CUL-5 Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 (Criterion 5).

No tribal cultural resources have been identified in the Project area and according to the Native American Heritage Commission, there are no sacred lands in the Project vicinity (WSA 2016). Six Native American tribes were contacted during preparation of the Draft EIR, and none provided information that would indicate that tribal cultural resources are located within the Project site. Given the level of previous disturbance of the Project area it is unlikely that tribal cultural resources are present. However, excavation associated with construction activities could potentially disturb unknown tribal cultural resources. If encountered, construction could inadvertently damage these resources. As detailed in the Project Description, EBMUD’s Standard Construction Specification 01 35 44, Environmental Requirements, Section 3.9, Protection of Cultural and Paleontological Resources has been incorporated into the Project and requires that a Native American representative shall be consulted by EBMUD to ensure that a management plan to protect tribal cultural resource is prepared and implemented if any prehistoric resource is encountered during construction. Implementation of this procedure would reduce potential impacts associated with discovery of previously unknown tribal cultural resources to a less than significant level.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

The geographic scope of potential cumulative impacts to cultural resources encompasses the area within or adjacent to the Leland Reservoir site and pipeline alignment. The Hoedel Court Subdivision, Lafayette Park Terrace, Homes at Deer Hill and Byron Park Expansion are all proposed to be constructed in the general vicinity of the Project area. All of the cumulative projects have the potential to result in the disturbance of previously unknown tribal and cultural resources, human burials and paleontological resources. However, with implementation of Section 3.9 of EBMUD Standard Construction Specification 01 35 44, Environmental Requirements, and, the Project's contribution to these cumulative impacts would not be cumulatively considerable. Thus, the Project's contribution to cumulative impacts would be less than significant.

3.4.5 References

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3.5 Energy

This section presents the physical and regulatory setting for energy resources and evaluates the potential impacts to energy consumption associated with implementation of the Project. Because the Project would not require energy for operation, the analysis of impacts focuses on energy use during construction.

3.5.1 Environmental Setting

Electricity and Natural Gas

In 2016, California generated approximately 298,000 gigawatt hours (GWh) of electricity, about 50 percent was produced by natural gas, with hydroelectric (14.6 percent), nuclear (9.5 percent), and coal less than 1 percent. The remaining energy was produced by renewable sources such as wind, solar, geothermal, and biomass.

Pacific Gas & Electric (PG&E) is the local electricity and natural gas supplier in the City of Lafayette. PG&E provides natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California (PG&E 2017). About 33 percent of PG&E's electrical generation is from renewable resources, such as wind, geothermal, biomass, solar and small hydroelectric facilities. Marin Clean Energy (MCE) also provides electric service to the City of Lafayette and serves the Leland Reservoir site. MCE's power mix for the City of Lafayette is 50 percent renewable energy, which is derived from solar, wind, bioenergy, geothermal, and small hydroelectric (MCE 2017).

EBMUD is a net energy generator, producing more energy through hydropower, solar power, and biogas production than is used by the water and wastewater facilities. EBMUD sells hydropower to electric power providers when the water system generates excess energy. EBMUD's wastewater treatment plant also produces more energy than is required to run processes at the plant and sells energy to the electric grid (EBMUD 2012). EBMUD's sustainability practices minimize energy use and greenhouse gas emissions.

Petroleum

Petroleum used in California in 2016 came from California (34 percent), Alaska (11 percent) and foreign sources (55 percent), and is refined to produce gasoline and diesel fuel and a variety of other liquid petroleum products (California Energy Commission 2016a). There are five oil refineries in the San Francisco Bay area.

3.5.2 Regulatory Framework

This section describes local policies and regulations that may apply to the Project.

Federal Policies and Regulations

Energy Policy Act

The Energy Policy Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Energy Policy Act requires that all vehicles sold in the US meet certain fuel economy goals. The Energy Policy Act of 1975 established the corporate average fuel economy (CAFE) standard with the purpose of reducing energy consumption by increasing the dual economy of cars and light trucks. CAFE requires cars and light trucks to have a minimum fuel economy (i.e., miles per gallon). CAFE standards have steadily increased year after year (NHTSA 2016). Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to CAFE standards. The Energy Policy Act of 1975 indirectly applies to the proposed Project due to its effects on vehicle fuel efficiencies for the vehicles to be used during construction.

National Energy Conservation Policy Act

The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it is regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements.

State Policies and Regulations

Senate Bill 350

Senate Bill (SB) 350 was signed into law in October 2015, and establishes a requirement for California to reduce the use of petroleum in cars by 50 percent, to generate half its electricity from renewable resources, and to increase energy efficiency by 50 percent at new and existing buidlings, all by the year 2030.

California Energy Plan

California’s Energy Action Plan II is the state’s principal energy planning and policy document (California Public Utilities Commission [CPUC] and California Energy Commission [CEC] 2005). The plan describes a coordinated implementation plan for state energy policies and refines and strengthens California’s original Energy Action Plan I published in 2003. California Energy Action Plan II identifies specific action areas to ensure that California’s energy is adequate, affordable, technologically advanced, and environmentally sound. It adopts a loading order of preferred energy resources to meet the state's needs and reduce reliance on natural gas and other fossil fuels, also important for achieving GHG emission reductions from the electricity sector.

Energy efficiency and demand response[1] are considered the first ways to meet the energy needs of California's growing population. Renewable energy and distributed generation are considered the best ways to achieve this on the supply side. To the extent that energy efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, CEC supports clean and efficient fossil fuel-fired generation to meet California’s energy needs. The 2008 Energy Action Plan Update provides a status update to the 2005 Energy Action Plan II and continues the goals of the original California Energy Action Plan (CPUC and CEC 2008).

State of California Integrated Energy Policy Report

SB 1389 was signed into law in 2002, and requires the CEC "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices." These assessments and forecasts are used to develop recommendations for energy policies that conserve state resources, protect the environment, provide reliable energy, enhance the state's economy, and protect public health and safety. The CEC is required to issue a report every two years, and the most recent report is the 2015 Integrated Energy Policy Report (CEC 2016b), which provides the results of the CEC’s assessments of a variety of energy issues facing Californiam including “energy efficiency, benchmarking under the Assembly Bill 758 Action Plan, strategies related to data for improved decisions in the Existing Buildings Energy Efficiency Action Plan, building energy efficiency standards, the impact of drought on California’s energy system, achieving 50 percent renewables by 2030, Renewable Action Plan status, the California Energy Demand Forecast, the Natural Gas Outlook, the Assembly Bill 1257 Report, methane emissions, the Transportation Energy Demand Forecast, Alternative and Renewable Fuel and Vehicle Technology Program benefits updates, landscape-scale planning efforts, transmission

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[1] Demand response is the reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure.

projects, the California Independent System Operator energy imbalance market, the Desert Renewable Energy Conservation Plan, climate change vulnerability and adaptation options, update on electricity infrastructure in Southern California, an update on trends in California's sources of crude oil, and an update on California's nuclear plants (CEC 2016b).

State Alternatives Fuel Plan

The State Alternatives Fuel Plan (California Air Resources Board [CARB] and CEC 2007) presents strategies and steps that California must take to increase the use of alternative fuels without adversely affecting air quality, water quality, or causing negative health effects. The plan recommends alternative fuel targets of 9 percent in 2012, 11 percent in 2017, and 26 percent by 2022. The plan also presents a 2050 Vision that extends the plan outcomes and presents a transportation future that greatly reduces the energy needed for transportation, provides energy through a diverse set of transportation fuels, eliminates over-dependency on oil, and achieves an 80 percent reduction in GHG emissions. With these goals, more than 4 billion gasoline gallon equivalents (20 percent) would be displaced by alternative fuels in 2020. CEC estimates that by 2050, alternative fuels could provide more than half of the energy needed to power California's transportation system.

Title 24

In 1978, the Title 24 energy standards referred to as the Energy Efficiency Standards for Residential and Nonresidential Buildings, were enacted by the California legislature with the goal of reducing energy use. These standards, as described Title 24, part 6 of the California Code of Regulations, are periodically updated. New standards, which went into effect January 1, 2010 require a 15 percent increase in energy savings compared with the 2005 Building Efficiency Standards, on average.

Local Policies and Regulations

City of Lafayette General Plan

The Open Space and Conservation Chapter of the General Plan include **Goal OS-11: Reduce the consumption of non-renewable energy resources**. There are, however, no specific policies that pertain to the Project, because the City's policies are primarily applicable to design and construction of new buildings or to City services.

EBMUD Sustainability Policy

EBMUD adopted a sustainability policy in 2008 that focuses on using resources (economic, environmental, and human) in a responsible manner that meets the needs of today without compromising the ability of future generations to meet the needs of tomorrow. The sustainability policy uses a holistic view and minimizes waste; conserves energy and natural resources; promotes long-term economic viability; supports safety and well-being for employees, communities, and customers; and is beneficial to society (EBMUD 2015).

EBMUD Strategic Plan

EBMUD's Strategic Plan outlines the goals, strategies, objectives, and key performance indicators that are used by EBMUD to carry out the mission of managing natural resources, providing reliable, high quality water and wastewater services at fair and reasonable rates for the people of the East Bay, and by preserving and protecting the environment for future generations. The long-term water supply goal in the Strategic Plan includes a strategy to address climate change. Strategy 4 of the long-term water supply goal notes that EBMUD shall: Maintain an updated Climate Change Monitoring and Response Plan to inform [EBMUD's] planning efforts for future water supply, water quality and infrastructure and support sound water and wastewater infrastructure investment decisions (EBMUD 2014b).

EBMUD Climate Change Monitoring and Response Plan

The purpose of the Climate Change Monitoring and Response Plan is to help EBMUD understand the potential climate change threats, prepare adaptation strategies, and guide mitigation of GHG emissions, which contribute to climate change (EBMUD 2014a). The Climate Change Monitoring and Response Plan established objectives for EBMUD, including encouraging and promoting cost-effective use and generation of renewable energy within their water and wastewater operations.

EBMUD Standard Construction Specifications

EBMUD Standard Construction Specification 01 35 44 (Environmental Requirements), Section 3.4(A) requires implementation of the following measures that are aimed at reductions of emissions, but also ensure energy-efficient use of equipment:

- Contractor shall implement standard air emissions controls such as:
  - Minimize the use of diesel generators where possible.
  - Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations.
  - Follow applicable regulations for fuel, fuel additives, and emission standards for stationary, diesel-fueled engines.
  - Perform regular-low-emission tune-ups on all construction equipment, particularly haul trucks and earthwork equipment.
- Contractor shall implement the following measures to reduce greenhouse gas emissions from fuel combustion:
  - On road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals.
  - Demolition debris shall be recycled for reuse to the extent feasible.

3.5.3 Impact Analysis

Methodology for Analysis

This section evaluates whether construction and operation of the proposed Project would result in significant impacts related to energy resources. Energy consumption as it relates to GHG is evaluated in *Section 3.7, Greenhouse Gas Emissions*.

Significance Criteria

Appendix F of the CEQA Guidelines provides guidance for assessing energy impacts of projects. The appendix provides three goals:

1. Decreasing overall per capita energy consumption
2. Decreasing reliance on natural gas and oil

3. Increasing reliance on renewable energy sources

Per Appendix F of the CEQA Guidelines, environmental impacts analyzed that are associated with to energy use include:

1. The proposed project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the proposed project;
2. The effects of the proposed project on local and regional energy supplies and on requirements for additional capacity;
3. The effects of the proposed project on peak and base period demands for electricity and other forms of energy;
4. The degree to which the proposed project complies with existing energy standards;
5. The effects of the proposed project on energy resources;
6. The proposed project's transportation energy use requirements and its overall use of efficient transportation alternatives.

Criteria Requiring No Further Evaluation

As documented in the Initial Study (IS) prepared by EBMUD (**Appendix A**) many of the items listed in Appendix F of the CEQA Guidelines pertain to operational energy use, and are thus not applicable to the Project. Criteria listed above that are not applicable to actions associated with Project are identified below with the supporting rational as to why consideration is unnecessary and a no-impact determination is appropriate (numbers correlate to the list above).

- *Criterion 2: The effects of the proposed project on local and regional energy supplies and on requirements for additional capacity*. As documented in the IS for the Project (**Appendix A**), operational energy use is not expected to be materially different from the energy requirements for maintenance of the existing facility and there would thus be no impacts on local and regional energy supplies or need for additional capacity.
- *Criterion 3: The effects of the proposed project on peak and base period demands for electricity and other forms of energy*. As documented in the IS for the Project (**Appendix A**), operational energy use is not expected to be materially different from the energy requirements for maintenance of the existing facility and there would thus be effect on either peak or base period electricity demands.
- *Criterion 4: The degree to which the proposed project complies with existing energy standards.* As documented in the IS for the Project (**Appendix A**), there would be no impacts associated with non-compliance with energy standards. The Project would comply with federal standards for vehicle fuel efficiency because all vehicles and machinery that are sold within the United States are required to meet those standards.
- *Criterion 6: The proposed project's transportation energy use requirements and its overall use of efficient transportation alternatives.* As documented in the IS for the Project (**Appendix A**) the project would have no impact on transportation energy use. Replacing the existing reservoir with tanks may actually decrease the need for maintenance trips to the reservoir site, reducing operational vehicles miles traveled and thus diminishing long-term transportation energy requirements. Energy used during construction, including transportation energy, is discussed below under impact EN-1.

Impacts and Mitigation Measures

Impact EN-1 Potential to result in a significant consumption of energy (Criteria 1 and 5)

Construction of the Project would require the use of fuels (primarily gas, diesel, and motor oil) for a variety of construction activities, including excavation, grading, and vehicle travel. During these activities, fuel for construction worker commute trips would be minor in comparison to the fuel used by construction equipment. Construction would also indirectly use energy for production of construction materials.

While the precise amount of construction energy consumption is uncertain, use of these fuels would be consistent with typical construction and manufacturing practices and would not be wasteful or unnecessary because doing so would not be economically sustainable for contractors. Construction vehicles and equipment would comply with federal standards for vehicle fuel efficiency because all vehicles and machinery that are sold in the United States must meet those standards. Construction activities have been designed to minimize energy use as much as possible; EBMUD would store as much excavated soil on site as possible and reuse the soils as backfill, so as to minimize fuel consumption associated with haul trucks for soil disposal.

As detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Section 3.4A, Air Quality and Emissions Control, of Standard Construction Specification 01 35 44 requires a variety of measures that would reduce inefficient use of fuels, including limiting idling, keeping engines properly tuned and maintaining appropriate tire pressure, requiring use of alternative-fueled construction equipment, and recycling or reuse of construction waste or demolition materials to the extent feasible.

Because Section 3.4A, Air Quality and Emissions Control, of EBMUD's Standard Construction Specification 01 35 44, Environmental Requirements, has been incorporated into the Project and includes BMPs to ensure efficient use of construction-related fuels, the Project construction impacts related to energy use and impacts on energy resources would be less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Operational energy use would be similar to or less than existing operations, and would primarily consist of occasional trips to the site by maintenance workers. The Project would not increase operational energy consumption.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

The Project would not increase operational energy use because operational activities would be similar to operation of the existing facility, and maintenance activities for new tanks may require fewer visits to the reservoir site (and thus less consumption of transportation energy) than existing maintenance activities for the reservoir. The Project would require only short-term use of energy during construction; energy use during construction would be temporary and would cease after construction is completed. Cumulative energy impacts would thus be less than significant.

3.5.4 References

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3.6 Geology and Soils

This section describes the geologic and seismic hazards in the Project area and evaluates whether the construction and operation of the Project would result in potentially adverse impacts related to local geology, existing soil conditions, or seismicity. This section is based on the results of a Geotechnical Feasibility Assessment that was prepared by EBMUD, and is included in **Appendix I**.

3.6.1 Environmental Setting

Geology

Surface Fault Rupture

The Leland Reservoir and its associated pipeline infrastructure are located in close proximity to multiple known earthquake faults, as shown in **Figure 3.6-1**. However, the United States Geological Survey (USGS) has not mapped the reservoir site or pipeline alignment as being underlain by an active fault capable of rupturing to the ground surface (EBMUD 2016). The closest known active fault is the Franklin fault, located approximately 1 mile east of the site. In addition, the reservoir site and pipeline alignment are not mapped within an active earthquake fault zone per the state of California, Alquist Priolo Special Studies Zone Act (Walnut Creek Quadrangle, July 1993). There is a short, inferred north-northeast trending, inactive fault located east of the reservoir along Leland Drive; no other faults are mapped at or immediately near the reservoir site. In addition, no faults were recorded at the reservoir site during or since its construction.

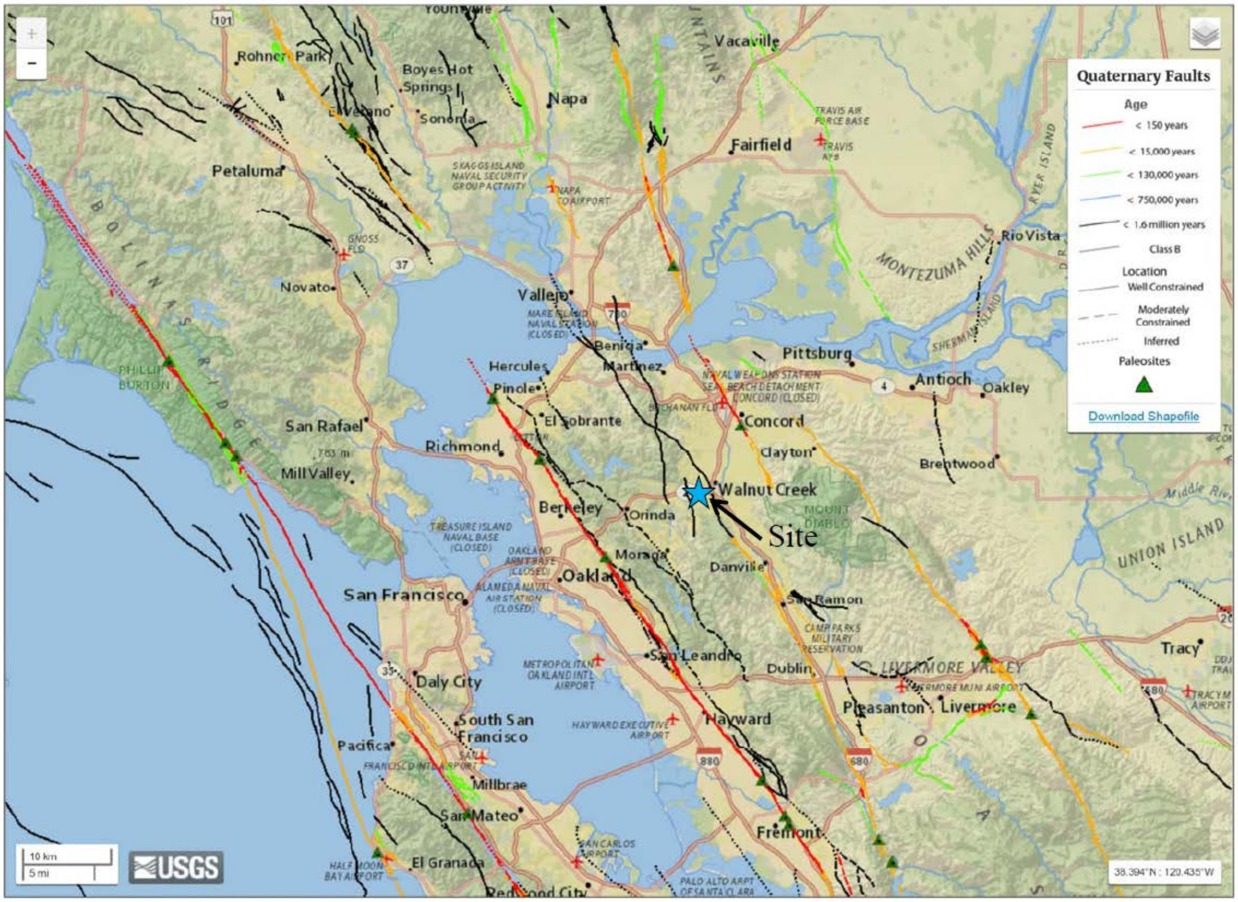
The fault names, distances, and expected maximum magnitude (M_{max}) earthquake for the known, major active faults in the vicinity of the site are summarized in **Table 3.6-1**. While Lafayette (and the Project site) could potentially be underlain by a blind thrust fault, as is the case with any site within the transpressional San Francisco Bay Area seismic region, it is highly unlikely that a typical moment magnitude (Mw) 6 to 6.5 earthquake on such a buried, dipping thrust fault would result in surface fault rupture at the Project site.

Table 3.6-1: Major Regional Active Earthquake Faults

Fault Name	Closest Distance (miles)	M_{max}^*
Franklin	1	6.8
Contra Costa Shear Zone	1	6.5
Mt. Diablo Thrust	3	6.5
Calaveras	4	7.0
Concord-Green Valley	5	7.0
Hayward-Rodgers Creek	8	7.3
Clayton	9	6.3
Greenville	12	7.1
San Andreas	27	7.9

Note: * M_{max} is the expected maximum magnitude earthquake (moment magnitude) based on estimated fault dimensions and fault rupture area and earthquake magnitude relationships.
Source: EBMUD 2016

Figure 3.6-1: Earthquake Faults in Project Vicinity



Source: EBMUD 2016

Site Geology

The Leland Reservoir and on-site pipelines are located on the southwest flank of a series of low rounded hills within the East Bay Hills structural block. Geologic mapping shows that the hills in the vicinity of the reservoir site are underlain by the Miocene Briones Formation, and are bounded to the east, south, and west by alluvial valleys along Las Trampas Creek and its tributaries.

The Briones Formation includes both massive sandstone and interbedded sandstone, siltstone, and shale that dip 30 to 40 degrees southwest. The base of the existing concrete lined, open-cut reservoir is founded on weathered sedimentary rock of the Briones Formation at an elevation of approximately 331 feet. The bottom elevation of the new tanks would be approximately 329 feet, so the concrete foundations for the new tanks would be excavated into and founded on weathered rock.

Pleistocene-age alluvial fan (Qpaf) and gravel (QTu) deposits have been mapped by the USGS (Helley and Graymer, 1997) beneath portions of the off-site pipeline route near the intersections of Old Tunnel Rd and Condit Rd with Windsor Dr. These soil deposits are present due to historical storm water runoff events from the adjacent Reliez Creek, which flows north to south, immediately west of Windsor Drive.

Liquefaction Potential

Liquefaction is defined as a temporary reduction of strength and stiffness in loose, saturated, sandy, cohesionless soils due to an applied cyclic stress, usually earthquake shaking or other sudden vibration, causing the soils to settle and behave like a liquid, potentially triggering lateral spreading. As the Leland Reservoir site and on-site pipelines are immediately underlain by hard, sedimentary bedrock, the subgrade materials below the site would not be susceptible to earthquake induced liquefaction and lateral spreading. Previous studies (as cited in EBMUD 2016) indicated that the embankment materials are not susceptible to liquefaction and/or seismic induced strength loss. While the State of California Geological Survey (CGS) has not yet mapped the site or surrounding area, including the pipeline alignment, as being located in an area with historical evidence of liquefaction, or with local geologic and ground water conditions conducive to liquefaction per the CGS Seismic Hazard Zone Mapping Act (Walnut Creek Quadrangle), the USGS has mapped portions of the off-site pipeline route as being underlain by alluvial soils (Helley and Graymer, 1997). The District will evaluate the liquefaction potential of these alluvial soils as part of the Design level geotechnical evaluation.

Landslides

No landslides are mapped on the reservoir site or pipeline alignment per the USGS Map of Landslide and Other Surficial Deposits of the Walnut Creek 7 ½’ Quadrangle, Contra Costa County, California (USGS 1975). No landslides have been observed or mapped immediately adjacent to the Project site, and the existing compacted embankment slopes are expected to deform less than one foot during strong shaking resulting from the design earthquake. In addition, the CGS has not yet mapped the reservoir site or pipeline alignment as being located in an area with historical evidence of landslides, or with local geologic and topographic conditions conducive to earthquake induced landslides, per the CGS Seismic Hazard Zone Mapping Act (Walnut Creek Quadrangle).

Soil Erosion

The weathered sedimentary rock at the reservoir site is susceptible to soil erosion. The zones of thin-bedded sandstone and shale are more susceptible to erosion than the massive sandstone that forms the majority of the site. There is evidence of ongoing erosion within a shale layer on the northeast rock slope facing Leland Drive, immediately north of the main access road. The erosion is relatively minor, not within the embankment, and not a threat to the stability of the open-cut reservoir. The pipeline alignment is paved and not subject to soil erosion.

Expansive Soils

High plasticity soils, claystones, or shales can be susceptible to expansion/contraction during annual wetting and drying cycles leading to subgrade movements beneath structures. The Leland Reservoir site is generally underlain by sandstone materials that are not expansive. While there are localized shale seams that could potentially be expansive if exposed to wetting and drying cycles, these layers are relatively minor as compared to the sandstone across the site.

3.6.2 Regulatory Framework

This section describes local policies and regulations that may apply to the Project. No federal policies are applicable to the Project relative to geology, soils or seismicity.

State Policies and Regulations

The Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with the Alquist-Priolo Act, the state geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing the earthquake fault zones. Within the fault zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch that may experience ground surface rupture. California Code of Regulations (CCR) Title 14, Section 3601(e) defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year. The Project site, including the reservoir and pipeline alignment, is not mapped within an active earthquake fault zone per the Alquist-Priolo Special Studies Zone Act (Walnut Creek Quadrangle, July 1993) and does not include any buildings that meet the CCR Title 14 criterion for human occupancy. Therefore, the Alquist-Priolo Act does not apply to the Project.

Seismic Hazard Mapping Act

The Seismic Hazard Mapping (SHM) Act was passed in 1990 following the 1989 Loma Prieta earthquake to reduce the potential impacts of earthquakes on public health and safety and to minimize property damage caused by earthquakes related to ground deformation. The SHM Act directs the California Department of Conservation (CDC) to identify and map areas prone to the earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The State of California Geological Survey (CGS) has not yet mapped the site or surrounding area, including the pipeline alignment, as being located in an area with historical evidence of liquefaction or landslides, or with local geologic and ground water conditions conducive to liquefaction or landslides per the CGS Seismic Hazard Zone Mapping Act (Walnut Creek Quadrangle). For structures intended for human occupancy, the SHM Act requires site specific geotechnical investigations to identify potential seismic hazards and to formulate mitigation measures before permitting most developments designed for human occupancy within the Zones of Required Investigation. The Project would not involve the construction of any structures for human occupancy; therefore, the SHM Act does not apply to the Project.

California Building Code

The California Building Code (CBC) was adopted by the California Building Standards Commission on January 1, 2017, and is based on the 2015 International Building Code with the addition of more extensive structural seismic provisions. The CBC is included in Title 24 of the CCR, California Building Standards Code, and is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions; and
- Building standards authorized by the California legislature that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns

Seismic sources and the procedures used to calculate seismic forces on structures are defined in Section 1613 of the CBC. The CBC requires that all structures and permanently attached nonstructural components be designed and built to resist the effects of earthquakes. The CBC also addresses grading and other geotechnical issues, building specifications, and non-building structures.

California Division of Safety of Dams

Since 1929, the state of California has supervised the construction and operation of dams to prevent failure and to safeguard life and property. The California Division of Safety of Dam (DSOD) supervises the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs. DSOD has jurisdiction over all dams in the state that are not federally owned, that are 25 feet or higher, and that have a storage capacity of 50 acre-feet of water or greater, with the exclusion of the dams that are 6 feet or less in height (regardless of storage) and the dams with a storage capacity of 15 acre feet or less (regardless of height). DSOD conducts annual inspections of dams under its jurisdiction and periodically requires that they are evaluated with respect to safety and seismic stability.

Currently, Leland Reservoir is under DSOD jurisdiction due to its height (approximately 40 feet) and also due to its capacity (approximately 60 acre-feet). The southeast embankment would be breached during the tank excavation to create an access road to the reservoir basin. Breaching the embankment and replacing the reservoir with tanks would remove the reservoir from DSOD jurisdiction, because the drained basin would no longer have any storage capacity and DSOD does not have jurisdiction over circular tanks.

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protection policies for guidance.

City of Lafayette General Plan

The City of Lafayette General Plan is a comprehensive, long-range plan for the physical development of the city that identifies goals and policies. The Safety Chapter of the General Plan includes the following geology, soils and seismicity policies that are relevant to the Project:

Goal S-2: Minimize risks to Lafayette residents and property from earthquakes.

- Policy S-2.1: Seismic Hazards: New development, including subdivisions, new construction, and remodels or expansions of existing structures, shall minimize exposure to seismic hazards through site planning and building design.
  - Program S-2.1.1: Comply with the provisions of the state Alquist-Priolo Act, as appropriate.
  - Program S-2.1.4: Require, as conditions of approval, measures to mitigate potential seismic hazards for structures.
  - Program S-2.1.5: Require geotechnical reports by a state registered geologist for development proposals on sites located in known or suspected seismically or geologically hazardous areas and for all critical structures.

The Open Space and Conservation Chapter of the General Plan includes the following policy that is relevant to the Project:

***Goal OS-7:* Protect and preserve soil as a natural resource.**

- Policy OS 7.1: Control Soil Erosion: Control soil erosion to prevent flooding and landslides, maintain water quality, and reduce public costs of flood control and watercourse maintenance.

- Program OS-7.1.1: Continue to require grading permits for new construction as a part of the development review process. Require soil erosion measures and a revegetation plan.

EBMUD Standard Practices

Reservoirs

EBMUD's Reservoir Design Guide (Design Guide) establishes the minimum requirements to be followed in the design of EBMUD above and below ground drinking water reservoirs. The Design Guide provides a list of goals, with each project design team using its engineering judgment for project-specific applications. Chapter 4 of the Design Guide includes criteria specific to the design of prestressed concrete reservoirs, which is the type of reservoir design proposed for the Leland Reservoir site. The Design Guide requires completion of a geotechnical investigation during design and incorporation of geotechnical design recommendations in project plans and specifications. EBMUD also follows the applicable seismic design standards found in the latest editions of the CBC, American Society of Civil Engineers 7 (ASCE-7 Minimum Design Loads for Buildings and Other Structures), and the American Water Works Association (AWWA D110 Wire- and Strand-wound, Circular, Prestressed Concrete Water Tanks).

Pipelines

EBMUD uses two primary Engineering Standard Practices for the design of water pipelines in its distribution system to address geologic hazards. Engineering Standard Practice 512.1, Water Main and Services Design Criteria, establishes basic criteria for the design of water pipelines and establishes minimum requirements for pipeline construction materials. Engineering Standard Practice 550.1, Seismic Design Requirements addresses seismic design of the pipelines to withstand seismic hazards including ground shaking, and requires that EBMUD establish project specific seismic design criteria for pipelines with a diameter of greater than 12-inches, such as the water pipelines that would be installed as part of the Project.

Practices and procedures to avoid seismic hazards include selecting appropriate routing to avoid seismic hazards, use of appropriate materials to withstand seismic hazards, and providing flexibility at locations where the pipeline crosses from one soil condition to another. Engineering Standard Practice 550.1 also requires use of steel pipe with restrained joints or the equivalent to address seismic hazards.

Engineering Standard Practice 550.1 is based on Guidelines for the Seismic Design of Oil and Gas Pipeline Systems prepared by the American Society of Civil Engineers Committee on Gas and Liquid Fuel Lifelines (1984). In addition to the practices and procedures listed above, EBMUD follows the recommendations of the American Water Works Association for the design and installation of steel pipe, including design for the appropriate wall thickness, external loadings, pipeline supports, pipe joints, fittings and appurtenances, corrosion control, and protective coatings and linings.

EBMUD Standard Construction Specifications

EBMUD's Standard Construction Specification 01 35 44 (Environmental Requirements), includes practices and procedures for preventing soil erosion, as described below.

Section 1.1(B). Site Activities

- Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work and staging areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of Work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable, in the Engineer's opinion.

- Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material.

EBMUD's Standard Construction Specification 01 35 24 (Project Safety Requirements), includes practices and procedures for preventing subsidence and soil collapse, as described below.

Section 1.3(C). Excavation Safety Plan

- Submit detailed plan for worker protection and control of ground movement for the Engineer's review prior to any excavation work at jobsite. Include drawings and details of system or systems to be used, area in which each type of system will be used, de-watering, means of access and egress, storage of materials, and equipment restrictions. If plan is modified or changed, submit revised plan.

3.6.3 Impact Analysis

Methodology for Analysis

This impact analysis considers whether implementation of the Project would result in significant impacts to geology, soils, and seismicity using the significance criteria listed above and based on published geologic and seismic information related to the geology, soils, and seismicity of or in the Project area. The potential direct and indirect effects of Project implementation are addressed below.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic related ground failure, including liquefaction;
    - Landslides;
2. Result in substantial soil erosion or the loss of topsoil;
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), or a corrosive soil creating substantial risks to life or property; or
5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Leland Reservoir Replacement Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 5: Have soils incapable of adequately supporting the use of septic tanks.* The Project would not employ the use of septic tanks or alternative waste water disposal systems resulting in no impact.

Impacts and Mitigation Measures

Impact GEO-1 Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides (Criterion 1)

Ground shaking can be a serious hazard to structures if they are not adequately designed and constructed. Given the Project site's location, it is possible that the Project would experience a major earthquake sometime during its operational lifetime. The degree of hazard depends on the geologic conditions of the site, as well as pipeline and reservoir construction approaches and quality. The intensity of the ground shaking would depend on the size of the causative fault, the distance to the epicenter, the magnitude of the earthquake, and the duration of the shaking. Seismically induced ground shaking would result in a potentially significant impact to the Project site. However, during the Project's design phase, EBMUD would perform a design-level geotechnical investigation to identify the potential for seismic hazards. As detailed in the Project Description, EBMUD's Reservoir Design Guide specifies minimum requirements to be followed in the design of drinking water reservoirs. The Design Guide requires preparation of a geotechnical investigation, and EBMUD would incorporate into the Project design the recommendations outlined in the geotechnical investigation, such as utilizing reasonable permanent slopes of no steeper than 3H:1V, building mid-slope benches with drainage collection ditches, and avoiding new cut slopes that dip southwest (the local geology dips to the southwest). Project design would follow the 2017 CBC as well as EBMUD's Engineering Standard Practices 512.1 and 550.1 for reservoir and pipeline construction projects. Engineering Standard Practice 550.1 for seismic design requirements specifies design features for prestressed concrete tanks including allowable stress design procedures, seismic design loads, and reinforcement and anchoring procedures, while Engineering Standard Practice 512.1 for pipelines includes use of special joints, use of stronger or more flexible pipelines, use of special backfill or casing to support pipeline motion, and other practices to reduce the risk of seismic damage. These practices would reduce potential seismicity related impacts to less than significant, by ensuring that all facilities are designed to withstand seismic hazards.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact GEO-2 Potential to result in substantial soil erosion or the loss of topsoil (Criterion 2).

Construction of the pipeline and replacement tanks would generate spoils that would be temporarily stockpiled on site for on-site re-use, resulting in the potential for erosion in excavated areas as well as at stockpile locations, shown on **Figure 2-9** of the Project Description. EBMUD's Standard Construction Specification 01 35 44 (Environmental Requirements), includes provisions for preventing soil erosion, including diversion of surface waters, minimization of removal and disturbance of natural vegetation, and prevention of erosion and loss of soil. In addition, during the Project's design phase, EBMUD would perform a design-level geotechnical investigation for the Project to identify soil control measures such as utilizing reasonable permanent slopes of no steeper than 3H:1V, building mid-slope benches with drainage collection ditches, avoiding new cut slopes that dip southwest (the local geology dips to the southwest), incorporating landscaping measures that promote erosion control, and developing a drainage collection plan that does not significantly concentrate storm water runoff in any one location. As detailed in the Project Description, a number of EBMUD standards practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project including Standard Construction Specification 01 35 44, Environmental Requirements. Section 1.1(B) of Standard Construction Specification 01 35 44 requires erosion control practices to ensure that soil erosion does not occur during construction. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists applicable standard specifications language. Through compliance with EBMUD's Standard Construction Specification 01 35 44 and by implementing the recommendations of the Design level geotechnical investigation impacts related to soil erosion and loss of topsoil would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact GEO-3 Potential to be located on a geologic unit or soil that is unstable or that would become unstable as a result of the proposed project, and potentially could result in on-site or off-site landslides, lateral spreading, subsidence (i.e., settlement), liquefaction, or collapse (Criterion 3).

Landslides. As noted above, no landslides are mapped on the Project site per the USGS Map of Landslide and Other Surficial Deposits of the Walnut Creek 7 ½' Quadrangle, Contra Costa County, California. No landslides have been observed or mapped immediately adjacent to the Project site, and the existing compacted embankment slopes are expected to deform less than one foot during strong shaking resulting from the design earthquake. In addition, the CGS has not yet mapped the site as being located in an area with historical evidence of landslides, or with local geologic and topographic conditions conducive to earthquake induced landslides. According to the City of Lafayette General Plan, the proposed pipeline and tank sites are located in an area classified as having few or no landslides, and least likely to develop landslides (City of Lafayette 2002). Because no landslides are mapped in the Project area, including the reservoir site and pipeline alignment, impacts related to landslides would be less than significant

Liquefaction and Lateral Spreading. The CGS has not yet mapped the reservoir site or pipeline alignment as being located in an area with historical evidence of liquefaction, or with local geologic and ground water conditions conducive to liquefaction, per the CGS Seismic Hazard Zone Mapping Act (Walnut Creek Quadrangle). Because no areas of potential liquefaction are mapped beneath the reservoir and on-site pipelines, impacts related to liquefaction-induced settlement or lateral spreading would be less than significant for on-site improvements. The USGS has mapped portions of the off-site pipeline route as being underlain by alluvial soils (Helley and Graymer 1997). These soil deposits are present due to historical storm water runoff events from the adjacent Reliez Creek which flows north to south, immediately west of Windsor Drive. The District will evaluate the liquefaction potential of these alluvial soils as part of the Design level geotechnical evaluation, and if applicable, design the off-site pipeline improvements to accommodate any liquefaction induced settlement or ground movements.

Subsidence and Soil Collapse. As discussed in Section 3.10, it is not expected that groundwater would be encountered during open trench construction and it is thus not anticipated that groundwater dewatering would be required. Impacts associated with dewatering-induced settlement are thus expected to be less than significant. Unsupported excavations into soft or loose soils can cause soil collapse near the proposed pipeline alignment. However, as detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 24, Project Safety Requirements. Section 1.3(C), Excavation Safety Plan, of Standard Construction Specification 01 35 24 includes practices and procedures for preventing subsidence and soil collapse. Implementation of the required safety measures would reduce the risk of soil collapse to less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact GEO-4 Potential to be located on expansive or corrosive soils that would create substantial risks to life or property (Criterion 4).

The bottom floor of the existing Leland Reservoir basin is underlain by sandstone materials that are generally not expansive or corrosive (EBMUD 2016). Construction of the new tanks would not result in risks to life or property from expansive or corrosive soils.

It is possible that the proposed new pipeline alignment area may contain expansive or corrosive soils, which would result in a potentially significant impact to the Project due to the effect those soils could have on the stability and longevity of the pipeline. However, during the Project's design phase, EBMUD would perform a design-level geotechnical investigation to identify the potential for expansive and corrosive soils along the pipeline alignment. A cathodic protection system and protective coatings would be used to protect the proposed pipelines from corrosion resulting from corrosive soils.

EBMUD would incorporate into the Project design the recommendations outlined in the geotechnical investigation, and the design would follow the guidance outlined in EBMUD's Engineering Standard Practices 512.1 and 550.1 for pipeline construction projects, which would reduce potential impacts to a level of less than significant, by ensuring that all facilities are designed to withstand the effects of expansive or corrosive soils by incorporating cathodic protection, and following recommendations of the geotechnical investigation to ensure that pipelines can withstand expansive soils. Through implementation of these practices, EBMUD would ensure that impacts to the Project from expansive or corrosive soils would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

Impacts on geology and soils are generally localized and do not result in regionally cumulative impacts. The geographical extent for cumulative impacts to geology and soils includes areas in and immediately adjacent to the Project site because erosion and soil stability impacts from the Project would be confined to immediately adjacent areas. The Project site, as with all of the Bay Area, is prone to seismic hazards due to proximity to faults. The Project site does not cross any known, mapped active faults but could experience impacts from seismic hazards.

The potential for a significant seismic event to occur in the vicinity of the Project site is high over the lifetime of the Project. However, the Project would not contribute considerably to this impact because the Project would not include habitable structures or otherwise introduce new people to the Project area that would be put in danger as a result of the occurrence of a seismic event; therefore, the Project would have no cumulatively considerable impact.

3.6.4 References

EBMUD. 2011. Leland Reservoir Replacement Tanks, Planning Phase Geotechnical Evaluation. July 22, 2011.

EBMUD. 2016. Leland Reservoir Replacement Project – CEQA Level Geotechnical Feasibility Assessment, October 31, 2016. Included as Appendix I of this EIR.

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3.7 Greenhouse Gas Emissions

This section presents the environmental setting and impact analysis for GHG emissions that could occur as a result of the proposed Project. Information is provided regarding global effects of GHG emissions and applicable policies and plans to reduce GHG emissions. **Appendix E** includes a copy of the Air Quality and GHG Emissions Technical Memorandum prepared for the proposed Project. The analysis in this section addresses cumulative GHG impacts, which are inherently a cumulative issue.

3.7.1 Environmental Setting

Overview

Gases that trap heat in the atmosphere (i.e., GHGs) regulate the earth's temperature. The primary GHGs, or climate pollutants, are carbon dioxide (CO_2), black carbon, methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. While primary GHGs occur naturally in the atmosphere, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices, landfills, and to a lesser extent wastewater treatment. Black carbon has emerged as a major contributor to global climate change, possibly second only to CO_2. Black carbon is produced naturally and by human activities as a result of the incomplete combustion of fossil fuels, biofuels, and biomass (Center for Climate and Energy Solutions, 2010). N_2O is a byproduct of various industrial processes including wastewater treatment. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. GHGs are typically reported in "carbon dioxide-equivalent" (CO_2e) measures.[1]

There is international scientific consensus that human-caused increases in GHGs contribute to global warming and, thus, climate change. Many impacts resulting from climate change, including sea level rise, increased fires, floods, severe storms, and heat waves, already occur and will only become more severe and costly (IPCC, 2013). Secondary effects of climate change likely include impacts on agriculture, the state's electricity system, and native freshwater fish ecosystems; an increase in the vulnerability of levees such as in the Sacramento-San Joaquin Delta; changes in disease vectors; and changes in habitat and biodiversity (IPCC, 2013; CCCC, 2012).

GHG Emission Estimates and Energy Providers in California

The CARB estimated that in 2010 California produced about 451.60 million gross metric tons of CO_2e (MT CO_2e; CARB, 2013). The CARB found that transportation is the source of 38 percent of the state's GHG emissions, followed by electricity generation (both in-state generation and imported electricity) at 21 percent and industrial sources at 19 percent. Commercial and residential fuel use (primarily for heating) accounted for 10 percent of GHG emissions. The remaining 12 percent of the state's GHG emissions are generated by compost/landfill facilities, agriculture, forestry, and processes involving the use of high global warming potential gases (i.e., ozone depleting substance substitutes, electricity grid sulfur hexafluoride (SF6) losses, and semiconductor manufacturing).

Energy to most EBMUD facilities is provided by the Pacific Gas and Electricity Company (PG&E). Both PG&E and Marin Clean Energy (MCE) provide electric service to the City of Lafayette (including the

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[1] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

Leland Reservoir site). MCE's power mix for the City of Lafayette is 50 percent renewable energy, which is derived from solar, wind, bioenergy, geothermal, and small hydroelectric (MCE, 2017). Similarly, about half of the electricity delivered by PG&E is from renewable and GHG-free sources. For example, PG&E's 2016 power mix was as follows: 17 percent natural gas, 24 percent nuclear, 33 percent eligible renewables, 12 percent large hydroelectric, and 14 percent unspecified power (PG&E, 2016).

3.7.2 Regulatory Framework

Federal Regulations

Mandatory Greenhouse Gas Reporting

Title 40 Code of Federal Regulations Part 98, Mandatory Greenhouse Gas Reporting, establishes mandatory GHG reporting requirements for certain industrial facilities that directly emit operational GHGs.[2] The purpose of the mandated GHG Reporting Program is to provide accurate and timely GHG data to inform the public, policy makers, and other interested parties regarding emissions from specific industries, emissions from individual facilities, factors that influence GHG emission rates, and actions that could be taken at facilities to reduce emissions. Once in operation, water facilities like Leland Reservoir and the transmission pipelines do not directly emit GHGs and, therefore, these mandatory GHG reporting requirements would not apply to the Project.

State Regulations

Executive Orders S-3-05 and B-30-15

Executive Order (EO) S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million MT CO_2e); by 2020, reduce emissions to 1990 levels (estimated at 427 million MT CO_2e); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million MT CO_2e).

EO B-30-15 set an additional, interim statewide GHG reduction target of 40 percent below 1990 levels to be achieved by 2030. The purpose of this interim target is to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 (Governor's Office, 2015). EO B-30-15 also requires all state agencies with jurisdiction over sources of GHG emissions to implement measures within their statutory authority to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets.

Assembly Bill 32

In 2006, the California legislature passed AB 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq.), also known as the California Global Warming Solutions Act. AB 32 requires the CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020.

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[2] Title 40, Chapter 1, Subchapter C, Part 98, Subparts A and II. Available online at http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=c784a291ba489991c58a3321c8ff8fcf&mc=true&n=pt40.23.98&r=PART&ty=HTML#se40.23.98_12. This reporting requirement applies to industrial facilities (e.g., manufacturing, petroleum refineries, petroleum/natural gas systems) but also includes electricity generation and industrial wastewater facilities as well as municipal solid waste landfills. Accessed on September 9, 2017.

California Climate Change Scoping Plan. Pursuant to AB 32, the CARB adopted the *Climate Change Scoping Plan* (Scoping Plan) in December 2008 outlining measures to meet the 2020 GHG reduction limits. In order to meet the goals of AB 32, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels (approximately 15 percent below 2008 levels). The Scoping Plan estimates a reduction of 174 million MT CO_2e from transportation, energy, agriculture, forestry, and other high global warming sectors (CARB, 2010).

The Scoping Plan anticipates that actions by local governments will result in reduced GHG emissions because local governments have the primary authority to plan, zone, approve, and permit development to accommodate population growth and the changing needs of their jurisdictions (CARB, 2008). The Scoping Plan also relies on the requirements of SB 375 (discussed below) to align local land use and transportation planning to achieve GHG reduction.

The Scoping Plan must be updated every five years to evaluate AB 32 policies and ensure that California is on track to achieve the 2020 GHG reduction goal. In 2014, the CARB released the *First Update to the Climate Change Scoping Plan* (First Update), which builds upon the initial scoping plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines the CARB's climate change priorities for the next five years and sets the groundwork to reach long-term goals set forth in EO S-3-05. The First Update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals in the initial scoping plan and also evaluates how to align the state's longer-term GHG reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use (CARB, 2014).

As identified in the First Update, California is on track to meeting the goals of AB 32. The First Update also addresses the state of California's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high-level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for California to adopt a mid-term target. According to the First Update, local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals. According to the First Update, reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate that was needed to reach the 2020 emissions limit.

Senate Bill 375

The Scoping Plan also relies on the requirements of SB 375 (Chapter 728, Statutes of 2008), also known as the Sustainable Communities and Climate Protection Act of 2008, to reduce carbon emissions from land use decisions. SB 375 requires regional transportation plans developed by each of the state's 18 metropolitan planning organizations to incorporate a "Sustainable Communities Strategy" in each regional transportation plan that will then achieve GHG emission reduction targets set by the CARB. For the Bay Area, the per-capita GHG emission reduction target is a 7 percent reduction by 2020 and a 15 percent reduction from 2005 levels by 2035 (CARB, 2011). *Plan Bay Area*, the Metropolitan Transportation Commission's regional transportation plan, adopted in July 2013, is the region's first plan subject to SB 375 requirements (ABAG and MTC, 2013).

Senate Bills 1078, 107, X1-2, and 350 and Executive Orders S-14-08 and S-21-09

California established aggressive renewable portfolio standards under SB 1078 (Chapter 516, Statutes of 2002) and SB 107 (Chapter 464, Statutes of 2006), which require retail sellers of electricity to provide at least 20 percent of their electricity supply from renewable sources by 2010. EO S-14-08 (November 2008) expanded the state's renewable portfolio standard from 20 to 33 percent of electricity from renewable sources by 2020. In September 2009, then Governor Schwarzenegger continued California's commitment to the renewable portfolio standard by signing EO S-21-09, which directed the CARB to enact regulations to help California meet the renewable portfolio standard goal of 33 percent renewable energy by 2020 (CPUC, 2015).

In April 2011, Governor Brown signed SB X1-2 (Chapter 1, Statutes of 2011) codifying the GHG reduction goal of 33 percent by 2020 for energy suppliers which preempts the CARB's 33 percent renewable sources electricity standard and applies to all electricity suppliers (not just retail sellers) in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. Under SB X1-2, all of these entities must adopt the new renewable portfolio standard goals of 20 percent of retail sales from renewable sources by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020 (CPUC, 2015). Eligible renewable sources include geothermal, ocean wave, solar photovoltaic, and wind, but exclude large hydroelectric (30 megawatts or more).

Senate Bill 32 and Assembly Bill 197

In August 2016, the California state legislature passed SB 32 which establishes a new target for GHG emissions reductions in the state. SB 32 requires the CARB to ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by the year 2030 and would augment AB 32 (described above). The Legislature paired SB 32 with AB 197, which directs the CARB to prioritize disadvantaged communities in its climate change regulations and to evaluate the cost-effectiveness of the measures it considers. SB 32 and AB 197 have been enacted (Chapters 249 and 250, Statutes of 2016 (chaptered September 8, 2016) and became effective on January 1, 2017.

California Green Building Standards Code

The 2013 California Green Building Standards Code, as specified in Title 24, Part 11 of the California Code of Regulations, specifies building standards to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. The provisions of this code apply to the planning, design, operation, construction, replacement, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

Local Plans

Bay Area Air Quality Management District

CEQA Guidelines. The BAAQMD CEQA Air Quality Guidelines also assist lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts on air quality. The BAAQMD advises lead agencies to consider adopting a GHG reduction strategy capable of meeting AB 32 goals and then reviewing projects for compliance with the GHG reduction strategy as a CEQA threshold of significance which is consistent with the approach to analyzing GHG emissions described in CEQA Guidelines Section 15183.5.

Bay Area Air Quality Management District Climate Protection Program. On June 1, 2005 the BAAQMD Board of Directors adopted a resolution establishing a Climate Protection Program and acknowledging the link between climate protection and programs to reduce air pollution in the Bay Area. A central element of the BAAQMD's Climate Protection Program is the integration of climate protection activities into existing BAAQMD programs.

2017 Clean Air Plan. The BAAQMD is responsible for attaining and maintaining federal and state air quality standards in the SFBAAB, as established by the federal CAA and the CCAA, respectively. The CAA and the CCAA require plans to be developed for areas that do not meet air quality standards, generally. The most recent air quality plan, the *Bay Area 2017 Clean Air Plan*, includes a goal of reducing GHG emission to 1990 levels by 2020, 40 percent below 1990 levels by 2035, and 80 percent below 1990 levels by 2050.

In addition, the BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the SFBAAB; the program includes GHG reduction measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative energy sources (BAAQMD, 2017).

City of Lafayette

The City of Lafayette has not prepared a qualified Climate Action Plan and there are no other city regulations or policies relating to the reduction of GHGs (e.g., reducing energy use, reducing use of single-occupant automobiles, encouraging alternative modes of transportation) that are applicable to the Project.

EBMUD Climate Mitigation Action Plan

In 2008, EBMUD adopted a climate change objective in EBMUD's Strategic Plan focusing on using resources (economic, environmental, and human) in a responsible manner that meets current needs without compromising the ability to meet future needs. In response to the climate change objective, EBMUD prepared the *EBMUD 2014 Climate Change Monitoring and Response Plan*. EBMUD also prepared an Action Plan that provides guidance to inform EBMUD of decisions regarding water supply, water quality, and infrastructure planning. EBMUD's goal is to reduce GHG emissions by 50 percent by 2040 (as compared to baseline GHG emissions in year 2000). In 2013, GHG emissions generated by EBMUD were 31,244 MTCO$_2$e which was 31 percent below 2000 GHG emission levels. EBMUD tracks GHG emissions per the California Climate Action Registry protocols (EBMUD, 2014).

EBMUD Standard Construction Specifications

EBMUD's Standard Construction Specification 01 35 44 (Environmental Requirements) includes practices and procedures for minimizing GHG emissions from fuel combustion as described below.

Air Quality and Emissions Control. EBMUD Standard Construction Specification 01 35 44, Section 3.4(A) requires implementation of the following control measures:

- The Contractor shall ensure that line power is used instead of diesel generators at all construction sites where line power is available.
- The Contractor shall ensure that for operation of any stationary, compression- ignition engines as part of construction, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards.
- Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) shall be electrically powered unless the Contractor submits documentation and receives approval

from the Engineer that the use of such equipment is not practical, feasible, or available. All portable engines and equipment units used as part of construction shall be properly registered with the California Air Resources Board or otherwise permitted by the appropriate local air district, as required.

- Contractor shall implement standard air emissions controls such as:
    - Minimize the use of diesel generators where possible.
    - Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations. Clear signage shall be provided for construction workers at all access points.
    - Minimize the idling time of diesel powered construction equipment to five minutes.
    - Follow applicable regulations for fuel, fuel additives, and emission standards for stationary, diesel-fueled engines.
    - Locate generators at least 100 feet away from adjacent homes and ball fields.
    - Perform regular low-emission tune-ups on all construction equipment, particularly haul trucks and earthwork equipment.
- Contractor shall implement the following measures to reduce greenhouse gas emissions from fuel combustion:
    - On road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals.
    - Construction equipment engines shall be maintained to manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
    - All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of Nitrogen Oxides (NOx) and Particulate Matter (PM).
    - Demolition debris shall be recycled for reuse to the extent feasible. See the Construction and Demolition Waste Disposal Plan paragraphs above for requirements on wood treated with preservatives.

3.7.3 Impact Analysis

Methodology for Analysis

The BAAQMD CEQA Guidelines do not include significance thresholds for construction-related GHG emissions. However, the BAAQMD recommends that construction-related GHG emissions be quantified and disclosed. The CalEEMod emissions estimator model (Version 2016.3.2) was used to estimate GHG emissions from off-road equipment emissions, while the Project’s GHG emissions from on-road, construction-related worker, haul, and vendor truck emissions were estimated using estimated vehicle miles presented in **Table 3** of **Appendix E** and EMFAC2014 emission factors. Model results are discussed below under Impact GHG-1.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* a GHG emissions impact would be considered significant if the Project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
2. Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impacts and Mitigation Measures

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (Criterion 1)

Construction-related GHG emissions would include direct GHG emissions from operation of construction equipment and increases in vehicle trips over the Project's 3+ years of construction. Construction-related GHG emissions associated with mobile sources were estimated using CalEEMod, EMFAC2014 emission factors, a Project-specific construction equipment list, and on-road haul/delivery truck and worker vehicle volume estimates provided by EBMUD. **Table 3.7-1** summarizes the Project's annual and total construction-related GHG emissions from off-road equipment and on-road trucks.

Table 3.7-1: Project Construction-related Greenhouse Gas Emissions

	GHG Emissions (MT CO_2e per year)		
Year	Off-Road Equipment	On-Road Vehicles	Total
2022	31	96	126
2023	327	777	1,103
2024	53	507	560
2025	28	242	270

NOTE: Due to rounding conventions, the numbers in the first two columns may not add up to totals in the right column.

SOURCE: CalEEMod for off-road equipment and EMFAC2014 emissions factors for on-road vehicles (see **Table 11** in **Appendix E**).

Neither the state nor BAAQMD has adopted a methodology or quantitative threshold, such as those that exist for criteria pollutants, which can be applied to a construction project to evaluate the significance of an individual project's construction-related contribution to GHG emissions. However, when the Project's construction-related annualized GHG emissions are compared to the BAAQMD's operational threshold for stationary sources of 10,000 MT CO_2e per year, the Project's annual and total construction-related GHG emissions shown in **Table 3.7-1** would remain well below BAAQMD's threshold and would be less than significant.

Although BAAQMD's CEQA Guidelines do not specify thresholds of significance for construction-related GHG emissions, they do encourage incorporation of BMPs to reduce GHG emissions during construction, where feasible and applicable. Consistent with these BMPs, EBMUD proposes to use excavated material as backfill where feasible, thereby minimizing GHG emissions associated with construction haul trucks and solid waste disposal.

Additionally, as detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Section 3.4A, Air Quality and Emissions Control, of Standard Construction Specification 01 35 44, requires construction crews to use alternative-fueled construction equipment and to recycle or reuse construction waste or demolition materials to the extent feasible.

Because Section 3.4A, Air Quality and Emissions Control, of EBMUD's Standard Construction Specification 01 35 44, Environmental Requirements, has been incorporated into the Project and includes specified air emission control BMPs to minimize short-term construction diesel exhaust emissions, and includes GHG emission controls which would reduce GHG emissions from fuel combustion, the Project construction impacts related to GHG emissions would be less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Following completion of Project pipelines, operational and maintenance practices for the Leland Reservoir would not change substantially. Therefore, direct GHG emissions associated with this maintenance traffic would be similar to existing levels, and operational GHG emissions would be less than significant.

Indirect operational GHG emissions are typically associated with emissions by electricity providers for line power and the source of line power that would be used by Project facilities is provided by PG&E and MCE. PG&E derives almost half of its power from eligible renewables and large hydroelectric, and MCE derives half of its power from eligible renewables, which would help minimize the potential for Project-related indirect GHG emissions.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact GHG-2: Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Criterion 2)

Construction of Project facilities would result in operation of diesel vehicles and equipment that would directly generate GHG emissions, and the vehicles and equipment would be subject to actions outlined in the California Climate Change Scoping Plan. Actions pertinent to Project facilities relate to emission controls that will be imposed in the future, including future implementation of additional controls (Phase 2) to reduce GHG emissions in new heavy-duty vehicles beyond 2018, continued implementation of diesel controls to reduce black carbon emissions from heavy-duty on-road engines as well as off-road engines, and reducing emissions of smog-forming pollutants by about 90 percent below 2010 levels by 2032 to meet the NAAQS for ozone. Heavy-duty vehicles used by EBMUD and its contractors would comply with applicable emission standards. As indicated in Section 3.2, Air Quality (**Table 3.2-3**), the Project’s construction-related ROG and NOx emissions (smog-forming pollutants or ozone precursors) would not exceed BAAQMD-recommended CEQA threshold levels. The CEQA threshold levels are intended to ensure that the SFBAAB would meet NAAQS standards. Therefore, the Project’s construction-related GHG emissions would not conflict with any plans, policies, or regulations adopted for the purpose of reducing GHG emissions (i.e., Scoping Plan actions, *2017 Clean Air Plan,* and the BAAQMD-recommended CEQA significance thresholds). Diesel trucks and off-road equipment operated by EBMUD and its contractors would comply with the latest vehicle emission standards established by CARB pursuant to the Scoping Plan.

According to EBMUD’s Climate Mitigation Action Plan (2014), the majority of EBMUD’s total operational GHG emissions are indirect GHG emissions associated with the use of electrical energy. However, EBMUD’s Plan indicates that 22 percent of EBMUD’s total GHG emissions are direct GHG emissions associated with fleet operations (vehicles and portable equipment). Following completion of Project facilities, operational and maintenance practices for the reservoir and pipelines would remain the same, which would include periodic maintenance. GHG emissions associated with maintenance traffic would be similar to existing levels so there would be no substantial increase in direct GHG emissions due to the Project. EBMUD’s heavy-duty maintenance vehicles would comply with the latest vehicle emission standards established by CARB pursuant to the Scoping Plan. Therefore, the Project’s direct operational

GHG emissions would not conflict with Scoping Plan actions, *2017 Clean Air Plan*, or the BAAQMD-recommended CEQA significance thresholds.

With respect to indirect operational GHG emissions associated with electrical energy use, EBMUD's *2014 Climate Change Monitoring and Response Plan* outlines how GHG emissions reductions are accomplished through implementation of energy efficiency practices, use of low-carbon energy sources, reductions in non-CO_2 emissions reductions (including black carbon), and carbon sequestration. EBMUD evaluates each project for water and energy conservation opportunities as well as the potential to create renewable energy. Energy efficiency measures implemented by EBMUD that pertain to the Project include the following:

- Minimizing GHG emissions as a goal in planning new projects;
- Reducing water use at District facilities through equipment upgrades and metering; and
- Reviewing the District's master equipment specifications to ensure energy efficient systems are appropriately procured.

Implementation of such measures would help to minimize the Project's indirect GHG emissions associated with energy use. Since EBMUD's *2014 Climate Change Monitoring and Response Plan* goal is to reduce GHG emissions by 50 percent by 2040 and energy efficiency measures would be implemented as part of the Project per the Response Plan, the Project's indirect operational GHG emissions would not conflict with Scoping Plan actions, *2017 Clean Air Plan*, or the BAAQMD-recommended CEQA significance thresholds resulting in a less than significant impact.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

3.7.4 References

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3.8 Hazards and Hazardous Materials

This section provides information used to evaluate the Project's potential effects related to hazards and hazardous materials. Hazardous materials and wastes can result in public health hazards if released to soil, groundwater, or air. Hazardous materials as defined in Section 25501(o) of the California Health and Safety Code are materials that, because of their "quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released to the workplace or environment." Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications, as well as to a limited extent in residential areas. This section is based on a Technical Memorandum regarding hazards and hazardous materials, which is included in **Appendix J**.

3.8.1 Environmental Setting

Regional Setting

The Leland Reservoir site is surrounded to the east and west by single family residential homes. A church, Sun Valley Bible Chapel, is adjacent to the southern property boundary of the reservoir site. The land between the northern property boundary and Old Tunnel Road is vacant, zoned for single family residential use, with the exception of three single family residential homes, south of Old Tunnel Road on the west side of Leland Drive. The proposed pipeline route is located under streets in single-family residential neighborhoods, and also passes a private preschool and elementary school (The Meher Schools). The Meher schools are located about 700 feet south of the reservoir site and immediately adjacent to the pipeline alignment.

Even though land around the Project site is primarily residential, there is the potential for hazards in the area, including high voltage power lines as well as gas and sewer lines. Physical damage to any of this infrastructure during construction could result in a risk of harm to people or structures at the Project site or its vicinity. There is a gas transmission pipeline owned by Pacific Gas and Electric located over ½ mile south of the reservoir site on Olympic Boulevard; this gas line is far enough from the Project construction area that it is not expected to be affected by the Project.

Local Setting

Leland Reservoir Site

As part of the Facilities Plan completed for the Leland Reservoir Replacement (EBMUD 2014), EBMUD evaluated the Leland Reservoir site for the presence of hazardous materials. The following description of the Leland Reservoir site is excerpted from the Facilities Plan.

In 1994, lead was detected at high concentrations in a Leland Reservoir roof caulking material sample and in a soil sample. Samples collected at Leland Reservoir as part of a reservoir materials assessment of all EBMUD reservoirs (1995, CH2MHill) did not exceed concentrations of contaminants that would require special Occupational Safety and Health Administration (OSHA) health and safety requirements or hazardous materials disposal. However, follow-up testing of Leland Reservoir in March 2017 concluded that roofing materials contain sufficient lead that demolition of the roof would need to be conducted in compliance with regulations pertaining to disturbing lead based construction materials (EBMUD 2017). As of December 2017, Leland reservoir's roof has been covered with the installation of a flexible, durable barrier that is fully adhered to building components, with all the edges and seams sealed. Surfaces with lead containing material are covered, preventing access and exposure to the lead containing material, and are designed to be water and dust tight. Because the roof's lead containing materials are covered they do not pose a public health hazard.

Known Contamination Sites

CalEPA maintains a list of hazardous substances sites (commonly referred to as the Cortese List) where soil and/or groundwater contamination is known or suspected to have occurred, typically as a result of leaking storage tanks or other spills. Since construction activities that encounter contaminated sites could create a potentially significant hazard, this list was consulted to identify any potential sites within the Project area. The Cortese List was consulted on June 20, 2016, and it was found that no contaminated sites or facilities have been identified within the Project area. The Cortese List search found that the nearest hazardous waste and substances site is 9 miles north of the Project site.

Airports

Safety hazards associated with airports and airstrips are generally related to construction of tall structures that could interfere with airplane flight paths. The closest airport is Buchanan Field Airport, located in Concord, approximately 8 miles from the Project site.

Schools within ¼ Mile of Project Site

Maps of the Project area were reviewed (including Google Maps, Google Earth and Bing Maps) and the only school within ¼ mile of the site is The Meher Schools with their preschool program, White Pony School, which are about 700 feet south of the reservoir, and immediately adjacent to the pipeline alignment.

3.8.2 Regulatory Framework

A waste is any material that is relinquished, recycled, or inherently waste-like. California Code of Regulations (CCR) Title 22, Division 4.5, Chapter 11, Articles 1 through 5 contain regulations regarding the Identification and Listing of Hazardous Waste. Article 2, Section 66261.1, contains regulations for the classification of hazardous wastes. Article 3 criteria classify waste as hazardous if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Article 4 also lists specific hazardous wastes, while Article 5 identifies specific waste categories, including Resource Conservation and Recovery Act (RCRA) hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes. If improperly handled and released to soil, groundwater, or air (in the form of vapors, fumes, or dust), hazardous materials and wastes can result in public health hazards.

Federal Policies and Regulations

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, also referred to as the Superfund law, regulates the potential for liability for cleanup of hazardous substances, provides for defense against liability, identification of contaminated sites, defines hazardous substances, petroleum products, and petroleum exclusions. The Superfund Amendments and Reauthorization Act (SARA), includes emergency planning and community right-to-know. Under CERCLA, facilities must report where toxic chemicals are transferred, chemical-specific information, and supplemental information, along with identification information for their facility to the USEPA. Hazardous substances must be reported, and releases to the environment accounted for. As part of CERCLA, USEPA has developed “Regional Screening Levels”, which establish levels of contamination that are used when a potential site is initially investigated to determine if potentially significant levels of contamination are present to warrant further investigation (USEPA 2016).

Resource Conservation and Recovery Act (RCRA)

RCRA regulates potential health and environmental problems associated with solid waste hazards and nonhazardous waste. RCRA defines solid waste as garbage or refuse, sludge from wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded materials. Solid waste can be either hazardous or non-hazardous. Hazardous waste is waste that burns readily, is corrosive, or reactive, or if it contains certain amounts of toxic chemicals, or has been included on the USEPA's list of hazardous wastes. RCRA regulates the disposal of waste and aims to reduce waste generation and restricts which facilities can receive hazardous wastes and regulates facilities to ensure proper handling of materials.

Emergency Planning and Community Right-To-Know Act (EPCRA)

EPCRA was passed in 1986 and requires federal, state, and local governments to create chemical emergency response plans for releases of hazardous substances. EPCRA also requires reporting on hazardous and toxic chemicals to increase awareness and access to information on chemical and individual facilities and requires that facilities report accidental releases of certain chemicals and hazardous substances, and provide such information to the public. Owners of facilities must create and make available Material Safety Data Sheets (MSDS) that describe the chemicals in question and health effects associated with them. Chemical inventories must also be reported if they require an MSDS.

Hazardous Materials Worker Safety Requirements

The federal OSHA is the federal agency responsible for ensuring worker safety. The federal regulations for worker safety are contained in Code of Federal Regulations (CFR) Title 29, as authorized in the Occupational Safety and Health Act of 1970. These regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling.

Preliminary Remediation Goals/Regional Screening Levels (RSLs)

USEPA has published screening levels, referred to as RSLs, for the evaluation of chemicals commonly found in soil or groundwater where a release of hazardous materials has occurred (USEPA 2016). For an industrial worker, the RSLs are conservative estimates of safe levels of a chemical that a worker could be exposed to in soil and groundwater. If the concentration of a chemical in the soil or groundwater is below the RSL, then it can be assumed that the chemical would not pose a health risk to the worker. Screening levels would generally be lower for industrial workers than construction workers because the industrial worker would be exposed to the hazard over a lifetime while the construction worker would only be exposed for the duration of construction. Therefore, safe levels of chemicals in soil and groundwater would generally be higher for construction workers than industrial workers.

State Policies and Regulations

California Health and Safety Code

The California Health and Safety Code contains statewide regulations designed to protect public health and safety. Sections of the state code relevant to the Project include the Hazardous Materials and the Hazardous Waste and Substances Site List (Cortese List), which is developed under Section 65962.5 of the California Government Code. The list is compiled and maintained by the DTSC under CalEPA. The Cortese List is a list of all sites identified as having hazardous waste releases.

Owners of facilities that handle, store, use, treat, dispose of, or generate hazardous materials are required to create hazardous-waste management programs under Division 20, Chapter 6.5, section 25100 et seq. Owners of facilities that generate hazardous wastes in excess of 26,400 pounds per year, or extremely hazardous wastes in excess of 26.4 pounds per year, must adhere to California Health and Safety Code Section 25244.12 et seq. which requires facilities to determine the types and amounts of wastes generated, identify procedures to reduce waste generation, develop written documentation that addresses waste reduction, develop a source-reduction evaluation review and plan, prepare a plan summary and hazardous waste management report, and a report summary. Hazardous materials handling, reporting requirements, and local agency surveillance programs are regulated under the California Health and Safety Code, Section 25500 et seq.

Transportation of Hazardous Wastes

Regulatory requirements for the transport of hazardous wastes in California are specified in 22 CCR Division 4.5 Chapters 13 and 29. In accordance with these regulatory requirements, all hazardous waste transporters must have identification numbers, which are used to identify the hazardous waste handler and to track the waste from its point of origin to its final disposal disposition (DTSC 2007). The identification number, issued by either USEPA or DTSC, depends on whether the waste is classified as hazardous by federal regulations or only under California regulations. Hazardous waste transporters must comply with the California Vehicle Code, California Highway Patrol Regulations (CCR Title 13); the California State Fire Marshal Regulations (CCR Title 19); and U.S. Department of Transportation (DOT) Regulations (CFR Title 49); and USEPA Regulations (CFR Title 40). A hazardous waste manifest is required for transport of hazardous wastes and documents the legal transport and disposal of the waste, which is signed by the generator and transporter(s) of the waste as well as the disposal facility. California regulations specify specific cleanup actions that must be taken by a hazardous waste transporter in the event of a discharge or spill, and for the safe packaging and transport of hazardous wastes.

Waste Classification Criteria

In accordance with CCR Title 22 Section 66261.20, et seq., excavated soil would be classified as a hazardous waste if it exhibits the characteristics of ignitability, corrosivity, reactivity, or toxicity. A waste is considered toxic in accordance with CCR Title 22 Section 66261.24 if it contains:

- Total concentrations of certain substances at concentrations greater than the Total Threshold Limit Concentration (TTLC);
- Soluble concentrations greater than the Soluble Threshold Limit Concentration (STLC);
- Soluble concentrations of certain substances greater than federal toxicity regulatory levels using the Toxicity Characteristic Leaching Procedure (TCLP); or
- Specified carcinogenic substances at a single or combined concentration of 0.001 percent.

A waste is considered hazardous by state and federal regulations if the soluble concentration exceeds the federal regulatory level as determined by the TCLP. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to exceed the regulatory level in the extract. A waste is also considered hazardous under state regulations if the soluble contaminant concentration exceeds the STLC as determined by the Whole Effluent Toxicity (WET) method. Because the WET method is performed using a 10-to-1 dilution of the sample, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract. A waste may also be classified as toxic if testing indicates toxicity greater than the specified criteria.

Environmental Screening Levels

The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) has published Environmental Screening Levels for the evaluation of chemicals commonly found in soil or groundwater where a release of hazardous materials has occurred (SFBRWQCB 2008). Similar to USEPA Preliminary Remediation Goals, these screening levels are conservative estimates of safe levels of a chemical that a worker could be exposed to in soil and groundwater. If the concentration of a chemical in the soil or groundwater is below the Environmental Screening Level, then it can be assumed that the chemical would not pose a health risk to the worker. However, these screening levels are based on conservative exposure assumptions, and it is possible to conduct a more detailed risk assessment using project-specific exposure assumptions to develop a higher concentration that would be considered safe.

Hazardous Materials Worker Safety Requirements

California state regulations concerning the use of hazardous materials in the workplace are included in CCR Title 8, and include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation and is enforced by Cal/OSHA. Cal/OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information relating to hazardous substances and their handling, and preparation of health and safety plans to protect workers. Cal/OSHA standards are generally more stringent than federal OSHA regulations.

California Fire Code

The California Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition;
- Spill control in all storage, handling, and dispensing areas; and
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code, Article 79, includes specific requirements for the safe storage and handling of flammable and combustible liquids. Specific requirements address fire protection; prevention and assessment of unauthorized discharges; labeling and signage; protection from sources of ignition; specifications for piping, valving, and fittings; maintenance of above ground tanks; requirements for storage vessels, vaults, and overfill protection; and requirements for dispensing, using, mixing, and handling of flammable and combustible liquids.

Fire Hazard Severity Zone Maps

California law requires the California Department of Forestry and Fire Protection (CALFIRE) to identify areas based on the expected severity of fire hazard. The areas, or “zones,” are based on factors such as fuel (material that can burn), slope and fire weather. There are three zones, based on increasing fire hazard, classified as medium, high and very high. Pursuant to Government Code Section 51175, CALFIRE has provided recommended maps for Very High Fire Hazard Severity Zones in Local

Responsibility and include incorporated cities, cultivated agriculture lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CALFIRE under contract to local government. The Project site is not in a Very High Fire Hazard Severity Zone.

Local Policies and Regulations

DTSC-Certified Unified Program Agency (CUPA)

The Certified Unified Program Agency (CUPA) addresses impacts from hazardous wastes to meet the requirements identified by the DTSC-Unified Program. The DTSC-Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs: *Hazardous Materials Release Response Plans and Inventories; California Accidental Release Prevention Program; Underground Storage Tank Program; Above Ground Petroleum Storage Act Program; Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs; and California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements.* The CUPA responsible for the Project area is the Contra Costa County Health Services Department.

City of Lafayette General Plan

The Safety Element, Chapter VI, of the City of Lafayette's General Plan (City of Lafayette 2009) addresses the protection of the community from unreasonable risks associated with natural and manmade hazards and contains goals and policies that relate to hazardous materials and emergency response. The following goals/polices in the General Plan relating to hazards and hazardous materials would apply to the Project:

> *Goal LU-5: Reduce the hazards of the storage, transportation, and disposal of hazardous materials*
>
> Policy S-5.3: Transportation, Storage and Disposal Facilities: Provide measures to protect the public from the hazards associated with the Transportation, Storage and Disposal ("TSD") of hazardous wastes.
>
> *Goal S-8: Provide adequate response and support services in the event of a major emergency or natural disaster*
>
> Policy S-8.5: Identify and publicize evacuation routes to be used in emergencies.
>
> *Goal S-9: Maintain an effective medical emergency response system.*
>
> Policy S-9.1: Work to improve emergency medical response service in Lafayette.

EBMUD Practices and Procedures

EBMUD Standard Construction Specifications

The following EBMUD's Standard Construction Specifications and Procedures include practices and procedures applicable to hazards and hazardous materials and are further described below:

- EBMUD Standard Construction Specification 01 35 44 (Environmental Requirements)
- EBMUD Standard Construction Specification 01 35 24 (Project Safety Requirements)
- EBMUD Standard Construction Specification 02 83 13 (Lead Hazard Control Activities)

- EBMUD Standard Construction Specification 01 55 26 (Traffic Regulation)
- EBMUD Procedure 711 (Hazardous Waste Removal)

The EBMUD Standard Construction Specification 01 35 44 stipulates that the construction crew shall be responsible for maintaining compliance with applicable federal, state and local requirements. The requirements include preparation of plans that outline procedures to be followed to ensure the safe and lawful handling of hazardous materials, implementation of plans, and documentation of compliance. EBMUD reviews submittals for conformance with the requirements of the contract document and specified laws and regulations.

Controls on Site Activities. EBMUD Standard Construction Specification 01 35 44 Section 1.1(B) requires that activities on the construction site are controlled to prevent discharge of contaminated stormwater. Applicable requirements include:

- No debris including, but not limited to, demolition material, treated wood waste, stockpile leachate, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into storm drains or surface waters or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan.
- Excess material shall be disposed of in locations approved by the Engineer consistent with all applicable legal requirements and disposal facility permits.
- Do not create a nuisance or pollution as defined in the California Water Code. Do not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board, as required by the Clean Water Act.
- Clean up all spills and immediately notify EBMUD in the event of a spill.
- Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans.
- Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work and staging areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable.
- Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material.
- Construction staging areas shall be graded, or otherwise protected with Best Management Practices (BMPs), to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters including wetlands, drainages, and creeks.
- Any chemical or hazardous material used in the performance of the Work shall be handled, stored, applied, and disposed of in a manner consistent with all applicable federal, state, and local laws and regulations.
- Contaminated materials excavated and/or removed from the construction area shall be disposed of in a manner consistent with all applicable local, state, and federal laws and regulations.

Stormwater Pollution Prevention Plan (SWPPP). EBMUD Standard Construction Specification 01 35 44 Section 1.3(A) requires that, before the start of construction, the contractor must submit a SWPPP that describes measures that shall be implemented to prevent the discharge of contaminated storm water runoff from the jobsite. Contaminants to be addressed include, but are not limited to, soil, sediment, concrete residue, pH less than 6.5 or greater than 8.5, and chlorine residual and all other contaminants known to exist at the jobsite location.

Water Control and Disposal Plan. EBMUD Standard Construction Specification 01 35 44 Section 1.3(B) requires that the Contractor shall submit a detailed Water Control and Disposal Plan for EBMUD's acceptance prior to any work at the jobsite. The plan shall comply with requirements of all applicable discharge permits, including State Water Resources Control Board (SWRCB) Order WQ 2014-0194-DWQ/General Order No. CAG 140001 – NPDES Permit for Drinking Water System Discharges; SWRCB Order No. 2012-0006-DWQ NPDES No. CAS000002 – Construction General Permit; Sanitary Sewer Discharge Permit. Contractor shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation into receiving waters.

Construction and Demolition Waste Disposal Plan. EBMUD Standard Construction Specification 01 35 44 Section 1.3(C) requires that prior to construction, the contractor must prepare a Construction and Demolition Waste Disposal Plan and submit a copy of the plan for EBMUD's acceptance prior to disposing of any material (except for water wastes which shall be addressed in the Water Control and Disposal Plan). The plan shall identify how the contractor will remove, handle, transport, and dispose of all materials required to be removed in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. The contractor shall procure the necessary permits required by the local, state, and federal agencies having jurisdiction over the handling, transportation, and disposal of construction and demolition waste and include a list of reuse facilities, recycling facilities and processing facilities that will be receiving recovered materials. The plan must identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the state of California and local ordinance and regulations) and list the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials. The plan must also identify each type of waste material to be reused, recycled or disposed of, and estimate the amount, by weight and shall include the sampling and analytical program for characterization of any waste material, as needed, prior to reuse, recycle or disposal. Materials or wastes shall only be disposed of at facilities approved of by EBMUD. Prior to disposition of wastes, contractor must submit permission to reuse, recycle, reclaim, or dispose of material from reuse, recycling, reclamation, or disposal site owner along with any other information needed by the EBMUD to evaluate the acceptability of the proposed reuse, recycling, or disposal site. Contractor shall disclose all information pertinent to the characterization of the material or waste to the EBMUD.

Spill Prevention and Response Plan. EBMUD Standard Construction Specification 01 35 44 Section 1.3(D) requires that, prior to construction contractor shall submit plan detailing the means and methods for preventing and controlling the spilling of known hazardous substances used on the jobsite or staging areas. The plan shall include a list of the hazardous substances proposed for use or generated by the contractor on site, including petroleum products, and measures that will be taken to prevent spills, monitor hazardous substances, and provide immediate response to spills. Spill response measures shall address notification of the EBMUD and appropriate agencies including phone numbers; spill-related worker, public health, and safety issues; spill control, and spill cleanup.

Project Safety and Health Plan. EBMUD Standard Construction Specification 01 35 24 Section 1.3(B) requires that, before the start of construction, the contractor shall prepare a Project Safety and Health Plan approved by EBMUD that addresses anticipated hazards related to hazardous substances, fall protection, confined spaces, and trenches or excavations. The plan must designate a Project Health and Safety Representative and a qualified person to take air samples and measurements of known or suspected hazardous materials. All personnel who will likely be exposed to hazardous substances must have appropriate training. The plan shall include an Emergency Action Plan in the event of an accident or serious unplanned event that requires notifying any responsive agencies (e.g., fire department, PG&E, rescue teams).

Excavation Safety Plan. EBMUD Standard Construction Specification 01 35 24 Section 1.3(C) requires that, before the start of excavation, the contractor shall prepare an Excavation Safety Plan, approved by EBMUD, which describes measures for worker protection and control of ground movement. The plan must include drawings and details of system(s) to be used, the area in which each type of system will be used, dewatering, means of access and egress, storage of materials, and equipment restrictions.

Lead Hazard Control Activities. EBMUD Standard Construction Specification 02 83 13 requires that, before the start of demolition, the contractor shall prepare a Lead Demolition Plan detailing handling, engineering control, removal and disposal procedures for lead-containing materials. All workers performing work shall meet the requirements of the California Department of Health Services lead-related construction interim certification. The lead work area will be isolated using caution tape, and the job site shall be secured at all times. Transportation equipment for removal of lead-containing materials shall be suitable for loading, temporary storage, transit and unloading of waste without exposure to persons or property. Contractor shall removal all evidence of lead-containing materials from the jobsite that are related to project demolition.

Traffic Regulation. EBMUD Standard Construction Specification 01 55 26 stipulates that the contractor shall comply with requirements pertaining to traffic regulation during Project construction activities. The Specifications outline what should be included in a Traffic Control Plan and how that Plan shall be implemented during construction activities. Where specific requirements are not detailed in the Specification or in applicable permits, the contractor shall comply with the Caltrans Manual of Traffic Controls for Construction and Maintenance Work Zones.

Hazardous Waste Removal. Procedure 711, Hazardous Waste Removal, defines hazardous waste and establishes responsibilities for removal of hazardous wastes from EBMUD facilities. Procedure 711 outlines specific steps and responsibilities for: characterizing the waste and determining what analyses are needed to classify the waste; coordinating waste disposal, reuse or recycling issues; labeling, storing, inspecting, and maintaining inventory records for the waste; and reviewing, signing, and tracking any hazardous waste handling and disposal requirements and hazardous waste manifests.

EBMUD Environmental Compliance Manual

EBMUD’s Environmental Compliance Manual requires implementation of procedures during construction to protect workers and the environment. The Trench Spoil Best Management Practices Program is applicable to the Project and would require proper disposal of spoil, which is excess material removed from the pipeline trench. The program requires site investigation, collection and analysis of soil, slurry and groundwater samples if needed, and depending on the results of the investigation, advanced soil, slurry and groundwater disposal arrangements.

3.8.3 Impact Analysis

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Project would result in significant hazards and hazardous materials impacts. Impacts are evaluated based on the known potentially hazardous materials that would be used or stored on site during construction and operation, potential for accidental hazardous substance release, and presence of other health-threatening factors in the Project vicinity. Each potential impact is assessed in terms of the applicable regulatory measures and EBMUD construction specifications, and mitigation measures are identified for significant impacts.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact on hazards and hazardous materials would be considered significant if the Project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
6. For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Criteria Requiring No Further Analysis

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 4: Located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.* The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; therefore, there is no impact.
- *Criterion 5: 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, result in a safety hazard for people residing or working in the project area.* The Project is not located within an airport land use plan or within two miles of a public airport. In addition, none of the Project's activities would create any significant hazards for people residing or working in or near an airport. Due to the distance of the closest airport from the Project area and the nature of Project related construction activities, the Project would not result in any safety hazards surrounding the airport; therefore, there is no impact.
- *Criterion 6: For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.* The Project is not located the vicinity of a private airstrip and would not result in any safety hazards surrounding an airstrip; therefore, there is no impact.
- *Criterion 8: Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildland.* The Project is located in a highly urbanized area with no adjacent

wildlands and is not located within a mapped area of high fire risk; therefore, the Project would have no impact related to wildland fire hazards.

Impacts and Mitigation Measures

Impact HAZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Criterion 1).

Construction activities are expected to involve the transport, use, and disposal of hazardous materials, including but not limited to motor fuels, paints, oils, and grease. The transport, use, and disposal of hazardous materials listed above could pose a significant threat to human health or the environment if not properly managed. Relatively small amounts of the listed materials, which are not considered acutely hazardous, would be transported, used, and disposed of during construction. Workers handling hazardous materials are required to adhere to OSHA and CAL OSHA health and safety requirements. Hazardous materials must be transported to and from the proposed Project area in accordance with RCRA and United States Department of Transportation (US DOT) regulations, managed in accordance with the Contra County Department of Environmental Health's regulations, and disposed of in accordance with RCRA and the CCR at a facility that is permitted to accept the waste. Since compliance with existing regulations and programs are mandatory, proposed Project construction activities are not expected to create a potentially significant hazard to the public or the environment. Therefore, impacts related to the routine transport, use, or disposal of hazardous materials during proposed Project construction would be less than significant.

Operation of the Project would not result in the routine use or transport of hazardous materials within the Project area, or the release of hazardous materials into the environment. The Project consists of constructing two 8-MG water tanks and 3,650 linear feet of 36-inch pipeline. Once constructed, operation of the water storage facilities and pipeline would not require use of hazardous materials and would not generate hazardous waste. Therefore the impact from operation of the Project is less than significant, and no mitigation is required.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact HAZ-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment (Criterion 2).

Construction of the Project would involve transporting and using hazardous materials such as paints, solvents, cements, lubricants, and fuels that must be properly handled and disposed of to minimize potential effects to human health and the environment. These materials would be contained in equipment and stored at the construction site. Demolition of the existing reservoir would include removal of the roof, which has been determined to include sealant materials containing elevated levels of lead. Although there is no indication that there is contaminated soil or groundwater at the Leland Reservoir site, there is a possibility that contamination could be uncovered during construction of the reservoir or pipeline. Accidental release or improper disposal of hazardous substances present in soils or groundwater could pose a potentially significant impact to human health and the environment. In addition, although no gas transmission lines are present in the Project area, rupture of a subsurface smaller gas pipeline during construction trenching could result in bodily injury or building structure hazard in the Project area.

As described in the Project Description, through implementation of EBMUD Standard Construction Specification 01 35 44, Environmental Requirements, Section 1.3, activities on the construction site would be controlled to prevent discharge of contaminated stormwater. Prior to construction, the contractor would prepare a Construction and Demolition Waste Disposal Plan and submit a copy of the plan for EBMUD's acceptance prior to disposing of any material (except for water wastes, which shall be addressed in the Water Control and Disposal Plan). The plan would identify how the contractor would remove, handle, transport, and dispose of all materials, which must be removed in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. In addition, prior to construction the contractor would submit a plan detailing the means and methods for preventing and controlling spills of known hazardous substances used on the job site or staging areas.

Through implementation of EBMUD Standard Construction Specification 01 35 24, Project Safety Requirements, Section 1.3, before the start of construction, the contractor would prepare a Project Safety and Health Plan approved by EBMUD that addresses anticipated hazards related to hazardous substances, fall protection, confined spaces, and trenches or excavations. The contractor would also prepare an Excavation Safety Plan, approved by EBMUD, which describes measures for worker protection and control of ground movement.

Through implementation of EBMUD Standard Construction Specification 02 83 13, Lead Hazard Control Activities, before the start of demolition, the contractor would prepare a Lead Demolition Plan detailing handling, engineering control, removal and disposal procedures for lead-containing materials.

Implementation of EBMUD Procedure 711, Hazardous Waste Removal, would carry out specific steps and responsibilities for characterizing waste and determining what analyses are needed to classify the waste; coordinating waste disposal, reuse or recycling issues; labeling, storing, inspecting, and maintaining inventory records for the waste; and reviewing, signing, and tracking any hazardous waste handling and disposal requirements and hazardous waste manifests.

Implementation of the above EBMUD Standard Construction Specifications and Procedures during Project construction would ensure that the Project's impacts related to the release of hazardous materials into the environment would be less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact HAZ-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Criterion 3).

Although construction would occur within one-quarter mile of The Meher Schools, construction would not require the use of acutely hazardous materials, and all use of hazardous materials during construction would be subject to compliance with federal, state and local hazardous materials regulations. It is thus expected that construction in accordance with these laws and regulations would not result in adverse effects on the schools. Impacts would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact HAZ-4 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Criterion 7).

Construction of the pipelines would require temporary lane and roadway closures during laydown of the pipelines and trenching. Although there are alternative vehicle routes in the Project vicinity, impacts to emergency access could occur during the Project's construction period. As described in the Project Description, through implementation of EBMUD Standard Construction Specification 01 55 26, the construction contractor would comply with specific requirements pertaining to traffic regulation. The Specifications outline what should be included in a Traffic Control Plan and how that Plan shall be implemented during construction activities. Where specific requirements are not detailed in the Specification or in applicable permits, the contractor shall comply with the Caltrans Manual of Traffic Controls for Construction and Maintenance Work Zones. Implementation of traffic regulation controls outlined in EBMUD Standard Construction Specification 01 55 26 would require a contingency plan for emergency acess and **Mitigation Measure TRA-2** requires notification and coordination with emergency response services and provisions to allow removal of barricades and closure of trenches to ensure that the Project's interference with adopted emergency response plans or emergency evacuation plans would be less than significant. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Significance Determination before Mitigation

Potentially significant.

Mitigation Measures

See **Mitigation Measure TRA-2** in Section 3.13 for measures to maintain emergency access.

Significance Determination after Mitigation

Less than significant.

Cumulative Impact Analysis

The geographical extent for cumulative impacts related to hazardous materials includes areas in the vicinity of the Project site that would experience construction activity at the same time as the Project. Given that the Project would not result in environmental impacts during its operational period, only the construction period is evaluated relative to potential cumulative impacts.

The Project would be required to adhere to all applicable laws and regulations pertaining to the use and storage of hazardous materials during construction. As described above, implementation and compliance with EBMUD's standard practices and procedures would ensure that the Project's hazardous materials impacts would be less than significant. Relative to the cumulative projects discussed in this document, the construction periods for all of those projects would be complete by 2019, whereas the Project's construction period would not begin until 2022. Because there would be no overlap in construction activity between the Project and the various cumulative projects, there would be no cumulatively considerably impact.

3.8.4 References

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3.9 Hydrology and Water Quality

This section evaluates whether construction and operation of the Project would result in potentially significant impacts related to hydrology and water quality. The hydrologic setting is described and potential impacts to hydrology and water quality are assessed. This section is based on a Technical Memorandum regarding hydrology and water quality impacts, which is included in this EIR as **Appendix K**.

3.9.1 Environmental Setting

Regional and Local Hydrology

The Project site is in the western portion of Contra Costa County, which is in the San Francisco Bay Basin. The site is within the Las Trampas Creek Watershed, a sub-watershed of the Walnut Creek Watershed, and is east of Reliez Creek, which flows into Las Trampas Creek southwest of the site (see **Figure 3.9-1**). The Las Trampas Creek Watershed drains 27 square miles of Lafayette, Orinda, Moraga, and Walnut Creek. Las Trampas Creek converges with San Ramon Creek and Tice Creek, forming Walnut Creek (Walnut Creek Watershed Council 2013). The Las Trampas Creek Watershed is located on the western side of the Walnut Creek Watershed and flows north into Suisun Bay and eventually the San Francisco Bay.

At 146 square miles, the Walnut Creek Watershed is Contra Costa County’s largest watershed. Covering over 20 percent of the county, the watershed contains 23 percent of the county’s channels with over 309 mapped creeks and 35 percent of its population with 340,000 inhabitants. Similar to the surrounding region, the Walnut Creek Watershed exhibits a Mediterranean climate of warm dry summers and mild, wet winters (Walnut Creek Watershed Council 2013).

Flooding

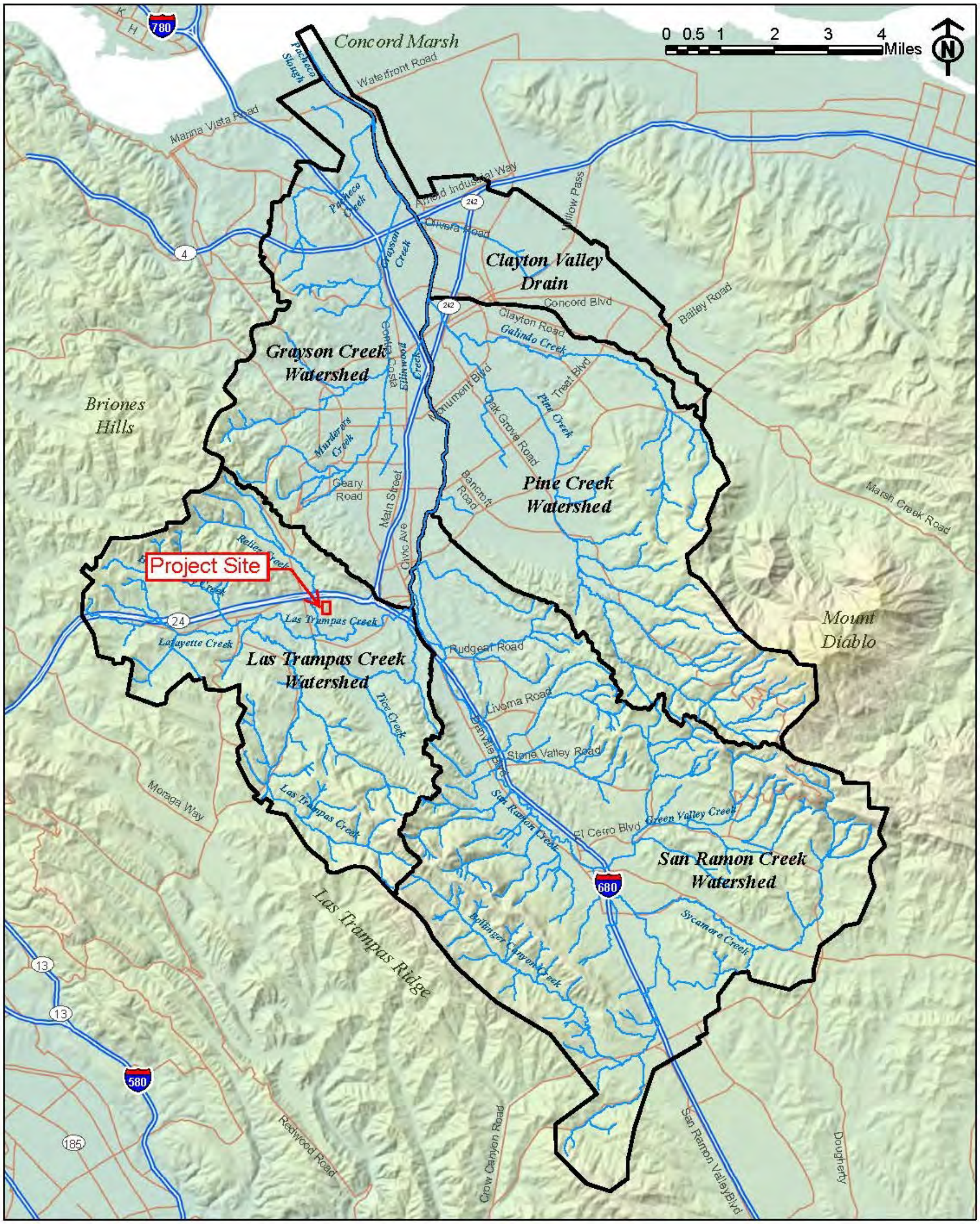
In 2011, the City of Lafayette conducted a hazards assessment, and after reviewing eight other local hazards, ranked flooding as the second biggest hazard based on past disasters and expected future impacts. While it was noted that localized creek flooding was a factor, the majority of risk was associated with the Lafayette Reservoir. In the unlikely event of a dam failure, a large portion of the downtown (City of Lafayette 2011) may be in the inundation zone. However, the Project site would not be affected by a failure of the Lafayette Reservoir and the Leland Reservoir is not identified as posing a risk of flooding.

In addition to a local assessment, flood hazard risks were evaluated by the Federal Emergency Management Agency (FEMA) by defining special flood hazard areas within Lafayette for use by the National Flood Insurance Program (NFIP), in which the city participates to provide residents with federally-backed flood insurance. Lafayette is identified as having a moderate to low flood risk, and no area within the Project site is located within the 100-year flood plain.

Storm Drainage

In an urban setting, flooding risk is dependent on several factors, such as duration and intensity of rainfall, the ratio of impervious to pervious land surfaces, and the location/capacity of the City’s storm drain system. It is the function of the storm drain system (which includes catch basins, open channels and ditches, and subsurface drains) to drain surface runoff into gutters, storm drain inlets, channels, creeks, and eventually the San Francisco Bay. There is an existing storm drain on the west side of Leland Drive, adjacent to the Project site, which flows into a larger storm drain on the east side of Leland Drive via a connection that crosses under Leland Drive at Patty Way.

Figure 3.9-1: Walnut Creek Watershed and Associated Sub-Watersheds



Source: Walnut Creek Watershed Council 2013

Storm drain maintenance within the City of Lafayette is provided by the City's Department of Public Works, whose services include maintenance and repair of the City's storm drainage system, removal of drainage impediments, minor storm drain repairs, cleaning of storm drains and roadside ditches, storm damage cleanup, and minor mud slide cleanup (City of Lafayette 2016).

Surface Water Quality

As defined in the San Francisco Bay Regional Water Quality Control Board's (SFBRWQCB) Watershed Management Initiative, significant water quality issues in watersheds in Contra Costa County include stream and wetland impacts from proposed new development and existing development; water quality impairment from pesticides, fertilizers, animal waste, automobiles, and other typical urban runoff pollutants; changes to the hydrograph of watersheds due to development and increase of impervious surfaces; and water quality impacts from industrial and commercial site development (SFBRWQCB 2004).

In addition to the SFBRWQCB Watershed Management Initiative, the SFBRWQCB addresses Region-wide water quality concerns through the creation and triennial update of a Water Quality Control Plan (Basin Plan). Serving as the SFBRWQCB's master water quality control planning document, the Basin Plan designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. Reliez Creek, which is a tributary of Las Trampas Creek, is located approximately 160 feet west of Windsor Drive and approximately 700 feet west of the reservoir site. Neither Reliez Creek nor Las Trampas Creek are considered to be water-quality impaired because they are not on the SWRCB list of impaired water bodies (State Water Resources Control Board 2010).

Groundwater

The California Department of Water Resources (DWR) has long recognized the need for collection, summary, and evaluation of groundwater data as tools in planning optimal use of the groundwater resource. DWR's Bulletin 118 compiles information including geology, groundwater quantity and quality, and current groundwater management practices for each groundwater basin (California Department of Water Resources 2015). No groundwater basins underlie the Project site.

Seiche/Tsunami

Tsunamis are sea waves or tidal waves caused by offshore earthquakes, landslides, or volcanic eruptions. Seiches are waves in an enclosed or semi-enclosed body of water such as a lake, reservoir, or harbor resulting from seismic activity. Because the Project site is located over 12 miles inland from the nearest ocean body of water (San Francisco Bay), it is not in an area subject to tsunami. The Project site is not located near any other large water bodies that would be capable of generating a seiche.

Project Site Hydrology

Surface drainage features of the reservoir site are described in the Leland Reservoir Replacement Facilities Plan (EBMUD 2014). The Leland Reservoir Replacement Facilities Plan determined that drainage from the Leland Reservoir site is directed to three primary locations. Water drains from the western side of the reservoir to a gutter on Mars Court and flows into the storm drain at the intersection of Mars Court and Windsor Drive, and from the northwest corner water drains through an underground pipe to a drainage inlet on Old Tunnel Road. On the eastern portion of the site, where construction would take place, a 10-inch corrugated metal pipe extends from the northeast corner of the reservoir to a drainage inlet located on the west side of Leland Drive at the north side of the reservoir access road (EBMUD 2014). No streams, springs, or seeps occur on the Project site.

Surface drainage is also captured by the City's storm drain system components located between the Project site's eastern property boundary and the west side of Leland Drive, north and south of the reservoir access road. North of the reservoir access road are two curb inlet catch basins that connect to the City's storm drain system. South of the reservoir access road is a concrete V-ditch that connects to the storm drain system via a catch basin at the north side of Patty Way.

3.9.2 Regulatory Framework

This section describes federal, state and local policies and regulations relative to hydrology that may apply to the Project.

Federal Policies and Regulations

Clean Water Act

Originally titled the Federal Water Pollution Control Act of 1972, the Clean Water Act (CWA) is administered by USEPA and the RWQCBs. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA allowed USEPA to delegate the National Pollutant Discharge Elimination System (NPDES) Permit Program to state governments, enabling states to perform many of the permitting, administrative, and enforcement aspects of the NPDES Program. In California, the NPDES Permit Program is managed by the SWRCB and nine RWQCBs. The SFBRWQCB has jurisdiction over the Project area as well as over the entire lengths of both Las Trampas Creek and the Walnut Creek Watershed.

Section 303(d)

CWA Section 303(d) requires states to develop lists of water bodies that will not attain water quality standards after implementation of technology-based effluent limitations by point-source dischargers. Section 303(d) further requires states to develop a Total Maximum Daily Load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of pollutant loading that the water body can receive and still meet water quality standards. In 2011, the EPA gave final approval to a revised list of impaired water bodies (the 303(d) list) prepared by the state. There are no streams in the vicinity of the Project site that are on the 303(d) list. In the Walnut Creek Watershed, only Grayson Creek, which runs through the City of Pleasant Hill several miles north of the Project area, is on the 303(d) list, which designates the creek as impaired for trash.

Section 402

CWA Section 402 regulates stormwater discharges to surface waters through the NPDES program. In California, USEPA authorizes the SWRCB to oversee the NPDES program through the RWQCBs, which regulate stormwater discharges associated with construction and require a permit for any construction project that would cause more than one acre of land disturbance. Construction activities are regulated under a statewide General Permit for Discharges of Storm Water Associated with Construction Activity, which was adopted by the SWRCB in 2009 as NPDES Order No. CAS000002, Order No. 2009-0009-DWQ (Construction General Permit) as amended by 2010-0014-DWQ and 2012-006-DWQ. Effective July 1, 2010, the amended General Construction Permit requires the development and implementation of a SWPPP. The SWPPP must include a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the site. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect stormwater runoff; a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under provisions of CWA Section 404. Construction activities involving placement of fill into jurisdictional waters of the U.S. are regulated by the USACE through permit requirements.

National Flood Insurance Program

NFIP was created to promote flood awareness and reduce flood losses of properties within Special Flood Hazard Areas. Drainage and related flooding hazards are managed in response to requirements established by the National Flood Insurance Act of 1986 and the Flood Disaster Protection Act of 1973, as amended. Requirements of the NFIP are included in the Building Code and through overall City and interagency programs for flood management. In implementing NFIP, FEMA requires that new construction in a flood hazard area meet minimum design standards to place occupied structures above flood hazard areas. As noted above, the Project site is not located within a flood hazard area.

State Policies and Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California’s statutory authority for the protection of water quality. Under this act, the state must adopt water quality policies, plans, and objectives that protect the state’s waters. The act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

San Francisco Bay Regional Water Quality Control Board (Region 2)

The California Water Code established the RWQCBs as the primary state agencies for protecting the quality of waters. Nine Regional Boards were established, whose boundaries and watershed/water quality requirements are based on the unique differences in climate, topography, geology and hydrology for each watershed. Each Regional Board makes critical water quality decisions for its region, including setting standards, issuing permits (waste discharge requirements), determining compliance with those requirements, and taking appropriate enforcement actions. The Regional Board with jurisdiction over the Project site is the SFBRWQCB (Region 2). In addition to enforcing the rules and regulations established by the SWRCB, the SFBRWQCB preparing and updating the Water Quality Control Plan for the region.

Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)

The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan:

1) Designates beneficial uses for surface and ground waters;
2) Sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy;

3) Describes implementation programs to protect the beneficial uses of all waters in the Region; and
4) Describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan [California Water Code Sections 13240 thru 13244, Section 13050(j)].

The Basin Plan is used as the regulatory authority for water quality standards established in local NPDES permits and other RWQCB decisions.

Local Policies and Regulations

Contra Costa Clean Water Program

In order to comply with the Federal CWA regulations, Contra Costa County, nineteen of its incorporated cities, and the Contra Costa Flood Control & Water Conservation District have joined together to form the Contra Costa Clean Water Program (CCCWP) (Contra Costa County 2016). The CWA requires municipalities to obtain permits that outline programs and activities to control surface stormwater pollution. The CCCWP is responsible for ensuring that the County complies with its municipal stormwater NPDES permit. Contra Costa County is included in the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008. Provision C.3 of the municipal stormwater permit governs both new development and redevelopment of existing facilities such as the Leland Reservoir.

The CCWP's Stormwater C.3 Guidebook establishes requirements to prevent increases in runoff flows and to address runoff pollutant discharges (CCCWP 2012). Projects on previously developed sites need to retrofit drainage to provide treatment of runoff from all impervious areas on the entire site, if the project results in an alteration of more than 50 percent of the impervious surface of a previously existing facility, and the existing facility were not subject to stormwater treatment measures.

The CCCWP acts on behalf and under the direction of the Program's Management Committee. The program coordinates, administers, and implements activities its municipal members decide to conduct as a group. In particular, the Program provides guidance and training on the following:

- Adopting legal ordinances
- Conducting public education programs such as stenciling informational signs like "No Dumping Drains to Bay" on storm drain covers
- Instituting or enhancing programs such as street sweeping, storm drain maintenance
- Performing erosion control practices
- Identifying illicit pollutant discharges to the storm drain system, and requiring new development and industrial discharge controls through non-point source BMPs and source control measures.

City of Lafayette

The City of Lafayette General Plan, Open Space and Conservation Chapter, identifies the following and policy and programs to improve water quality in water courses:

Policy OS-6.1: Reduce Watercourse Pollution: Minimize pollutants in storm water runoff.

Program OS-6.1.1: Enforce the Municipal Code prohibiting: (1) the discharge of any substances other than storm water into storm drains and creeks, (2) illicit dumping of wastes into storm drains and creeks, and (3) the dumping of debris and refuse in and near waterways and their riparian areas.

Program OS-6.1.2: Consider adopting the erosion and sedimentation controls described in ABAG's Manual of Standards for Erosion and Sediment Control, published in June 1995.

EBMUD Environmental Compliance Manual, Section 3.0 Water Quality Protection

EBMUD’s Environmental Compliance Manual includes requirements for water quality protection that would minimize water quality impacts associated with Project construction.

Potable Water Discharges

EBMUD complies with the NPDES permit issued by the SFBRWQCB for planned, unplanned, and emergency discharges from the potable water transmission, storage, and distribution system. For planned discharges, EBMUD must submit a site-specific Discharge Plan to the SFBRWQCB at least one week in advance of the discharge with copies to interested parties such as flood control agencies and downstream jurisdictions. The Discharge Plan must include the proposed project name and reason for the discharge; a description of the discharge; a map showing the discharge location(s) and receiving water(s); the estimated time, duration, volume, and flowrate of the discharge; and a monitoring plan for the chlorine residual, pH, and turbidity of the discharge. The maximum monitoring schedule for residual chlorine is every 15 minutes for the first 2 hours and daily thereafter. Once the Discharge Plan is approved, the SFBRWQCB will issue a non-action letter specifying approval of the discharge.

For unplanned discharges, BMPs must be implemented to alleviate the discharge as soon as practicable. Certain discharges must be reported to the California Emergency Management Agency and SFBRWQCB within 24 hours, followed by a written report within 5 days. EBMUD must also submit an annual report to the SFBRWQCB summarizing the date, address, estimated flow rate, and BMPs implemented for each unplanned discharge.

EBMUD employs Source Control BMPs whenever practical to reduce pollutants at their source rather than applying Treatment Control BMPs. Typical source controls include: isolating a system for several days and/or reducing or eliminating chemical dosages to allow the chlorine residual and pH levels to naturally comply with regulatory limits; transferring the contents via a truck to a wastewater treatment plant; and minimizing the flow rate and/or volume to reduce potential sedimentation and erosion effects. Typical treatment BMPs include dechlorinating the discharge with sodium sulfite tablets or liquid calcium thiosulfate.

For discharges of superchlorinated water such as that which is used for pipeline disinfection (typically with chlorine concentrations of 100 to 300 milligrams per liter [mg/L]), the EBMUD Environmental Compliance Manual requires: placement of BMPs at all affected storm drains, even if there are no planned discharges; photo documentation of all BMP installations; documented calculation of the amount of dechlorination agent necessary to dechlorinate the planned discharge; measurement and recording of the amount of dechlorination agent used; provision of creek maps to all dechlorination vans to ensure awareness of sensitive creeks; and documentation of the amount of water discharged to the sanitary sewer under a permit or trucked off-site. All superchlorinated discharges, whether dechlorinated or not, must be discharged in one of several ways: discharge to a sanitary sewer or interceptor in compliance with a permit; to the EBMUD wastewater treatment plant; or other approved disposal methods such as dust control at a construction site with no discharge to storm drain. Superchlorinated water transported off-site for disposal must be dechlorinated prior to transport, and dechlorination may also be required for discharge to a sanitary sewer system. Under normal conditions, discharge to a storm drain or creek is not permitted, but emergency discharges of superchlorinated water may be dechlorinated and discharged to the storm sewer system.

EBMUD Standard Construction Specifications

EBMUD Standard Construction Specification 01 35 44 (Environmental Requirements) sets forth the contract requirements for environmental compliance to which construction crews must adhere, including provisions for protection of water quality during construction.

The General Requirements of EBMUD Standard Construction Specification 01 35 44 stipulate that the construction crew shall be responsible for maintaining compliance with applicable federal, state and local requirements. The requirements include preparation of plans that outline procedures to be followed to ensure effective stormwater/non-stormwater management and documentation of compliance. EBMUD reviews submittals for conformance with the requirements of the contract document and specified laws and regulations. Specific planning documents and procedures related to protection of water quality that are required by EBMUD for construction are described below.

- **Controls on Site Activities.** EBMUD Standard Construction Specification 01 35 44 Section 1.1(B) requires that activities on the construction site are controlled to prevent discharge of contaminated stormwater. Applicable requirements include:
    - No debris including, but not limited to, demolition material, treated wood waste, stockpile leachate, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into storm drains or surface waters or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan.
    - Do not create a nuisance or pollution as defined in the California Water Code. Do not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board, as required by the Clean Water Act.
    - Clean up all spills and immediately notify EBMUD in the event of a spill.
    - Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans.
    - Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work and staging areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable.
    - Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material.
    - Conduct dust control measures in such a manner as to minimize waste and runoff from the site.
    - Construction staging areas shall be graded, or otherwise protected with BMPs, to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters including wetlands, drainages, and creeks.

  - Any chemical or hazardous material used in the performance of the Work shall be handled, stored, applied, and disposed of in a manner consistent with all applicable federal, state, and local laws and regulations.

- **Stormwater Pollution Prevention Plan**. EBMUD Standard Construction Specification 01 35 44 Section 1.3(A) requires that the contractor shall be responsible for complying with the requirements of the Construction General Permit. Before the start of construction, the contractor must submit a SWPPP that describes measures that shall be implemented to prevent the discharge of contaminated storm water runoff from the jobsite. Contaminants to be addressed include, but are not limited to, soil, sediment, concrete residue, pH less than 6.5 or greater than 8.5, and chlorine residual and all other contaminants known to exist at the jobsite location.

- **Water Control and Disposal Plan.** EBMUD Standard Construction Specification 01 35 44 Section 1.3(B) requires that the Contractor shall submit a detailed Water Control and Disposal Plan for EBMUD's acceptance prior to any work at the jobsite. The plan shall comply with requirements of all applicable discharge permits, including SWRCB Order WQ 2014-0194-DWQ/General Order No. CAG 140001 – NPDES Permit for Drinking Water System Discharges; SWRCB Order No. 2012-0006-DWQ NPDES No. CAS000002 – Construction General Permit; and Sanitary Sewer Discharge Permit. The Contractor shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation into receiving waters.
  - **Drinking Water System Discharges.** Contractor shall submit a plan that includes estimated flow rate and volume of all proposed discharges to surface water, including discharges to storm drains. All receiving waters shall be clearly identified. Contractor shall track discharges and comply with applicable monitoring requirements. Drinking water system discharges shall be dechlorinated and shall have acceptable turbidity and pH.
  - **Non-Stormwater Discharges**. Contractor shall develop plan for containment, handling, treatment (as necessary), and disposal of discharges such as groundwater (if encountered), runoff water used for dust control, stockpile leachate, tank heel water, wash water, saw cut slurry, test water, and construction water or any other liquid that has been in contact with any interior surface of District facilities. A containment, handling, treatment and disposal design and sampling and analysis plan shall be approved by EBMUD before the start of construction.
  - **Sanitary Sewer Discharges**. District policy specifies that superchlorinated discharges from pipeline disinfection shall be sent to the sanitary sewer system. Discharge plan shall include sampling and analytical program in conformance with the Sanitary Sewer Discharge Permit. Contractor must provide documentation to EBMUD that discharge has been authorized by the applicable agency.

- **Spill Prevention and Response Plan.** EBMUD Standard Construction Specification 01 35 44 Section 1.3(D) requires that prior to construction contractor shall submit plan detailing the means and methods for preventing and controlling the spilling of known hazardous substances used on the jobsite or staging areas. The plan shall include a list of the hazardous substances proposed for use or generated by the contractor on site, including petroleum products, and measures that will be taken to prevent spills, monitor hazardous substances, and provide immediate response to spills. Spill response measures shall address notification of EBMUD and appropriate agencies including phone numbers; spill-related worker, public health, and safety issues; spill control, and spill cleanup.

3.9.3 Impact Analysis

Methodology for Analysis

Potential impacts on hydrology and water quality were analyzed based on the potential for the Project to result in physical hydrologic or hydrogeologic changes (e.g., flooding, erosion and siltation, changes in groundwater recharge) during construction or operation. Existing site conditions prior to construction of the Project were compared to site conditions both during construction activities and operation.

Construction impacts are described below, but based on the analysis presented in **Appendix K**, it has been determined that the Project would not have any operational impacts to hydrology or water quality because EBMUD water distribution facilities are designed, constructed, operated, and maintained to conform to state and federal requirements for water treatment and discharge, and thus would not result in any operational impacts to water quality. Operation of the Project would not involve groundwater extraction and would not increase impervious surface area and thus would not deplete groundwater or interfere with recharge. Once construction is complete operation of the Project would not cause erosion, siltation or polluted runoff because the site would be paved or revegetated, and the Project would be designed to ensure that runoff from the site would not exceed capacity of existing storm drains and to comply with requirements of the Municipal Regional Stormwater NPDES Permit. The analysis of impacts presented below thus focuses on impacts during construction.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Violate any water quality standards or waste discharge requirements;
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
6. Otherwise substantially degrade water quality (erosion potential);
7. 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;
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
10. Result in inundation by seiche, tsunami, or mudflow.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 7: Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map*. The Project site is not located within a 100-year flood plain, and does not include the construction of new housing; therefore, there would be no impact.
- *Criterion 8: Place within a 100-year flood hazard area structures which would impede or redirect flood flows*. The Project site is not located within a 100-year flood plain; therefore, there would be no impact.
- *Criterion 9: Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam*. Prior to construction activity on the Leland Reservoir site, the existing reservoir would be drained. The existing dam embankment would be removed following the dewatering of the reservoir. Therefore, the Project would not cause flooding due to the failure of a dam or levee because there would be no water impounded behind the dam prior to its removal, and replacing the existing open cut embankment reservoir with prestressed concrete tanks built to modern seismic standards would eliminate the existing dam and reduce the risk of flooding; therefore, there would be no impact.
- *Criterion 10: Result in inundation by seiche, tsunami, or mudflow*. The Project site is not located in an area susceptible to seiches, tsunamis, or mudflows; therefore, there would be no impact.

Impacts and Mitigation Measures

Impact HYD-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality (Criteria 1 and 6).

Activities involving soil disturbance, excavation, cutting/filling, stockpiling, dewatering and grading could result in increased erosion and sedimentation to surface waters during construction of the Project. If precautions are not taken to contain contaminants, construction could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to degradation of water quality. In addition, fuels, lubricants and other hazardous materials associated with construction equipment could adversely affect water quality if spilled or stored improperly. Because the Project would disturb more than one acre, coverage under the General Construction Permit and development of a SWPPP would be required, but because there are no impaired water bodies in the Project area, the SWPPP would not be subject to requirements for discharges to water bodies on the 303(d) list for sediment. The requirements of the General Construction Permit are strengthened and made more specific by EBMUD Standard Construction Specification 01 35 44, which is described above; per Section 1.3(A) of the specification, EBMUD requires qualified professionals as described in the permit to prepare and certify all permit-required document/submittals and to implement effective stormwater/non-stormwater management practices and conduct inspections and monitoring as required by the permit. The SWPPP must be reviewed and approved by EBMUD before the start of construction and must, and requires the contractor to control discharge of soil, sediment, and concrete residue and control pH and chlorine residual of any discharges. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. Construction impacts would be less than significant with implementation of EBMUD Standard Construction Specification 01 35 44.

During construction of the Project, dewatering would be conducted to drain the existing reservoir but dewatering is not expected to be required to remove excess groundwater from excavations created for installation of the pipeline because the pipeline route is 160 feet from Reliez Creek and the trench is not expected to intercept groundwater. Draining the existing reservoir would take several weeks. The reservoir would first be allowed to drain into the distribution system via system demand until the water level drops to a point where pressures would become too low to maintain customer level of service, after which the valves that connect the reservoir to the distribution system would be closed. The remaining reservoir water would be filtered, tested, dechlorinated, and discharged. EBMUD would decide if water from dewatering the reservoir would go to the sewer for treatment at Central Contra Costa Sanitary District (CCCSD) treatment plant in Martinez or to the storm drain. EBMUD discharges of potable water to storm drains or surface water bodies are covered under their statewide NPDES potable discharge permit[1], so if water is discharged to the storm drain, discharge would be done in a manner that meets EBMUD's requirements for potable discharge. If the contractor opts to discharge to the local sanitary sewer they would be required to obtain a discharge permit from CCCSD.

Once the pipeline is constructed, flushing, hydrostatic testing and pipeline disinfection would need to be conducted, and water from the testing would also need to be discharged. Potable water would be used for flushing and hydrostatic testing and after any leaks are repaired, superchlorinated water[2] would be used to disinfect the pipelines. Water from flushing and testing would be discharged in accordance with the Construction General Permit. If water from the reservoir or pipelines is discharged to the storm drain system there is a potential for water quality impacts to Reliez Creek, where the local storm drain discharges. However, EBMUD Standard Construction Specification 01 35 44 requires that all discharges be conducted in accordance with a Water Control and Disposal Plan, which would ensure that any discharges are controlled to prevent erosion, scouring, nuisance, contamination or sedimentation of receiving waters. Section 1.3(B) of EBMUD Standard Construction Specification 01 35 44 states that it is EBMUD policy to send superchlorinated discharges from pipeline disinfection to the sanitary sewer system, and requires that the contractor obtain a sanitary sewer discharge permit and specifies that the plan for discharge shall include a sampling and analytical program to ensure conformance with the discharge permit. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. Impacts of discharges would be less than significant with implementation of EBMUD Standard Construction Specification 01 35 44.

Implementation of EBMUD Standard Construction Specification 01 35 44 would control erosion and planned discharges from the reservoir and pipelines to ensure that no water quality standards are exceeded and no additional sources of polluted runoff are created. BMPS would be implemented to ensure that sediment is controlled and that contaminants such as fuel and lubricants do not contaminate local storm drains. With implementation of EBMUD Standard Construction Specification 01 35 44, impacts would be less than significant.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required.

Impact HYD-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (Criterion 2).

Construction would not include significant groundwater withdrawals that would lower groundwater levels or substantially deplete groundwater resources. Dewatering is not expected to be required to remove excess groundwater from excavations created for installation of the pipeline because trenches would be less than seven feet deep and would not be close to any stream channels, and are thus not expected to intercept groundwater. If minor construction dewatering is necessary for either pipeline or reservoir

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[1] EBMUD has a Notice of Applicability confirming coverage for drinking water discharges under the Statewide NPDES Permit, Order No. WQ 2015-0194-DWQ.

[2] Superchlorinated water has chlorine levels of 100 to 300 mg/L, as compared to a chlorine residual of less than 4 mg/L in potable water.

construction, any groundwater depletion would be localized and less than significant, as there is no defined groundwater basin underlying the Project site.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required.

Impact HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Criteria 3 and 5).

Construction of the Project, including the two 8-MG concrete water tanks and 3,650 linear feet of 36-inch pipeline, would involve temporary disturbance of the Project site. As detailed under Impact HYD-1, although erosion or siltation may occur during construction, the construction contractor would be required to implement control measures in accordance with EBMUD Standard Construction Specification 01 35 44, requiring controls on site activities to prevent discharge of contaminated stormwater, including control of construction materials, control of surface water flows and restoration of ground surfaces, and maintenance of construction sites to prevent erosion. With implementation of required Project controls, construction related alteration of local drainage patterns and associated erosion and siltation would be minor. Additionally, EBMUD Standard Construction Specification 01 35 44, Section 1.1(B) requires that no debris, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter storm drains or surface waters; Section 1.3(A) requires storm water management procedures to prevent generation of polluted runoff from the site; and Section 1.3(D) requires measures to prevent and control spills of hazardous substances. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. Implementation of these requirements during construction would prevent any spills and prevent polluted runoff from being conveyed off site. Because construction sites would have to be managed to minimize erosion and siltation and to prevent polluted runoff from leaving the site, this impact would be less than significant.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required,

Impact HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site (Criterion 4).

Construction of the Project, including the two 8-MG concrete water tanks and 3,650 linear feet of 36-inch pipeline, would involve temporary disturbance in the Project area. However, EBMUD Standard Construction Specification 01 35 44 requires control of site activities to manage surface water flows. Specifically, Section 1.1(B) specifies ground alterations made by the Contractor shall be removed and ground surfaces shall be restored to their former condition at the completion of construction activities. Trenched areas of roadways would be repaved and disturbed areas on the reservoir site would be repaved or revegetated. The EBMUD Practices and Procedures Monitoring Plan (**Table 7-2** in Chapter 7) lists the applicable standard specification language. With implementation of these required controls governing site activities, construction related alteration of local drainage patterns would not be expected to result in flooding, and impacts would be less than significant.

Additionally, to ensure adequate drainage within the reservoir site, a new 30-inch storm drain pipeline would be installed on site and connected to the City of Lafayette's existing storm drain system at the intersection of Leland Drive and Patty Way. The storm drain pipeline would be designed and constructed in accordance with EBMUD's current Reservoir Design Guide (EBMUD 2014). Because there would be no change in existing drainage patterns, the Project would not increase surface runoff in a manner that would result in flooding on or off site and would not result in off-site flooding or runoff from the site that would exceed the capacity of the City's storm drain system.

Significance Determination before Mitigation

Less than Significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

The geographical extent for cumulative impacts related to hydrology and water quality includes areas in the vicinity of the Project site that would experience construction activity at the same time as the Project. None of the projects listed in **Table 3.0-1** are expected to be under construction at the same time as the Project. Given that the Project would not result in environmental impacts during its operational period, only the construction period is evaluated relative to potential cumulative impacts.

The Project would be required to adhere to all applicable laws and regulations pertaining to construction period protection of water quality, erosion minimization and maintenance of existing site drainage patterns. As described above, implementation of mitigation measures and compliance with EBMUD's standard practices and procedures would ensure that the Project's hydrology and water quality impacts would be less than significant. All of the cumulative projects would be subject to the same water quality regulatory requirements and would be required to implement BMPs to protect water quality during construction and none is expected to be under construction at the same time as the Project. As a result, cumulative impacts on water quality and hydrology during construction would be less than significant.

3.9.4 References

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3.10 Land Use and Planning

This section presents the physical and regulatory setting for land use and planning within the study area, which includes the Project site and adjacent land uses. The impact analysis considers the potential for the Leland Reservoir Replacement Project to physically divide the community or conflict with adopted land use plans or policies.

3.10.1 Environmental Setting

Regional Land Use

Leland Reservoir is located in the City of Lafayette, Contra Costa County. Lafayette encompasses an area of about 15 square miles with approximately 25,800 people (U.S. Census Bureau 2015). Lafayette is bordered by Walnut Creek to the east, Moraga to the south, and Orinda to the west. North of Lafayette are the cities of Pacheco and Pleasant Hill, as well as the Briones Regional Park.

Lafayette is bisected by SR 24, which runs east-west through the city. Arterial streets include Deer Hill Road, Mt. Diablo Boulevard, Pleasant Hill Road, Moraga Road, and St. Mary's Road. Much of Lafayette's development occurs along these roads, particularly along Mt. Diablo Boulevard, which runs parallel to SR 24. Land use in Lafayette consists primarily of rural residential areas (17%), low-density single family residential (39%), medium-density single-family residential (22%), and open space/parkland (16%) (City of Lafayette 2012). Most of the City of Lafayette's commercial and institutional development is concentrated in the City's downtown, which is located about one mile west of the Project site along the SR 24 corridor and comprises about 2% of the City. The remaining 4% of the City is designated for multifamily land uses and for community facilities, civic uses and public utilities. Most of the remaining undeveloped land in the city has steep slopes or unstable soils, and is thus unsuitable for development (City of Lafayette 2012).

Leland Reservoir occupies an approximate 14.5-acre site opposite 1050 Leland Drive, south of Old Tunnel Road in a residential area of the City of Lafayette. The site is surrounded to the east and west by single family homes. A church, the Sun Valley Bible Chapel, is adjacent to the southern property boundary of the reservoir site. Between the northern property boundary and Old Tunnel Road there are three single family residential homes, south of Old Tunnel Road on the west side of Leland Drive, and a vacant area that is zoned for single family residential use.

The Project would also include construction of a 36-inch water pipeline under streets in single-family residential neighborhoods. The pipeline would be installed in Windsor Drive, Condit Road and a short section of Leland Drive from Condit Road to Meek Place. The pipeline alignment passes The Meher Schools, a private elementary and preschool, located at the corner of Condit Road and Leland Drive.

3.10.2 Regulatory Framework

This section describes local policies and regulations that may apply to the Project. No federal or state policies are applicable to the Project's land use component.

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protection policies for guidance.

City of Lafayette General Plan

The City's General Plan is a comprehensive, long-range plan for the physical development of the city that identifies land use goals and policies. The reservoir site is designated as "Community Facilities/Civic Uses" in the City of Lafayette General Plan, as is The Meher Schools site, which is south of the reservoir site (City of Lafayette 2002). The area surrounding the reservoir, including the area along the pipeline route on Windsor Drive, Condit Road and Leland Drive, is designated as Medium Density Single Family Residential, with an area of Low Density Single Family Residential on the south side of Condit Road.

The Land Use Chapter of the General Plan includes the following policies that are relevant to the Project site:

***Goal LU-4:* Ensure that the semi-rural character of the community is protected by appropriate infrastructure design.**

- Policy LU-4.1: Infrastructure Design: Public and private infrastructure should reinforce the semi-rural qualities of residential neighborhoods.
    - Program LU-4.1.2: Require design review of infrastructure projects, including circulation, parks, government-sponsored projects, and telecommunications facilities.

***Goal LU-18:* Coordinate with other jurisdictions to protect and restore environmental resources and to provide public services.**

- Policy LU-18.2: Coordination of Public Services: Coordinate water supply, flood control, wastewater and solid waste disposal, soil conservation, and open space preservation with other jurisdictions to create the greatest public benefit and the least degree of environmental impact.
    - Program LU-18.2.1: Periodically review level of service standards with the districts providing water supply, flood control, wastewater and solid waste disposal, soil conservation, and open space preservation.

Lafayette Zoning Ordinance

Within the City, the Zoning and Subdivision Ordinances dictate acceptable land uses. Pursuant to California Government Code Section 53091(e), county and city zoning ordinances do not apply to the location or construction of facilities for the transmission of water. Local regulations are thus not applicable to EBMUD, but are considered here for the purpose of determining significance of potential land use impacts.

The Leland Reservoir site is zoned as single-family residential, district-10 (R-10) (City of Lafayette 2013). The proposed pipeline route would run through neighborhoods zoned as R-10 and single-family residential, district-20 (R-20) (City of Lafayette 2013). Lafayette's Zoning Ordinance indicates that in both R-10 and R-20, publicly owned facilities are allowed with a use permit. However, Section 6-516 states that "[t]he use of land for rights-of-way for the construction, maintenance and repair of public utilities and publicly owned facilities, and for privately owned pipelines for the transportation of oil, gas, water and other substances transportable by pipelines, is not regulated or restricted by this title" (City of Lafayette 2015).

3.10.3 Impact Analysis

Methodology for Analysis

Land use impacts are assessed based upon the level of physical impact anticipated in the various environmental factors that can affect compatibility (e.g., air quality, noise, aesthetics). The analysis also includes an evaluation of the Project's consistency with local and regional land use policies. Existing site conditions prior to construction of the Project are compared to site conditions both during construction activities and after the Project facilities are operational.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Physically divide an established community;
2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
3. Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 1: Physically divide an established community*. The Project would place pipelines underneath existing roadways and would result in infrastructure changes at the reservoir site itself. The completed Project would not add structures that would create a division in the community because pipelines would be underground. During pipeline construction the presence of construction equipment and workers would temporarily change the existing character of the community but would not physically divide the community because access would be maintained for residents along the proposed alignment throughout the construction process. At the reservoir site, the Project would replace the reservoir with tanks, which would not result in a division of the community because facilities would be confined to the existing site. Construction activities at the reservoir would also be confined to the site. There would be no impact associated with the division of an established community.
- *Criterion 3: Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan*. There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other local, regional, or state habitat conservation plans within the proposed Project area. There would be no impacts associated with conflicts with Habitat Conservation Plans or Natural Community Conservation Plans.

Impacts and Mitigation Measures

Impact LU-1 Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect (Criterion 2).

Both the reservoir site and proposed pipeline alignment are zoned as residential areas, where no permit is required for the construction or maintenance of public utilities. Therefore, the Project would comply with the zoning ordinance. The General Plan designates the reservoir site for Community Facilities/Civic Uses, so the Project is also consistent with the applicable land use plan.

The Project facilities would be installed either within public right-of-way or within the reservoir site. Construction of the Project would temporarily affect adjacent land uses (through increased dust, noise, and traffic). Impacts to adjacent land uses would cease upon completion of construction and would not permanently impact the existing surrounding land uses or neighborhoods. The proposed facilities would not result in changes to land uses in the Project area. The proposed pipelines would be installed below grade, and, as noted above, all above-ground facilities would be located on the reservoir site, and would be consistent with the existing use of the site.

The Project would be consistent with the land use goals outlined in Lafayette's General Plan. The new storage tanks would be screened by the existing embankments and the site would be landscaped to be compatible with the existing semi-rural character of the community.

The Project would improve existing aging infrastructure and enable EBMUD to maintain a high level of service in the Leland Pressure Zone, consistent with Policy LU-18.2 of the City's General Plan.

The Project may have other impacts that are indirectly related to land use, which are addressed in the relevant EIR sections. Specifically: potential tree removal (Biological Resources); construction noise (Noise); traffic impacts on community use of the area (Transportation/Traffic); and access to recreational facilities (Recreation).

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

The Project would not divide a community and would not change land use in the vicinity of the reservoir site and would thus have no potential to contribute to cumulative impacts related to land use.

3.10.4 References

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3.11 Noise

This section presents the environmental setting and impact analysis for noise that could occur as a result of the proposed Project. The section describes the ambient noise environment in the Project area and evaluates noise impacts associated with the Project. **Appendix L** includes a copy of the Noise and Vibration Technical Memorandum prepared for the proposed Project, which includes noise and vibration analysis that serves as the basis for this section.

3.11.1 Sound Fundamentals

Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that it travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale is used to reflect this wide range. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is reflected in the A-weighted decibel (expressed as "dBA"), which refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On the dBA scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. Except in carefully controlled laboratory experiments, a change of only 1-dBA in sound level cannot be perceived. Outside of the laboratory, a 3-dBA change is considered a perceptible difference, while a 5-dBA change is readily noticeable. A 10-dBA increase in the level of a continuous noise represents a perceived doubling of loudness (Caltrans, 2013a).

Noise Descriptors

Noise is generally defined as sound that is loud, disagreeable, unexpected, or unwanted. Sound is mechanical energy transmitted in the form of a wave by a disturbance or vibration that causes pressure variation in air the human ear can detect. Variations in noise exposure over time are typically expressed in terms of a steady-state energy level (called L_{eq}) that represents the acoustical energy of a given measurement, or alternatively as a statistical description of what sound level is exceeded over some fraction (10, 50, or 90 percent) of a given measurement period (i.e., L_{10}, L_{50}, L_{90}). $L_{eq(24)}$ is the steady-state acoustical energy level measured over a 24-hour period. L_{max} is the maximum, instantaneous noise level registered during a measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, 24-hour noise descriptors called the Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (L_{dn}) are used for planning purposes because they add a dBA penalty increment to evening and nighttime noise levels to account for the increased sensitivity. CNEL adds a 5-dBA penalty during the evening (7:00 p.m. to 10:00 p.m.) and a 10-dBA penalty at night (10:00 p.m. to 7:00 a.m.). Another 24-hour noise descriptor, called the day-night noise level (L_{dn}), is similar to CNEL. Both CNEL and L_{dn} add a 10-dBA penalty to all nighttime noise levels between 10:00 p.m. and 7:00 a.m., but L_{dn} does not add the evening 5-dBA penalty between 7:00 p.m. and 10:00 p.m. In practice, L_{dn} and CNEL usually differ by less than 1 dBA at any given location for transportation noise sources (Caltrans, 2013a).

Table 3.11-1 presents representative noise sources and their corresponding noise levels in dBA at varying distances from the noise sources.

Table 3.11-1: Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-Over at 100 feet		
	100	
Gas Lawnmower at 3 feet		
	90	
Diesel Truck going 50 mph at 50 feet		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noise Urban Area during Daytime		
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Area during Daytime	50	Dishwasher in Next Room
Quiet Urban Area during Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	30	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
	0	

Note: dBA = A-weighted decibel; mph = miles per hour
Source: Caltrans (2013a)

Attenuation of Noise

A receptor's distance from a noise source affects how noise levels attenuate (decrease). Transportation noise sources tend to be arranged linearly, such that roadway traffic attenuates at a rate of 3.0 dBA to 4.5 dBA per doubling of distance from the source, depending on the intervening surface (paved or vegetated, respectively). Point sources of noise, such as stationary equipment or construction equipment, typically attenuate at a rate of 6.0 dBA to 7.5 dBA per doubling of distance from the source.[1] For example, a sound level of 80 dBA at 50 feet from the noise source will be reduced to 74 dBA at 100 feet, 68 dBA at 200 feet, and so on. Noise levels can also be attenuated by "shielding" or providing a barrier between the source and the receptor. With respect to interior noise levels, noise attenuation effectiveness depends on whether windows are closed or open. Based on the United States Environmental Protection Agency (EPA) national average, closed windows reduce noise levels by approximately 25 dBA, while open windows reduce noise levels by about 15 dBA (EPA, 1974).

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[1] The 1.5-dBA variation in attenuation rate (6 dBA vs. 7.5 dBA) can result from ground absorption effects, which occur as sound travels over soft surfaces such as soft earth or vegetation (7.5-dBA attenuation rate) vs. over hard ground such as pavement or very hard-packed earth (6-dBA rate; HUD, 1985).

Vibration

Vibrations caused by construction activities can be interpreted as energy transmitted in waves through the soil mass. The energy waves generally dissipate with distance from the vibration source (e.g., pile driving or sheetpile driving). Since energy is lost during the transfer of energy from one particle to another, vibration that is distant from a source is usually less perceptible than vibration closer to the source. However, actual human and structure response to different vibration levels is influenced by a combination of factors, including soil type, distance between source and receptor, duration, and the number of perceived events.

If great enough, the energy transmitted through the ground as vibration can result in structural damage. To assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions (vector sum), typically in units of inches per second (in/sec). For comparison purposes, a freight train passing at 100 feet can cause vibrations of 0.1 in/sec PPV, while a strong earthquake can produce vibration in the range of 10 in/sec PPV. Minor cosmetic damage to buildings can occur at vibration levels as low as 0.5 in/sec PPV.

3.11.2 Environmental Setting

The following sections describe the existing environmental conditions regarding noise and the potential effects the Project may have on the site and its surrounding area.

Existing Noise Environment

The Project site is located in the City of Lafayette, surrounded to the east and west by single-family residential homes. A church is adjacent to the southern property boundary of the Project site. The land between the northern property boundary and Old Tunnel Road is primarily vacant land, zoned for single-family residential use, with two existing homes located at the corner of Leland Drive and Old Tunnel Road; SR 24 is located immediately north of Old Tunnel Road. The proposed 2,700 feet of 36-inch pipeline in Windsor Drive, Condit Road, and Leland Drive is under streets in single-family residential neighborhoods, and also passes a private elementary school (The Meher Schools), and a pool operated by a local swimming club.

Even though land around the Project site is primarily residential, SR 24 is the predominant source of noise in the Project vicinity. SR 24 is located approximately 500 feet north of the site's northern boundary and about 700 feet north of the existing Leland Reservoir's northern boundary. Noise levels on the Project site and vicinity vary with their elevation relative to the freeway. The hill along the northern Project boundary (approximately 450 feet in elevation at the top of the hill) partially blocks freeway noise from the site, where elevations are lower, generally ranging from a low of 260 feet at the southeast corner to highs of 375 feet along the western boundary and 415 feet along the northern boundary. There are hills to the northwest and northeast that also partially block freeway noise and they limit direct exposure of the Project site and its vicinity to freeway noise. In order to characterize the existing noise environment in the site vicinity, two long-term (24-hour) noise measurements were taken in September 2016 at two locations near the existing Leland Reservoir. **Figure 3.11-1** shows the noise measurement locations, while **Table 3.11-2** summarizes the results of the noise measurements.

Figure 3.11-1: Noise Measurement and Sensitive Receptor Locations

Source: Compiled by Orion Environmental Associates and RMC, a Woodard & Curran company (2017)

Table 3.11-2: Summary of Noise Measurement Results

	Noise Measurement Locations, Hourly Noise Levels, dBA (Leq)			
	#1: Leland Drive (150 feet from centerline)		#2: Old Tunnel Road (150 feet from centerline)	
Time	Day 1	Day 2	Day 1	Day 2
12:00 a.m. to 1:00 a.m.	43.6	43.1	49.2	50.7
1:00 a.m. to 2:00 a.m.	40.1	40.3	47.5	47.9
2:00 a.m. to 3:00 a.m.	39.4	37.2	46.9	47.9
3:00 a.m. to 4:00 a.m.	37.9	38.8	46.9	48.7
4:00 a.m. to 5:00 a.m.	39.5	41.3	49.9	51.5
5:00 a.m. to 6:00 a.m.	46.6	46.0	51.5	54.7
6:00 a.m. to 7:00 a.m.	49.8	48.2	52.8	54.7
7:00 a.m. to 8:00 a.m.	51.8	50.1	54.6	53.5
8:00 a.m. to 9:00 a.m.	52.2	55.5	52.5	52.3
9:00 a.m. to 10:00 a.m.	47.7	53.7	50.0	51.5
10:00 a.m. to 11:00 a.m.	48.3	48.5	49.8	50.7
11:00 a.m. to 12:00 p.m.	47.3	46.7	49.8	50.1
12:00 p.m. to 1:00 p.m.	47.2	54.6	49.6	49.1
1:00 a.m. to 2:00 p.m.	49.1	50.1	50.8	50.3
2:00 p.m. to 3:00 p.m.	49.8	49.7	51.2	53.2
3:00 p.m. to 4:00 p.m.	48.9	51.7	49.8	53.7
4:00 p.m. to 5:00 p.m.	47.9	49.4	50.4	54.0
5:00 p.m. to 6:00 p.m.	48.6	48.8	54.3	53.5
6:00 p.m. to 7:00 p.m.	48.8	46.6	55.9	50.5
7:00 p.m. to 8:00 p.m.	48.2	48.4	54.7	51.2
8:00 p.m. to 9:00 p.m.	48.7	52.5	55.4	53.9
9:00 p.m. to 10:00 p.m.	47.6	48.9	54.7	55.0
10:00 p.m. to 11:00 p.m.	45.4	45.7	53.4	54.5
11:00 p.m. to 12:00 a.m.	44.4	44.4	52.0	51.8
Daytime Leq (7:00 a.m. to 7:00 p.m.)	49-51		52	
Evening Leq (7:00 p.m. to 10:00 p.m.)	48-50		54-55	
Nighttime Leq (10:00 p.m. to 7:00 a.m.)	44-45		51-52	
Ldn[a]	52-53		57-59	

Notes: See **Figure 3.11-1** for noise measurement locations. Both measurements were taken from midnight on Tuesday, September 13, 2016, to midnight on Thursday, September 15, 2016, using a Quest Soundpro D/L meter.

[a] Ldn is a 24-hour noise level with 10-dBA penalty between 10:00 p.m. and 7 a.m.

Source: Orion Environmental Associates (2016)

In general, existing noise levels in the site vicinity ranged from 52 to 59 dBA (L_{dn}) with higher noise levels occurring with proximity to SR 24. Noise levels at the Project site also varied with elevation and topographic barriers. Freeway noise is less noticeable in areas below the freeway elevation and behind the hills to the north, while it is more noticeable at the existing Leland Reservoir, which is higher in elevation than the freeway and where hills to the north do not completely block freeway noise. In general, noise levels ranged from 49 to 52 dBA (L_{eq}) during the daytime hours (7:00 a.m. to 7:00 p.m.), 48 to 55 dBA (L_{eq}) during the evening hours (7:00 p.m. to 10:00 p.m.), and 44 to 52 dBA (L_{eq}) during the nighttime hours (10:00 p.m. to 7:00 a.m.). As indicated in **Table 3.11-2**, noise levels near the freeway (Location 2) are higher during the evening than the daytime hours, but at Location 1, which is farther from the freeway, evening noise levels are slightly lower than daytime levels.

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the types of population groups or activities involved. According to the City of Lafayette General Plan Noise Element (2002), sensitive land uses generally include residential uses, hospitals, schools, convalescent homes, and libraries.

Figure 3.11-1 shows the locations of sensitive receptors adjacent to the existing Leland Reservoir site which are described as follows. There are residences directly adjacent to the western reservoir site boundary and east of the project site across Leland Drive. Most existing residences to the west are located approximately 115 feet or more from the existing reservoir and approximately 80 feet or more from the western site boundary with one exception; the residence on the northern side of the cul-de-sac at the end of Maryola Court (3134 Maryola Court) is located approximately 80 feet from the reservoir and approximately 30 feet from the site boundary, and approximately 10 to 13 feet lower in elevation than the existing reservoir's upper perimeter road. The residence on the southern side of the cul-de-sac (3135 Maryola Court) is also located about 5 to 10 feet below the perimeter road but there is an intervening hill that blocks the line-of-sight between this home and the perimeter road. Southwest of the reservoir site, the residences at the end of Mars Court (3132 and 3131) are located farther away from the reservoir (approximately 120 feet away) and also located approximately 30 feet below the perimeter road elevation. Existing residences to the east are on the east side of Leland Drive and are located at least 400 feet from the existing reservoir, but located as close as 65 feet from the eastern site boundary. In general, homes to the east are located at the same elevation or slightly higher than the eastern project boundary along Leland Drive. There is one residence located on the west side of Leland Drive, approximately 125 feet north of the site's northeast boundary. The Meher Schools are located approximately 800 feet south of the reservoir site.

Although not identified as noise-sensitive in the Lafayette General Plan, the Sun Valley Bible Chapel is located approximately 130 feet south of the existing reservoir and approximately 80 feet from the southern site boundary. Services are held on Sundays (9:15 a.m. to noon), and some activities are held on weekdays (e.g., bible study groups). There are residences located on Windsor Drive, Condit Road, and Leland Drive and they are adjacent to the off-site pipeline alignment, within 50 feet of the centerlines of these streets.

3.11.3 Regulatory Framework

Federal and State Policies and Regulations

No federal or state standards related to noise are applicable to the Project. The Federal Noise Control Act of 1972 divides powers between federal, state, and local governments, in which the primary federal responsibility is for noise source emission control. State and local governments are responsible for controlling the operation of fixed noise sources (i.e., air conditioning and swimming pool equipment) and determining the levels of noise to be permitted in their environment (EPA, 1974).

Local Policies and Regulations

Local noise issues are addressed by assessing consistency with applicable noise ordinance standards or general plan guidelines (if there is no noise ordinance). Noise ordinances regulate such sources as mechanical equipment and amplified sounds as well as prescribe hours of heavy equipment operation. Government Code 53091(d) and (e) state that building 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 a local agency." Although building and zoning ordinances do not strictly apply to EBMUD projects, it is the practice of EBMUD to work with host jurisdictions and neighboring communities during project planning and to conform to local environmental protection policies to the extent possible, therefore relevant noise regulations and standards for the City of Lafayette are outlined below.

City of Lafayette Municipal Code

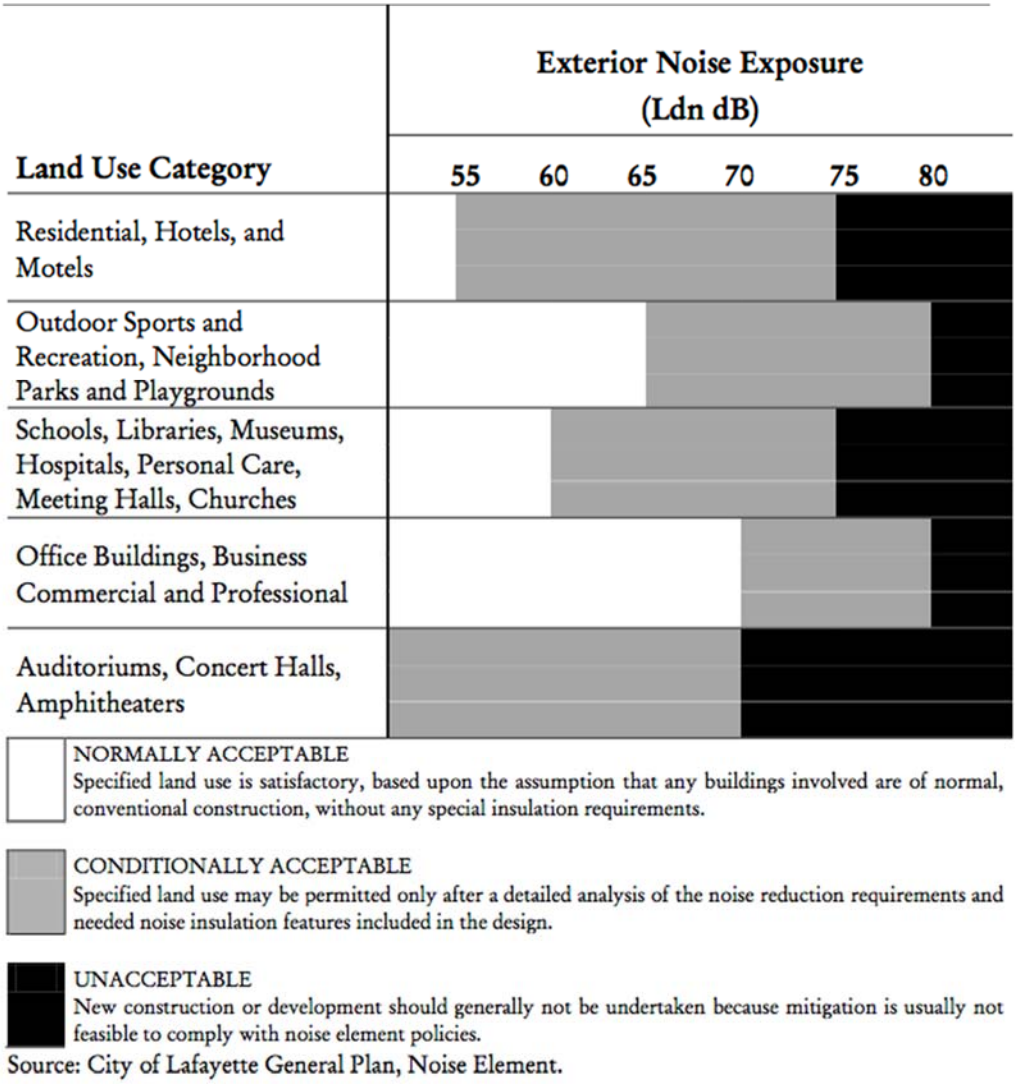
The Lafayette Municipal Code (Chapter 5-2) contains the City's Noise Ordinance. The Noise Ordinance is designed to control unnecessary, excessive, and annoying sounds from sources on private property by setting limits that cannot be exceeded at adjacent properties. The City's Noise Ordinance specifies noise limits at property boundaries and the limits apply to fixed noise sources such as air conditioners and pool equipment.

The City's Noise Ordinance also limits the hours of permitted construction activities to the hours of 8:00 a.m. to 8:00 p.m. Monday through Saturday, and between 10:00 a.m. to 6:00 p.m. on Sundays and legal holidays, provided that such construction activities do not exceed 80 dBA at the nearest affected property or individual equipment items do not exceed 83 dBA at 50 feet (Section 5-208[d]). For any construction noise occurring outside these hours, the City's outdoor noise limits specified in Section 5-205 are applicable. Therefore, on weekdays from 7:00 a.m. to 10:00 p.m., Section 5-205 stipulates that noise must not exceed 50 dBA more than 30 minutes in any hour, 55 dBA more than 15 minutes in any hour, 60 dBA more than 5 minutes in any hour, 65 dBA more than 1 minute in any hour, and 70 dBA for any period of time. From 10:00 p.m. to 7:00 a.m., these limits are reduced by 5 dBA. These time-based noise limits convert to an equivalent L_{eq} noise limit of 58 dBA between 7 a.m. and 10 p.m. and 53 dBA between 10 p.m. and 7 a.m. If the existing ambient noise level exceeds these standards, the allowable noise exposure standard shall be increased at 5 dB increments as appropriate to reflect the ambient noise level.

City of Lafayette General Plan Noise Element

The Noise Element of the City of Lafayette's General Plan (p. VII-10) sets forth several policies and programs to assess and control environmental noise. The General Plan policies and programs establish indoor and outdoor noise standards for residential and other urban land uses. The Noise Element includes land use and noise compatibility standards (presented in **Table 3.11-3**), and indicates what noise environments are considered acceptable for a range of urban land uses. For example, ambient noise levels of up to 55 dBA (L_{dn}) are considered "normally acceptable" for residential uses, while ambient noise levels ranging from 55 dBA (L_{dn}) to 75 dBA (L_{dn}) are considered "conditionally acceptable" for residential uses.

Table 3.11-3: City of Lafayette Land Use and Noise Compatibility Standards



Land Use Category	Exterior Noise Exposure (Ldn dB)	55	60	65	70	75	80
Residential, Hotels, and Motels	□	▨	▨	▨	▨	■	■
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds	□	□	□	▨	▨	▨	■
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches	□	□	▨	▨	▨	■	■
Office Buildings, Business Commercial and Professional	□	□	□	□	▨	▨	■
Auditoriums, Concert Halls, Amphitheaters	▨	▨	▨	▨	■	■	■

□ NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal, conventional construction, without any special insulation requirements.

▨ CONDITIONALLY ACCEPTABLE
Specified land use may be permitted only after a detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

■ UNACCEPTABLE
New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

Source: City of Lafayette General Plan, Noise Element.

EBMUD Standard Construction Specifications

EBMUD's Standard Construction Specification 01 35 44 (Environmental Requirements) includes practices and procedures for reducing noise and vibration impacts including restrictions on noise generating activities, and noise and vibration control methods and monitoring, as described below.

Work Restrictions. EBMUD Standard Construction Specification 01 14 00, Section 1.8(A) requires that noise generating activities greater than 90 dBA (impact construction such as concrete breaking, concrete crushing, tree grinding, etc.) shall be limited to the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday.

Noise Control and Monitoring Plan. EBMUD Standard Construction Specification 01 35 44, Section 1.3(G) requires that the contractor submit a plan detailing the means and methods for controlling and monitoring noise generated by construction activities, including demolition, alteration, repair or remodeling of or to existing structures and construction of new structures, as well as by items of machinery, equipment or devices used during construction activities on the site for the Engineer's acceptance prior to any work at the jobsite. The plan shall detail the equipment and methods used to monitor compliance with the plan.

Noise Control. EBMUD Standard Construction Specification 01 35 44, Section 3.6 requires noise controls on site activities and describe measures that shall be implemented to reduce the potential for noise disturbance at adjacent or nearby residences.

Noise control measures required by the specification include:

- Contractor is responsible for taking appropriate measures, including muffling of equipment, selecting quieter equipment, erecting noise barriers, modifying work operations, and other measures as needed to bring construction noise into compliance.
- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.
- Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks, as necessary.
- Stationary noise sources (e.g., chippers, grinders, compressors) shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used. Enclosure opening or venting shall face away from sensitive receptors. Enclosures shall be designed by a registered engineer regularly involved in noise control analysis and design.
- Material stockpiles as well as maintenance/equipment staging and parking areas (all on-site) shall be located as far as practicable from residential receptors.
- If impact equipment (e.g., jack hammers, pavement breakers, and rock drills) is used, Contractor is responsible for taking appropriate measures, including but not limited to the following:
  - Hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed- air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves shall be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible. It is the Contractor's responsibility to implement any mitigations necessary to meet applicable noise requirements. Impact construction including jackhammers, hydraulic backhoe, concrete crushing/recycling activities, vibratory pile drivers will be limited to between 8:00 a.m. and 4:00 p.m., Monday through Friday within residential communities, and will be limited in duration to the maximum extent feasible.
  - Erect temporary noise barriers or noise control blankets around the construction site, particularly along areas adjacent to residential buildings.
  - Utilize noise control blankets around the major noise sources to reduce noise emission from the site.
  - Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example.

  - Limit the noisiest phases of construction to 10 workdays at a time, where feasible.
  - Notify neighbors/occupants within 300 feet of project construction at least thirty days in advance of extreme noise generating activities about the estimated duration of the activity.

- Monitoring for noise shall be conducted periodically during noise generating activities. Monitoring shall be conducted using a precision sound-level meter that is in conformance with the American National Standards Institute (ANSI) Standard S1.4, Specification for Sound Level Meters. Monitoring results shall be submitted weekly to the Engineer.

Vibration Control and Monitoring Plan. EBMUD Standard Construction Specification 01 35 44, Section 1.3(H) requires that the contractor submit a plan detailing the means and methods for controlling and monitoring surface vibration generated by demolition and other work on the site for the Engineer's acceptance prior to any work at the jobsite. The plan shall detail the equipment and methods used to monitor compliance with the plan.

Vibration Controls. EBMUD Standard Construction Specification 01 35 44, Section 3.5 requires vibration controls on site activities and describes measures that shall be implemented to reduce the potential for cosmetic damage to adjacent or nearby structures. Vibration control measures required by the specification include:

- Limit surface vibration to no more than 0.5 in/sec PPV, measured at the nearest residence or other sensitive structure.
- Upon homeowner request, and with homeowner permission, the District will conduct preconstruction surveys of homes, sensitive structures and other areas of concern within 15 feet of continuous vibration-generating activities (i.e. vibratory compaction). Any new cracks or other changes in structures will be compared to preconstruction conditions and a determination made as to whether the project could have caused such damage. In the event that the project is demonstrated to have caused the damage, the District will have the damage repaired to the pre-existing condition.

3.11.4 Impact Analysis

Methodology for Analysis

Potential impacts related to noise and vibration are analyzed based on the potential for the Project to result in substantial changes in the noise environment during construction or operation. Existing site conditions prior to construction of the Project are compared to site conditions both during construction activities and after the Project facilities are operational.

Noise

Project implementation would result in temporary increases in construction noise in the vicinity of the pipeline alignments and the reservoir site. The noise impact assessment evaluates short-term (temporary) impacts associated with the construction of the pipelines and replacement of the existing reservoir. For Criterion 1 and Criterion 2 below, the determination of impact significance for noise takes into account combined construction noise from simultaneous use of on-site equipment, Noise Ordinance standards, proximity of noise-sensitive uses, and the potential duration that sensitive receptors would be subject to construction noise.

To assess potential short-term construction noise impacts, the analysis identifies and describes sensitive receptors and their relative exposure to estimated construction noise. The analysis considers the attenuation of noise with distance but not attenuation potentially provided by existing topography such as an embankment or trench because attenuation effects can be variable and receptor benefits depend on the degree to which a source is blocked. With no topographic barrier attenuation effects included, the estimated noise levels are considered to be conservatively high. Construction-related noise impacts were assessed in part using the U.S. Federal Transit Administration (FTA) methodology for general quantitative noise assessment (FTA, 2006). The FTA methodology considers operation of the two noisiest pieces of equipment and applies documented usage to account for the amount of time that equipment is in use. The distance between noise source and receptor was based on the distance between each facility's closest boundary to the specified receptors.

Vibration and Groundborne Noise

The operation of impact or vibratory equipment (i.e., vibratory compactors or rollers) as part of Project construction could result in vibration that, in turn, could cause cosmetic damage to buildings or structures or disturb nearby residents at night. The impact assessment for vibration (Criterion 3 below) evaluates the potential for construction to result in excessive groundborne vibration or groundborne noise. Groundborne noise is experienced inside a building or structure but is the result of vibrations produced outside of the building and transmitted as ground vibration between the source and receiver. Groundborne noise can be problematic in situations where the primary airborne noise path is blocked, as in the case of a subway tunnel passing near homes or other noise-sensitive structures. However, the proposed noise- and vibration-generating construction activities associated with the Project would involve techniques (i.e., pavement cutting, excavation, and paving) that generate airborne noise and surface vibration. Groundborne noise is not discussed further since any potential groundborne noise from construction activities would be imperceptible; therefore, no impact related to groundborne noise would occur. The analysis of groundborne vibration impacts uses standard analytical methodologies, such as estimating vibration levels at sensitive receptors for a given vibration source and setback distance, comparing the estimated vibration levels with recommended limits or significance thresholds, determining potentially significant impacts on nearby sensitive receptors, and providing mitigation where applicable.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* a noise or vibration impact would be considered significant if the Project would:

1. Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
3. Result in exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels;
4. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
5. For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels; or
6. For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate (numbers correlate to the list above).

- *Criterion 4: Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.* The primary sources of noise typically associated with the operation of water facilities include pumps and electrical facilities (substations, transformers, and emergency generators). The Project would not include any such noise sources. The proposed pipelines would be located underground and the new tanks would be partially backfilled. Following the completion of Project improvements, pipeline operations would be similar to operations for other existing pipelines operated by EBMUD (i.e., flushing, hydrant testing, anode replacement every 25 years, leak detection, leak repair, right-of-way maintenance). Maintenance and repair activities would occur as needed or as part of routine of facility monitoring in accordance with standard inspection schedules, and the frequency of monitoring or maintenance activities would not change substantially from current conditions. The Project would not result in any permanent surface operations that would introduce new sources of noise or vibration. In addition, traffic (and resulting traffic noise) associated with operations and maintenance at the reservoir facility would decrease from approximately three trips per month to two after the existing reservoir is replaced with dual concrete tanks and is no longer under Division of Safety of Dams (DSOD) jurisdiction; therefore, there would be no impact.
- *Criterion 5: For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels.* The Project site is not within an airport land use plan area, nor is it in the vicinity of a private airstrip. Therefore, the Project would not result in the long-term exposure of workers to excessive airport-related noise levels and there would be no impact.
- *Criterion 6: For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.* The Project site is not within an airport land use plan area, nor is it in the vicinity of a private airstrip. Therefore, the Project would not result in the long-term exposure of workers to excessive airport-related noise levels and there would be no impact.

Impacts and Mitigation Measures

Impact NOI-1 Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (Criterion 1).

Lafayette’s Noise Ordinance includes a limited exception from noise level limits (i.e., higher or relaxed noise limits) for construction activity occurring between the less noise-sensitive daytime hours of 8:00 a.m. and 8:00 p.m. Outside of that timeframe, construction noise is expected to fall below the otherwise applicable, more stringent noise limits found in the ordinance. Because Lafayette’s Noise Ordinance imposes differing noise level limits depending on the time of day during which construction occurs, this analysis considers two categories of construction noise: (1) that generated by construction activities occurring between 8:00 a.m. and 8:00 p.m., and (2) that generated by construction activities occurring outside of the ordinance’s 8:00 a.m. to 8:00 p.m. timeframe.

Construction Activities Occurring Between 8:00 a.m. and 8:00 p.m.

Operation of construction equipment between the hours of 8:00 a.m. and 8:00 p.m. would result in temporary noise increases in the Project vicinity. Some proposed construction activities could expose nearby residents to noise levels that exceed ordinance noise limits.

To assess which construction activities could exceed noise ordinance limits, **Table 3.11-4** presents the estimated daytime Project-related construction noise levels at the closest property boundary, based on distance, equipment type and duration of equipment use. The table is organized by the daytime construction activities (open trench pipeline construction, reservoir replacement and pipeline tie-ins) and equipment associated with each activity (i.e., principal noise sources). **Table 3.11-4** also indicates the reference noise level (L_{max} in dBA) at 50 feet, typical minimum distances between specific construction activities and the closest property lines, the noise level reduction adjustment to account for distance attenuation effects ("Noise Level Adjustment for Distance"), typical duration factor to reflect equipment use ("Assumed Usage Factor"[2]), and noise level adjustment to account for duration of use ("Noise Level Adjustment for Usage"). The results of these adjustments are the Leq noise levels shown in **Table 3.11-4** ("Leq Noise Level Adjusted for Distance and Usage").

To assess which construction activities exceed the construction noise limits (i.e., Lmax over 83 dBA at 50 feet or Leq over 80 dBA at the nearest property line), the reference Lmax noise level and time-adjusted Leq noise levels are compared to the respective limits for each construction activity. If at least one of the two noise limits would be met, the construction activity is considered to be consistent with the ordinance, resulting in a less-than-significant noise impact. However, if both noise limits are exceeded, the construction activity is considered to conflict with the ordinance, and the impact would be significant.

Pipeline Construction. As shown on **Table 3.11-4,** all equipment for pipeline construction expect for the grader, tractor, jackhammer and pavement saw meet the construction ordinance noise level limits of either 83 dBA (Lmax) at 50 feet or 80 dBA (Leq) at the property line and noise impacts are therefore considered less-than-significant. The grader and tractor equipment, either of which could be used 40 percent of the time, would generate noise levels of 84 to 85 dBA (Lmax) at 50 feet or 90 to 91 dBA (Leq) at the property line. In addition, the jackhammer and pavement saw equipment, either of which would be expected to only be used 20 percent of the time, would generate noise levels of 84 dBA to 90 dBA (Lmax) at 50 feet or 87 to 93 dBA (Leq) at the closest property line. Operation of these four types of equipment could not meet the construction ordinance noise level limits of either 83 dBA (Lmax) at 50 feet or 80 dBA (Leq) at the property line. Accordingly, use of these four types of equipment would result in a significant noise impact. However, it is noted that operation of these equipment types would be very limited in duration. Pavement saws are typically used in lieu of jackhammers and therefore not operated at the same time as jackhammers. Pavement saws typically maintain speeds between 8 to 10 feet per minute (fpm) to cut pavement. The saw cutting equipment would pass by each residential property twice to cut the pavement for each side of the pipeline trench, which would take approximately 10 to 15 minutes for each side of the trench. Therefore, pavement cutting noise is expected to only last for a total of 20 to 30 minutes in front of each residential property. Operation of the grader and tractor is expected to be limited to 6 to 8 hours per day in front of each residential property for approximately two days.

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[2] Equipment usage factors are estimated by the Federal Highway Administration based on a roadway tunnel project (FHWA, 2017).

Table 3.11-4: Estimated Daytime Construction Noise Levels at Closest Property Lines

Pipeline and Closest Noise-Sensitive Property Location	Construction Activity	Maximum Noise Source	Reference Noise Level, Lmax in dBA at 50 feet[a]	Reference Noise Level Exceeds 83-dBA (Lmax) Ordinance Limit at 50 feet? (Impact NOI-1)	Distance Between Project and Closest Property Line[b]	Noise Level Adjustment for Distance	Assumed Usage Factor[c]	Noise Level Adjustment for Usage	Leq Noise Level Adjusted for Distance and Usage	Adjusted Noise Level Exceeds 80-dBA (Leq) Ordinance Limit at Closest Property Line? (Impact NOI-1)	Impact NOI-1 Significance Determination[d]	Duration of Active Construction	Impact NOI-2 Significance Determination With Duration Considered[e]
Open Trench Pipeline Construction													
Closest residential properties on Leland Drive, Condit Road, and Windsor Drive	Pavement Cutting	Pavement Saw	**90**	Yes	15	10	20%	-7	**93**	Yes	SU	≤10 days	LS
		Jackhammer with Jacket[f]	**84**	Yes	15	10	20%	-7	**87**	Yes	SU	≤10 days	LS
	Excavation and Pipe Installation	Excavator	81	No	15	10	40%	-4	**87**	Yes	LS	≤10 days	LS
		Grader	**85**	Yes	15	10	40%	-4	**91**	Yes	SU	≤10 days	LS
		Concrete Mixer Truck	79	No	15	10	40%	-4	**85**	Yes	LS	≤10 days	LS
		Dump Truck	76	No	15	10	40%	-4	**82**	Yes	LS	≤10 days	LS
		Backhoe	78	No	15	10	40%	-4	**84**	Yes	LS	≤10 days	LS
		Front End Loader	79	No	15	10	40%	-4	**85**	Yes	LS	≤10 days	LS
		Tractor	**84**	Yes	15	10	40%	-4	**90**	Yes	SU	≤10 days	LS
		Dewatering Pump	45	No	15	10	100%	0	55	No	LS	≤10 days	LS
		Welder/Torch	74	No	15	10	40%	-4	80	No	LS	≤10 days	LS
		Compressor	78	No	15	10	40%	-4	**84**	Yes	LS	≤10 days	LS
		Generator	81	No	15	10	50%	-3	**88**	Yes	LS	≤10 days	LS
	Repaving	Paver	77	No	15	10	50%	-3	**84**	Yes	LS	≤10 days	LS
		Roller	80	No	15	10	20%	-7	**83**	Yes	LS	≤10 days	LS
		Compactor	80	No	15	10	20%	-7	**83**	Yes	LS	≤10 days	LS
		Sweeper	82	No	15	10	10%	-10	**82**	Yes	LS	≤10 days	LS
The Meher Schools on Leland Drive	Pavement Cutting	Pavement Saw	**90**	Yes	15	10	20%	-7	**93**	Yes	SU	≤10 days	LS
		Jackhammer with Jacket[f]	**84**	Yes	15	10	20%	-7	**87**	Yes	SU	≤10 days	LS
	Excavation and Pipe Installation	Excavator	81	No	15	10	40%	-4	**87**	Yes	LS	≤10 days	LS
		Grader	**85**	Yes	15	10	40%	-4	**91**	Yes	SU	≤10 days	LS
		Concrete Mixer Truck	79	No	15	10	40%	-4	**85**	Yes	LS	≤10 days	LS
		Dump Truck	76	No	15	10	40%	-4	**82**	Yes	LS	≤10 days	LS
		Backhoe	78	No	15	10	40%	-4	**84**	Yes	LS	≤10 days	LS
		Front End Loader	79	No	15	10	40%	-4	**85**	Yes	LS	≤10 days	LS
		Tractor	**84**	Yes	15	10	40%	-4	**90**	Yes	SU	≤10 days	LS
		Dewatering Pump	45	No	15	10	100%	0	55	No	LS	≤10 days	LS
		Welder/Torch	74	No	15	10	40%	-4	80	No	LS	≤10 days	LS
		Compressor	78	No	15	10	40%	-4	**84**	Yes	LS	≤10 days	LS
		Generator	81	No	15	10	50%	-3	**88**	Yes	LS	≤10 days	LS
	Repaving	Paver	77	No	15	10	50%	-3	**84**	Yes	LS	≤10 days	LS
		Roller	80	No	15	10	20%	-7	**83**	Yes	LS	≤10 days	LS
		Compactor	80	No	15	10	20%	-7	**83**	Yes	LS	≤10 days	LS
		Sweeper	82	No	15	10	10%	-10	**82**	Yes	LS	≤10 days	LS

NOTES: Under Impact NOI-1, noise levels in **BOLD** exceed the referenced ordinance noise limit.

[a] Reference noise levels are based on the actual measured Lmax noise levels at 50 feet that are listed in Table 9.1 (RCNM Default Noise Emissions Reference Levels and Usage Factors) of the FHWA Roadway Construction Noise Model (2017).

[b] Distances represent typical minimum setback distances from the closest property lines/rights-of-way to 7 feet from the curb, which is the closest possible location where most construction equipment would operate.

[c] Acoustical usage factors are estimated based on on extensive measurements taken by FHWA (2017) in conjunction with the Central Artery/Tunnel Project and intended for noise modeling purposes. The acoustical usage factors represent the percentage of time that a particular item of equipment is assumed to be running at full power (i.e., loudest condition) during a construction operation.

[d] Significance is determined by comparing project-related nosie levels to the 83-dBA (Lmax) at 50 feet ordinance limit and the 80-dBA (Leq) ordinance limit. If only one of the two noise limits is exceeded, the construction activity is considered to be consistent with the ordinance, a less-than-significant noise impact. However, if both noise limits are exceeded, the construction activity is considered to conflict with the ordinance, and the impact would be significant.

[e] Under Impact NOI-2, adjusted noise levels exceeding the 80-dBA (Leq) ordinance limit for longer than two weeks (10 weekdays) is considered to be a significant noise impact.

[f] Jackhammers typically generate noise levels of 89 dBA (Lmax) at 50 feet, but when equipped with an external jacket, noise can be reduced to 84 dBA (Lmax) at 50 feet.

Table 3.11-4: Estimated Daytime Construction Noise Levels at Closest Property Lines (Continued)

Pipeline and Closest Noise-Sensitive Property Location	Construction Activity	Maximum Noise Source	Reference Noise Level, Lmax in dBA at 50 feet[a]	Reference Noise Level Exceeds 83-dBA (Lmax) Ordinance Limit at 50 feet? (Impact NOI-1)	Distance Between Project and Closest Property Line[b]	Noise Level Adjustment for Distance	Assumed Usage Factor[c]	Noise Level Adjustment for Usage	Leq Noise Level Adjusted for Distance and Usage	Adjusted Noise Level Exceeds 80-dBA (Leq) Ordinance Limit at Closest Property Line? (Impact NOI-1)	Impact NOI-1 Significance Determination[d]	Duration of Active Construction	Impact NOI-2 Significance Determination With Duration Considered[e]
Reservoir Replacement													
Demolition of Existing Reservoir and Tank Construction													
Closest residential properties to the east on Leland Drive	Vegetation Clearing	Chain Saws	**85**	Yes	175	-11	10%	-10	64	No	LS	≤10 days	LS
		Wood Chipper	**90**	Yes	175	-11	10%	-10	69	No	LS	≤10 days	LS
	Demolition and Construction	Excavator	81	No	350	-17	40%	-4	60	No	LS	>10 days	LS
		Grader	**85**	Yes	350	-17	40%	-4	64	No	LS	>10 days	LS
		Concrete Mixer Truck	79	No	350	-17	40%	-4	58	No	LS	>10 days	LS
		Dump Truck	76	No	350	-17	40%	-4	55	No	LS	>10 days	LS
		Backhoe	78	No	350	-17	40%	-4	57	No	LS	>10 days	LS
		Front End Loader	79	No	350	-17	40%	-4	58	No	LS	>10 days	LS
		Tractor	**84**	Yes	350	-17	40%	-4	63	No	LS	>10 days	LS
		Hoe Ram (Impact Hammer)	**90**	Yes	350	-17	20%	-7	66	No	LS	>10 days	LS
		Crane	**85**	Yes	350	-17	16%	-8	60	No	LS	>10 days	LS
		Concrete Crusher	**90**	Yes	350	-17	50%	-3	70	No	LS	>10 days	LS
		Compressor	78	No	350	-17	40%	-4	57	No	LS	>10 days	LS
		Generator	81	No	350	-17	50%	-3	61	No	LS	>10 days	LS
		Paver	77	No	350	-17	50%	-3	57	No	LS	>10 days	LS
		Roller	80	No	350	-17	20%	-7	56	No	LS	>10 days	LS
		Compactor	80	No	350	-17	20%	-7	56	No	LS	>10 days	LS
Closest residential properties to the northwest off Old Tunnel Road	Vegetation Clearing	Chain Saws	**85**	Yes	450	-19	10%	-10	56	No	LS	≤10 days	LS
		Wood Chipper	**90**	Yes	450	-19	10%	-10	61	No	LS	≤10 days	LS
	Demolition and Construction	Excavator	81	No	90	-5	40%	-4	72	No	LS	>10 days	LS
		Grader	**85**	Yes	90	-5	40%	-4	76	No	LS	>10 days	LS
		Concrete Mixer Truck	79	No	90	-5	40%	-4	70	No	LS	>10 days	LS
		Dump Truck	76	No	90	-5	40%	-4	67	No	LS	>10 days	LS
		Backhoe	78	No	90	-5	40%	-4	69	No	LS	>10 days	LS
		Dozer	82	No	90	-5	40%	-4	73	No	LS	>10 days	LS
		Scraper	**84**	Yes	90	-5	40%	-4	75	No	LS	>10 days	LS
		Hoe Ram (Impact Hammer)	**90**	Yes	90	-5	20%	-7	78	No	LS	>10 days	LS
		Crane	81	No	90	-5	16%	-8	68	No	LS	>10 days	LS
		Concrete Crusher	**90**	Yes	90	-5	50%	-3	**82**	Yes	LSM	>10 days	LSM
		Compressor	78	No	90	-5	40%	-4	69	No	LS	>10 days	LS
		Generator	81	No	90	-5	50%	-3	73	No	LS	>10 days	LS
		Paver	77	No	90	-5	50%	-3	69	No	LS	>10 days	LS
		Roller	80	No	90	-5	20%	-7	68	No	LS	>10 days	LS
		Compactor	80	No	90	-5	20%	-7	68	No	LS	>10 days	LS

NOTES: Under Impact NOI-1, noise levels in **BOLD** exceed the referenced ordinance noise limit.

[a] Reference noise levels are based on the actual measured Lmax noise levels at 50 feet that are listed in Table 9.1 (RCNM Default Noise Emissions Reference Levels and Usage Factors) of the FHWA Roadway Construction Noise Model (2017).

[b] Distances represent typical minimum setback distances from the closest property lines/rights-of-way to 7 feet from the curb, which is the closest possible location where most construction equipment would operate.

[c] Acoustical usage factors are estimated based on on extensive measurements taken by FHWA (2017) in conjunction with the Central Artery/Tunnel Project and intended for noise modeling purposes. The acoustical usage factors represent the percentage of time that a particular item of equipment is assumed to be running at full power (i.e., loudest condition) during a construction operation.

[d] Significance is determined by comparing project-related nosie levels to the 83-dBA (Lmax) at 50 feet ordinance limit and the 80-dBA (Leq) ordinance limit. If only one of the two noise limits is exceeded, the construction activity is considered to be consistent with the ordinance, a less-than-significant noise impact. However, if both noise limits are exceeded, the construction activity is considered to conflict with the ordinance, and the impact would be significant.

[e] Under Impact NOI-2, adjusted noise levels exceeding the 80-dBA (Leq) ordinance limit for longer than two weeks (10 weekdays) is considered to be a significant noise impact.

[f] Jackhammers typically generate noise levels of 89 dBA (Lmax) at 50 feet, but when equipped with an external jacket, noise can be reduced to 84 dBA (Lmax) at 50 feet.

Table 3.11-4: Estimated Daytime Construction Noise Levels at Closest Property Lines (Continued)

Pipeline and Closest Noise-Sensitive Property Location	Construction Activity	Maximum Noise Source	Reference Noise Level, Lmax in dBA at 50 feet[a]	Reference Noise Level Exceeds 83-dBA (Lmax) Ordinance Limit at 50 feet? (Impact NOI-1)	Distance Between Project and Closest Property Line[b]	Noise Level Adjustment for Distance	Assumed Usage Factor[c]	Noise Level Adjustment for Usage	Leq Noise Level Adjusted for Distance and Usage	Adjusted Noise Level Exceeds 80-dBA (Leq) Ordinance Limit at Closest Property Line? (Impact NOI-1)	Impact NOI-1 Significance Determination[d]	Duration of Active Construction	Impact NOI-2 Significance Determination With Duration Considered[e]
Reservoir Replacement (Continued)													
Demolition of Existing Reservoir and Tank Construction (Continued)													
Closest residential properties to the west on Maryola Court (at east end)	Vegetation Clearing	Chain Saws	**85**	Yes	280	-15	10%	-10	60	No	LS	≤10 days	LS
		Wood Chipper	**90**	Yes	280	-15	10%	-10	65	No	LS	≤10 days	LS
	Demolition and Construction	Excavator	81	No	50	0	40%	-4	77	No	LS	>10 days	LS
		Grader	**85**	Yes	50	0	40%	-4	81	No	LS	>10 days	LS
		Concrete Mixer Truck	79	No	50	0	40%	-4	75	No	LS	>10 days	LS
		Dump Truck	76	No	50	0	40%	-4	72	No	LS	>10 days	LS
		Backhoe	78	No	50	0	40%	-4	74	No	LS	>10 days	LS
		Dozer	82	No	50	0	40%	-4	78	No	LS	>10 days	LS
		Scraper	**84**	Yes	50	0	40%	-4	80	No	LS	>10 days	LS
		Hoe Ram (Impact Hammer)	**90**	Yes	50	0	20%	-7	**83**	Yes	LSM	>10 days	LS
		Crane	81	No	50	0	16%	-8	73	No	LS	>10 days	LS
		Concrete Crusher	**90**	Yes	50	0	50%	-3	**87**	Yes	LSM	>10 days	LSM
		Compressor	78	No	50	0	40%	-4	74	No	LS	>10 days	LS
		Generator	81	No	50	0	50%	-3	78	No	LS	>10 days	LS
		Paver	77	No	50	0	50%	-3	74	No	LS	>10 days	LS
		Roller	80	No	50	0	20%	-7	73	No	LS	>10 days	LS
		Compactor	80	No	50	0	20%	-7	73	No	LS	>10 days	LS
Closest residential properties to the west and southwest on Mars Court (at east end)	Vegetation Clearing	Chain Saws	**85**	Yes	60	-2	10%	-10	73	No	LS	≤10 days	LS
		Wood Chipper	**90**	Yes	60	-2	10%	-10	78	No	LS	≤10 days	LS
	Demolition and Construction	Excavator	81	No	55	-1	40%	-4	76	No	LS	>10 days	LS
		Grader	**85**	Yes	55	-1	40%	-4	80	No	LS	>10 days	LS
		Concrete Mixer Truck	79	No	55	-1	40%	-4	74	No	LS	>10 days	LS
		Dump Truck	76	No	55	-1	40%	-4	71	No	LS	>10 days	LS
		Backhoe	78	No	55	-1	40%	-4	73	No	LS	>10 days	LS
		Dozer	82	No	55	-1	40%	-4	77	No	LS	>10 days	LS
		Scraper	**84**	Yes	55	-1	40%	-4	79	No	LS	>10 days	LS
		Hoe Ram (Impact Hammer)	**90**	Yes	55	-1	20%	-7	82	No	LS	>10 days	LS
		Crane	81	No	55	-1	16%	-8	72	No	LS	>10 days	LS
		Concrete Crusher	**90**	Yes	55	-1	50%	-3	**86**	Yes	LSM	>10 days	LSM
		Compressor	78	No	55	-1	40%	-4	73	No	LS	>10 days	LS
		Generator	81	No	55	-1	50%	-3	77	No	LS	>10 days	LS
		Paver	77	No	55	-1	50%	-3	73	No	LS	>10 days	LS
		Roller	80	No	55	-1	20%	-7	72	No	LS	>10 days	LS
		Compactor	80	No	55	-1	20%	-7	72	No	LS	>10 days	LS

NOTES: Under Impact NOI-1, noise levels in **BOLD** exceed the referenced ordinance noise limit.

[a] Reference noise levels are based on the actual measured Lmax noise levels at 50 feet that are listed in Table 9.1 (RCNM Default Noise Emissions Reference Levels and Usage Factors) of the FHWA Roadway Construction Noise Model (2017).

[b] Distances represent typical minimum setback distances from the closest property lines/rights-of-way to 7 feet from the curb, which is the closest possible location where most construction equipment would operate.

[c] Acoustical usage factors are estimated based on on extensive measurements taken by FHWA (2017) in conjunction with the Central Artery/Tunnel Project and intended for noise modeling purposes. The acoustical usage factors represent the percentage of time that a particular item of equipment is assumed to be running at full power (i.e., loudest condition) during a construction operation.

[d] Significance is determined by comparing project-related nosie levels to the 83-dBA (Lmax) at 50 feet ordinance limit and the 80-dBA (Leq) ordinance limit. If only one of the two noise limits is exceeded, the construction activity is considered to be consistent with the ordinance, a less-than-significant noise impact. However, if both noise limits are exceeded, the construction activity is considered to conflict with the ordinance, and the impact would be significant.

[e] Under Impact NOI-2, adjusted noise levels exceeding the 80-dBA (Leq) ordinance limit for longer than two weeks (10 weekdays) is considered to be a significant noise impact.

[f] Jackhammers typically generate noise levels of 89 dBA (Lmax) at 50 feet, but when equipped with an external jacket, noise can be reduced to 84 dBA (Lmax) at 50 feet.

Table 3.11-4: Estimated Daytime Construction Noise Levels at Closest Property Lines (Continued)

Pipeline and Closest Noise-Sensitive Property Location	Construction Activity	Maximum Noise Source	Reference Noise Level, Lmax in dBA at 50 feet[a]	Reference Noise Level Exceeds 83-dBA (Lmax) Ordinance Limit at 50 feet? (Impact NOI-1)	Distance Between Project and Closest Property Line[b]	Noise Level Adjustment for Distance	Assumed Usage Factor[c]	Noise Level Adjustment for Usage	Leq Noise Level Adjusted for Distance and Usage	Adjusted Noise Level Exceeds 80-dBA (Leq) Ordinance Limit at Closest Property Line? (Impact NOI-1)	Impact NOI-1 Significance Determination[d]	Duration of Active Construction	Impact NOI-2 Significance Determination With Duration Considered[e]
Reservoir Replacement (Continued)													
Staging and Stockpile Areas													
Closest residential properties on Leland Drive (to the east)	Equipment Storage and Soil Stockpiling Activities	Dump Truck	76	No	50	0	40%	-4	72	No	LS	>10 days	LS
		Backhoe	78	No	50	0	40%	-4	74	No	LS	>10 days	LS
		Front End Loader	79	No	50	0	40%	-4	75	No	LS	>10 days	LS
Pipeline Tie-ins													
Closest residential properties at Laland Drive/Meek Place intersection	Pipe Cutting and Removal	Pipe Cutter	78	No	20	8	10%	-10	76	No	LS	<10 days	LS
		Backhoe	78	No	20	8	40%	-4	**82**	Yes	LS	<10 days	LS
		Front End Loader	79	No	20	8	40%	-4	**83**	Yes	LS	<10 days	LS
	Installation of Tee	Dump Truck	76	No	20	8	40%	-4	80	No	LS	<10 days	LS
		Flatbed Truck	74	No	20	8	40%	-4	78	No	LS	<10 days	LS
		Welder	74	No	20	8	40%	-4	78	No	LS	<10 days	LS
	Dewatering and Welding	Dewatering Pump	45	No	20	8	100%	0	53	No	LS	<10 days	LS
		Generator	81	No	20	8	100%	0	**89**	No	LS	<10 days	LS
Closest residential properties at Old Tunnel Road/ Windsor Drive intersection	Pipe Cutting and Removal	Pipe Cutter	78	No	15	10	10%	-10	78	No	LS	<10 days	LS
		Backhoe	78	No	15	10	40%	-4	**84**	Yes	LS	<10 days	LS
		Front End Loader	79	No	15	10	40%	-4	**85**	Yes	LS	<10 days	LS
	Installation of Tee	Dump Truck	76	No	15	10	40%	-4	**82**	Yes	LS	<10 days	LS
		Flatbed Truck	74	No	15	10	40%	-4	80	No	LS	<10 days	LS
		Welder	74	No	15	10	40%	-4	80	No	LS	<10 days	LS
	Dewatering and Welding	Dewatering Pump	45	No	15	10	100%	0	55	No	LS	<10 days	LS
		Generator	81	No	15	10	100%	0	**91**	Yes	LS	<10 days	LS

NOTES: Under Impact NOI-1, noise levels in **BOLD** exceed the referenced ordinance noise limit.

[a] Reference noise levels are based on the actual measured Lmax noise levels at 50 feet that are listed in Table 9.1 (RCNM Default Noise Emissions Reference Levels and Usage Factors) of the FHWA Roadway Construction Noise Model (2017).

[b] Distances represent typical minimum setback distances from the closest property lines/rights-of-way to 7 feet from the curb, which is the closest possible location where most construction equipment would operate.

[c] Acoustical usage factors are estimated based on on extensive measurements taken by FHWA (2017) in conjunction with the Central Artery/Tunnel Project and intended for noise modeling purposes. The acoustical usage factors represent the percentage of time that a particular item of equipment is assumed to be running at full power (i.e., loudest condition) during a construction operation.

[d] Significance is determined by comparing project-related nosie levels to the 83-dBA (Lmax) at 50 feet ordinance limit and the 80-dBA (Leq) ordinance limit. If only one of the two noise limits is exceeded, the construction activity is considered to be consistent with the ordinance, a less-than-significant noise impact. However, if both noise limits are exceeded, the construction activity is considered to conflict with the ordinance, and the impact would be significant.

[e] Under Impact NOI-2, adjusted noise levels exceeding the 80-dBA (Leq) ordinance limit for longer than two weeks (10 weekdays) is considered to be a significant noise impact.

[f] Jackhammers typically generate noise levels of 89 dBA (Lmax) at 50 feet, but when equipped with an external jacket, noise can be reduced to 84 dBA (Lmax) at 50 feet.

Source: Orion Environmental Associates (2017)

As detailed in the Project Description and described above, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, and they include a wide range of noise control measures including development of a noise control and monitoring plan and requiring the contractor to implement noise control measures (e.g., mufflers or noise attenuating shield on all equipment, and construction of temporary sound barriers where impact equipment is used). Implementation of EBMUD's standard noise controls as required by Section 3.6 of EBMUD's Standard Construction Specification 01 35 44 would reduce equipment-related noise levels, but not necessarily to below either ordinance noise limit. Therefore, noise increases associated with operation of these four equipment types, despite the short duration of their operation in front of each residential property, is considered to be a significant and unavoidable impact because it would not meet either the equipment noise limit of 83 dBA at 50 feet or the 80-dBA noise limit at the property line.

Reservoir Construction. The reservoir replacement would entail demolishing the existing reservoir and replacing it with two concrete tanks within the existing reservoir basin. The loudest noise generating activities would occur during the demolition phase. During the demolition phase, vegetation and trees would be removed, the existing Leland Reservoir would be demolished, and soil stockpile and staging areas would be constructed. Demolition activities would include operation of chain saws and a wood chipper for tree removals. A hoe-ram (mounted impact hammer) and concrete crusher (recycler) would be used to break up and process the reservoir's concrete. Operation of heavy equipment would be necessary for grading the reservoir/tank locations and stockpile/staging areas. Trucks would also operate in the stockpile and staging areas as materials and equipment are stored there. As shown on **Table 3.11-4**, even with the incorporation of EBMUD's standard practices and procedures for noise control measures, much of the construction equipment noise would still have a noise level between 76 dBA to 90 dBA (L_{max}) at 50 feet and therefore could not meet the construction ordinance noise level limit of 83 dBA at 50 feet.

As indicated in **Table 3.11-4**, residential receptors to the east, north, and west would be subject to noise levels related to the reservoir replacement construction of less than 80 dBA (L_{eq}) at the property line, with two exceptions. The hoe ram and concrete crusher would generate noise levels of 83 dBA (L_{eq}) and 87 dBA (L_{eq}), respectively, if they are located within 50 feet of the property line to the west, which would be at the edge of the existing reservoir facility. At this distance, operation of the hoe ram and concrete crusher would exceed both the City's 83-dBA at 50 feet and 80-dBA at the closest property line thresholds. Accordingly, use of the hoe-ram (mounted impact hammer) and concrete crusher would be considered a potentially significant impact related to noise. However, implementation of **Mitigation Measure NOI-1a** would reduce this potential impact to a less-than-significant level by requiring a temporary barrier or sufficient setbacks between the hoe ram and concrete crusher and the property line to the west. As detailed in the Project Description and described above, Section 1.3(G) of EBMUD's Standard Construction Specification 01 35 44 requires the contractor to have a noise control and monitoring plan, and Section 3.6 requires implementation of noise controls. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists applicable standard specification language. Therefore noise generated by the hoe ram, concrete crusher and other construction activities would be monitored and additional noise controls (e.g., construction of a sound barrier or relocation of the concrete crusher) would be implemented. Additionally, the hillside surrounding the reservoir basin would serve as a topographic noise barrier, effectively blocking construction noise generated within or east of the basin from sensitive receptors to the west, which are located closest to the reservoir site.

Pipeline Tie-Ins. The new 36-inch pipeline construction installation would need to be connected to the existing water distribution system at three connection points: (1) the intersection of Windsor Drive and Old Tunnel Road, (2) the intersection of Leland Drive and Meek Place, and (3) on the southeast side of the Leland Reservoir property. The pipeline tie-ins at the intersections of Windsor Drive/Old Tunnel Road and Leland Drive/Meek Place would require a continuous process of approximately 71 to 76 hours, with some work occurring between 8 a.m. and 8 p.m. As **Table 3.11-4** shows, noise levels related to the pipeline tie-in construction would not exceed the 80-dBA (L_{eq}) threshold at the property line, with three exceptions. The backhoe would generate noise levels of 82 to 84 dBA (L_{eq}), the front end loader would generate 83 to 85 dBA (L_{eq}), and the generator could generate 89 to 91 dBA (L_{eq}) if they are located within 15 to 20 feet of the closest property line. None of the tie-in work would exceed the Noise Ordinance's 83-dBA (L_{max}) at 50 feet limit for daytime construction activity. As indicated above, even though the 80-dBA (L_{eq}) threshold would not be met at the closest property line during operation of these three equipment types, the pipeline tie-in work is still considered to be consistent with the ordinance because the 83-dBA (L_{max}) at 50 feet threshold would be met, a less-than-significant noise impact. Additionally, pipeline tie-in activities would generate noise levels in excess of the 80-dBA (L_{eq}) threshold at the property line for only approximately three days and only when these three specific types of equipment are operated.

Construction Activities Occurring Outside 8:00 a.m. to 8:00 p.m. Timeframe
The Project's construction hours would be 7:00 a.m. to 7:00 p.m., Monday through Friday, and construction-related vehicles could travel on neighborhood streets prior to 7:00 a.m. in order to reach the site by 7:00 a.m. On a typical day, construction trucks and personnel would report to the site at 7:00 a.m. for minor tasks and meetings, and there would be morning construction-related activities between 7:00 a.m. and 8:00 a.m. A 6:00 a.m. start time is needed during reservoir foundation and roof slab concrete pour work, which is estimated to occur over a total of approximately 16 days for both tanks (approximately 8 days per tank).

Because of the Project's proximity to residential areas, construction noise occurring outside of the 8:00 a.m. to 8:00 p.m. timeframe is expected to exceed the ordinance's more stringent noise limits. The ordinance requires noise occurring between 10:00 p.m. and 7:00 a.m. to remain below 53 dBA (L_{eq}), and noise occurring between 7:00 a.m. and 8:00 a.m. to remain below 58 dBA (L_{eq}). As explained above, the Project would include work on a daily basis beginning at 7:00 a.m., as well as limited amounts of overnight and early morning work, all of which could exceed these limits.

Table 3.11-4 presents estimated Project-related construction equipment noise levels generated during typical work on the Project, including work likely to be completed prior to 8:00 a.m. As the table indicates, construction noise could exceed the Lafayette Noise Ordinance's applicable limits of 58 dBA (L_{eq}) between 7:00 a.m. and 8:00 a.m., and 53 dBA (L_{eq}) between 10:00 p.m. and 7:00 a.m., a significant noise impact. EBMUD has considered the practicability of prohibiting construction work before 8:00 a.m. in order to meet the ordinance time limit and has determined that this is not feasible because:

- Construction work must start as early in the morning as possible to allow workers, deliveries, and equipment movement to avoid the heaviest rush hour traffic on highways and roads. Deliveries may arrive early in the morning before 7:00 a.m. due to either lighter traffic or permits that prohibit travel during certain hours.
- Earlier start times also allow the work to avoid the heat of the day in summer and the darkness when the daylight hours are shorter. During summertime heatwaves, contractors will sometimes request earlier start times to avoid working throughout the heat of the day.
- Starting early in the morning also allows for a larger time buffer in the afternoon, when adhering to an 8-hour work day. The buffer can provide extra daylight hours in case the project schedule slips or a construction issue comes up during the day that must be corrected.
- Concrete work requires a 6:00 a.m. start time due to the need for setup in the morning to mobilize a pump truck prior to the first delivery of concrete. Pump trucks will typically arrive at 6:00 a.m., ahead of the rest of the concrete crew. Disruptions in the concrete pour can affect the quality of the concrete work and service life of the structure; therefore, it is extremely important that concrete trucks arrive at regular intervals, particularly later in the concrete pour. If concrete truck

movement is inhibited by heavy traffic later during afternoon commute hours, the concrete pour operation could be disrupted. In addition, concrete work is affected by temperature. Early start times ensure longer periods of time when temperatures are lower and concrete sets slower and is easier to work with.

- For concrete work that involves flat work, such as the tank floor, the concrete finishers typically stay later to finish the concrete after the remainder of the crew has gone home. Starting concrete work early allows concrete finishers to complete their work during daylight hours, or at least minimize the amount of work being performed after dark under floodlights. Finishing concrete after dark can negatively affect the quality of the concrete finish.

In addition to early morning activities, construction activities would need to extend later than the 8:00 p.m. ordinance time limits for pipeline tie-ins at Old Tunnel Road at Windsor Drive and Leland Drive at Meek Place. The entire tie-in process could require continuous work for approximately 71 to 76 hours, although the noisiest activity would occur over a 24-hour period. The tie-in process would be short-term, intermittent in nature, and would cease upon completion of the tie-in process. The process would entail some limited construction activities during nighttime (7:00 p.m. to 7:00 a.m.) weekday hours. The nighttime work would occur primarily during one 24-hour period. The tie-in process would involve: (1) approximately 5 to 7 hours to dewater and shut down existing mains (no major equipment noise sources); (2) approximately 24 hours to cut and weld the inside and outside of the each pipeline connection and valve installation (audible equipment noise would be generated during this process); (3) approximately 36 hours to apply the mortar and allow it to dry (little to no noise); and (4) approximately 6 to 9 hours to flush/chlorinate/recharge/return existing pipelines back into service (no major equipment noise sources).

Table 3.11-5 presents the estimated nighttime Project-related construction noise levels generated during the pipeline tie-in process at the closest property line based on distance, equipment type and duration of equipment use. As indicated in **Table 3.11-5**, Project-related nighttime construction equipment noise levels at the closest property line to tie-in sites are estimated to range between 53 and 91 dBA (L_{eq}) at the closest property line. Noise levels from all equipment proposed to be used (except dewatering pumps) would exceed the 53-dBA nighttime and 58-dBA early morning thresholds at the closest property lines for one night when pipeline cutting and welding occur, which would be a significant impact. As detailed in the Project Description and described above, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project. Sections 1.3G and 3.6 of EBMUD's Standard Construction Specification 01 35 44 require implementation of a wide range of noise control measures including development of a noise control and monitoring plan and requiring the contractor to implement noise control measures (e.g., mufflers or noise attenuating shield on all equipment, and construction of temporary sound barriers where impact equipment is used). The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists applicable standard specification language. Implementation of EBMUD's standard noise controls, provision of alternative lodging for affected residents as described in **Mitigation Measure NOI-1b,** and assignment of an EBMUD contact person as a community-construction liaison as specified in **Mitigation Measure NOI-1c** would reduce this impact but not to a less-than-significant level because nighttime construction noise would not meet noise ordinance limits. As a result, the noise impacts associated with nighttime construction at the tie-in sites for one night are considered to be significant and unavoidable.

Table 3.11-5: Estimated Nighttime Construction Noise Levels at Closest Property Lines

Pipeline and Closest Noise-Sensitive Property Location	Construction Activity	Maximum Noise Source	Reference Noise Level, Lmax in dBA at 50 feet[a]	Distance Between Project and Closest Property Line[b]	Noise Level Adjustment for Distance	Assumed Usage Factor[c]	Noise Level Adjustment for Usage	Leq Noise Level Adjusted for Distance and Usage	Adjusted Noise Level Exceeds 53-dBA (Leq) Ordinance Limit (10 p.m. to 7 a.m.) at Closest Property Line?	Adjusted Noise Level Exceeds 58-dBA (Leq) Ordinance Limit (7 a.m. to 8 a.m.) at Closest Property Line? (Impact	Duration of Active Construction
Pipeline Tie-ins											
Closest residential properties at Laland Drive/Meek Place intersection	Pipe Cutting and Removal	Pipe Cutter	78	20	8	10%	-10	76	**Yes**	**Yes**	24 hours
		Backhoe	78	20	8	40%	-4	82	**Yes**	**Yes**	24 hours
		Front End Loader	79	20	8	40%	-4	83	**Yes**	**Yes**	24 hours
	Installation of Tee	Dump Truck	76	20	8	40%	-4	80	**Yes**	**Yes**	24 hours
		Flatbed Truck	74	20	8	40%	-4	78	**Yes**	**Yes**	24 hours
		Welder	74	20	8	40%	-4	78	**Yes**	**Yes**	24 hours
	Dewatering and Welding	Dewatering Pump	45	20	8	100%	0	53	No	No	up to 76 hours
		Generator	81	20	8	100%	0	89	**Yes**	**Yes**	24 hours
Closest residential properties at Old Tunnel Road/ Windsor Drive intersection	Pipe Cutting and Removal	Pipe Cutter	78	15	10	10%	-10	78	**Yes**	**Yes**	24 hours
		Backhoe	78	15	10	40%	-4	84	**Yes**	**Yes**	24 hours
		Front End Loader	79	15	10	40%	-4	85	**Yes**	**Yes**	24 hours
	Installation of Tee	Dump Truck	76	15	10	40%	-4	82	**Yes**	**Yes**	24 hours
		Flatbed Truck	74	15	10	40%	-4	80	**Yes**	**Yes**	24 hours
		Welder	74	15	10	40%	-4	80	**Yes**	**Yes**	24 hours
	Dewatering and Welding	Dewatering Pump	45	15	10	100%	0	55	**Yes**	No	up to 76 hours
		Generator	81	15	10	100%	0	91	**Yes**	**Yes**	24 hours

NOTES: Noise levels in BOLD indicate a significant impact because they exceed either the 53-dBA (Leq) ordinance noise limit during the nighttime hours (10:00 p.m. to 7:00 a.m.) or 58-dBA (Leq) ordinance noise limit in the early morning hours (7:00 a.m. to 8:00 a.m.) at the property line.

[a] Reference noise levels are based on the actual measured Lmax noise levels at 50 feet that are listed in Table 9.1 (RCNM Default Noise Emissions Reference Levels and Usage Factors) of the FHWA Roadway Construction Noise Model (2017). Reference noise level for a pipe cutter is based on the reference noise level for a hot tapping machine.

[b] Distances represent typical minimum setback distances from the closest property line to the tie-in-location.

[c] Acoustical usage factors are estimated based on on extensive measurements taken by FHWA (2017) in conjunction with the Central Artery/Tunnel Project and intended for noise modeling purposes. The acoustical usage factors represent the percentage of time that a particular item of equipment is assumed to be running at full power (i.e., loudest condition) during a construction operation.

[d] Significance is determined by comparing projecct-related noise levels to the 53-dBA (Leq) nighttime and 58-dBA (Leq) early morning ordinance noise limits. If either of these limits would be exceeded, the construction activity is considered to have a significant noise impact.

[e] Under Impact NOI-2, adjusted noise levels exceeding the 53-dBA or 58-dBA (Leq) ordinance limits for any amount of time is considered to be a significant noise impact.

Source: Orion Environmental Associates (2017)

In summary, Project construction hours would extend one hour earlier than ordinance time limits (7:00 a.m. versus 8:00 a.m.) on most days and two hours earlier than ordinance time limits (6:00 a.m. versus 8:00 a.m. on reservoir foundation and roof slab concrete pour days) for 16 days during the 3+ year construction duration. Additionally, Project construction activities would extend overnight for two days (7:00 p.m. to 7:00 a.m.) for the two tie-in locations (one night per tie-in) and construction noise levels during this work would exceed the applicable noise level limits set forth in Lafayette's Noise Ordinance. These conflicts with the ordinance for overnight and early morning work are considered to be a significant and unavoidable noise impact.

Significance Determination before Mitigation

Significant.

Mitigation Measures

Mitigation Measure NOI-1a: Noise Control Measures for Hoe Ram and Concrete Crusher

During reservoir construction, EBMUD shall locate the concrete crusher within the reservoir basin (east of the access road) and at least 110 feet away from the closest property line to the west. During periods when the hoe ram needs to be operated within 70 feet of the closest property line to the west, a temporary noise barrier will be erected as necessary to ensure that the noise from the hoe ram does not exceed the 80-dBA (L_{eq}) ordinance limit at the western property line.

Mitigation Measure NOI-1b: Nighttime Construction Measure

EBMUD will provide alternative lodging for residents, if requested, that are adversely affected by nighttime pipeline tie-in construction at Windsor Drive /Old Tunnel Road and Leland Drive /Meek Place. This measure would only be implemented if nighttime construction occurs. EBMUD will notify residents that could be affected by nighttime project construction at least ten (10) days in advance. Residences within 500 feet of the tie-in construction sites and with a direct line-of-sight[3] who could be significantly affected by nighttime construction may request alternative lodging for the night(s) of the potential nighttime construction from EBMUD; alternative lodging will consist of a standard room at a hotel located within 6 miles of the affected residence or as close as feasible. Alternative lodging will be provided and approved by EBMUD the day before the known nighttime construction occurs, or sooner, based upon the types of construction activities that may occur during the nighttime hours (10:00 p.m. to 7:00 a.m.).

Mitigation Measure NOI-1c: Construction Liaison

EBMUD will maintain ongoing communication with residents adjacent to active construction areas. The following measures would be implemented during construction of the proposed Project.

- An EBMUD contact person will be designated to respond to construction-related issues, including noise. The phone number of the liaison will be conspicuously posted at construction areas, on all advanced notifications, and on the EBMUD Project website. The EBMUD contact person will take steps to resolve complaints, including coordinating periodic noise monitoring, if necessary.

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[3] The 500-foot distance applies only to residences with a direct line-of-sight to construction activities, and is determined by applying spherical spreading losses (6 dBA per doubling of distance) to a noise level of 80 dBA (L_{eq}) at 50 feet, resulting in a noise level of 60 dBA (L_{eq}) at 500 feet. While an exterior noise level of 60 dBA (L_{eq}) would still exceed the 53-dBA nighttime ordinance threshold, the exterior shell of a house can reduce exterior noise levels by 25 dBA with the windows closed, which would result in an interior level of 35 dBA (L_{eq}) with windows closed. Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable (U.S. EPA, 1974). The requirement that windows must be closed to achieve this acceptable level is assumed to be feasible since exposure would only be for one night.

- Residents located within 500 feet of project construction and with a direct line-of-sight to the construction area will be notified at least seven (7) days in advance of noisy activities and about the estimated duration of the activity. EBMUD will also send emails to individuals on the Project's mailing list to update them prior to noisy phases.

Significance Determination after Mitigation

The impacts of Project construction occurring outside of the noise ordinance's 8:00 a.m. to 8:00 p.m. timeframe for relaxed construction noise standards would be significant and unavoidable because construction noise prior to 7:00 a.m. could exceed the Lafayette Noise Ordinance's applicable limits of 58 dBA (L_{eq}) between 7:00 a.m. and 8:00 a.m. and 53 dBA between 10:00 p.m. and 7:00 a.m. (See **Table 3.11-5**). EBMUD has considered the practicability of prohibiting construction work before 8:00 a.m. in order to meet the ordinance time limit and has determined that this is not feasible, as detailed above.

In addition, as explained above, nighttime work is also required to complete the Project's pipeline tie-ins. The nighttime pipeline tie-in construction work would violate the Lafayette Noise Limit Ordinance of 53 dBA (L_{eq}) for nighttime noise. Implementation of **Mitigation Measure NOI-1b** would mitigate noise impacts associated with pipeline tie-ins by providing affected residents with the option to temporarily relocate to alternative lodging. However, **Mitigation Measure NOI-1b** would not necessarily reduce this impact to a less-than-significant level because residents may choose not to move to alternative lodging for one night and therefore would be subject to nighttime noise. Per **Mitigation Measure NOI-1c**, EBMUD will also maintain ongoing communication with residents and will address noise issues during construction, but this impact would remain significant and unavoidable because the Project would not comply with the noise ordinance.

Construction noise generated during the noise ordinance's 8:00 a.m. to 8:00 p.m. timeframe for relaxed construction noise standards could also exceed either the ordinance's noise limits of 83 dBA (L_{max}) at 50 feet or 80 dBA (L_{eq}) at the closest property line. As explained above, exceedance of only one of the two noise limits would be a less-than-significant noise impact, but exceedance of both noise limits would be a significant noise impact. Both limits would be exceeded when four equipment types are operated during pipeline construction and when the hoe-ram (mounted impact hammer) and concrete crusher are operated during reservoir construction. Implementation of **Mitigation Measure NOI-1a**, which requires a temporary noise barrier or minimum set back from the closest property line to the west of 70 feet for the hoe ram and 110 feet for the concrete crusher, would reduce the noise impact of reservoir construction to a less-than-significant level. However, implementation of EBMUD's standard noise controls on the pavement saw, jackhammer, grader, and tractor would not necessarily reduce their noise levels to below either ordinance noise limit. Therefore, noise increases associated with operation of these four equipment types, despite the short duration of their operation in front of each residential property, would be significant and unavoidable.

Impact NOI-2 Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Criterion 2).

Noise Limit Considerations

The following noise limit considerations were applied to determine whether a noise increase is considered to be a "substantial" temporary or periodic noise increase:

1. For daytime construction noise: Impacts would be significant if temporary noise increases from construction activities greater than 80 dBA (L_{eq}) during the day (7:00 a.m. to 10:00 p.m.) at the closest property line of any sensitive receptor occurred for more than two consecutive weeks (10 work days).
2. For nighttime construction noise: Temporary noise increases that cause sleep disturbance for any duration are considered to cause significant impacts.

3. For noise generated by construction-related traffic: Traffic noise increases that result in the ambient noise environment becoming “unacceptable” for the affected land use (as defined in the City of Lafayette’s General Plan Noise Element Land Use and Noise Compatibility standards) for more than two consecutive weeks (10 work days) would be considered a significant impact. These standards consider noise levels up to 75 dBA (L_{dn}) to be “conditionally acceptable” for residential and school uses (see **Table 3.11-3**).

Each piece of construction equipment is evaluated as a “point source” and is perceived as a single source of noise at a specific location (such as the reservoir site or active pipeline construction area), and thus construction noise impacts are evaluated based on the 80-dBA (L_{eq}) noise limit defined in the City’s Noise Ordinance. A temporary noise increase that exceeds 80 dBA (L_{eq}) during the day (7:00 a.m. to 10:00 p.m.) and affects any given receptor for more than two consecutive weeks (10 work days) is considered to be a noticeable, but less-than-significant temporary impact. However, if such an increase occurs for longer than two consecutive weeks at any given receptor, the increase in ambient noise levels in the project vicinity is considered to be a significant temporary impact.

In contrast to noise generated by individual equipment (point sources), when noise is generated by many passing vehicles traveling along a roadway, all of the vehicles traveling along a roadway are evaluated as a single “line source” and this source affects the noise environment along the entire roadway. The change in the ambient noise environment due to project-related traffic noise is thus evaluated using the City’s Land Use and Noise Compatibility standards because these standards consider whether the noise level is acceptable for a residential area. Any traffic increase that results in traffic noise levels along local streets remaining below the 75-dBA (L_{dn}) noise level, which is considered “conditionally acceptable” for residential and school uses, is considered to be a less-than-significant impact. However, if traffic noise increases cause noise levels along local streets to exceed the 75-dBA (L_{dn}) noise level and also occur for more than two weeks, the increase is considered to be a significant temporary impact.

A temporary nighttime noise increase that causes interior noise levels to exceed 35 dBA (L_{eq}) with the windows closed for any duration, even one night, is considered significant. Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable (U.S. EPA, 1974). The requirement that windows must be closed to achieve this acceptable level is assumed to be feasible since exposure would only be for one night. The exterior shell of a house typically reduces exterior noise levels by 25 dBA with the windows closed. To maintain an interior level of 35 dBA (L_{eq}) with windows closed, exterior noise levels should not exceed 60 dBA (L_{eq}).

Construction Equipment Noise Increases

Pipeline Construction. As shown in **Table 3.11-4**, Project-related construction equipment noise levels adjacent to the pipeline alignment are estimated to range between 55 and 93 dBA (L_{eq}) at the closest property lines. Noise levels would exceed the 80-dBA threshold over approximately 7 to 8 work days at the closest property lines. While noise levels exceeding 80-dBA would indicate a considerable noise increase, each individual residential receptor would be subject to noise increases for less than two weeks (10 work days) as pipeline construction progresses down the street. Although such temporary noise increases would be noticeable, the noise increases are considered to be less than significant because the potential exposure duration at any given receptor would be less than two weeks.

A portion of the pipeline alignment would extend along the sections of Leland Drive and Condit Road where The Meher Schools are located. Construction activities could be located as close as 15 feet from the closest property line, but much farther from the closest school building (130 feet away). As shown in **Table 3.11-4**, Project-related construction noise levels of up to 93 dBA (L_{eq}) would occur at the closest property line, but noise levels outside the closest school building would be up to 75 dBA (L_{eq}), which would exceed the 80-dBA threshold at the property line but not at the closest school building. As stated in the Project Description, EBMUD proposes to schedule pipeline construction directly in front of The

Meher Schools when school is not in session to minimize disruption of school activities as well as interruption of the pipeline construction in front of The Meher Schools. Due to the construction of the pipeline during non-school hours, the potential for adverse noise effects on classroom activities would be avoided, resulting in a less-than-significant impact.

Small dewatering pumps could operate occasionally along the pipeline alignment if dewatering is required (e.g., after rainfall). The pumps would be similar in size to the pumps used for swimming pools (about 1.5 horsepower) and typically generate noise levels of approximately 45 dBA (L_{eq}) at 50 feet. At distances of 15 to 20 feet, the pumps would generate noise levels of 53 to 55 dBA (L_{eq}) at the closest property lines, but noise levels would actually be lower since they would be located at the bottom of the pipeline trenches. Regardless of their locations, pump noise associated with the pipeline installation would not exceed the 80-dBA noise limit during the day (see **Table 3.11-4**), resulting in a less-than-significant impact.

Reservoir Construction. As shown in **Table 3.11-4**, the majority of the construction activities related to the reservoir replacement would exceed two weeks (10 work days). Construction equipment noise levels are estimated to range between 55 and 87 dBA (L_{eq}) at the closest property lines. Operation of most equipment would not exceed the 80-dBA (L_{eq}) limit, but there would be two exceptions. Operation of the hoe ram and concrete crusher along the western edge of the reservoir site would exceed the 80-dBA (L_{eq}) threshold for longer than 10 work days, and this would be a significant noise impact. However, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure NOI-1a**, which requires that a noise barrier be used or that this equipment be sufficiently set back from residences to the west so as to not exceed the 80-dBA (L_{eq}) noise limit during the day.

Pipeline Tie-ins. As indicated in **Table 3.11-5**, operation of all construction equipment (except the dewatering pump) during the nighttime hours would exceed the 60-dBA (L_{eq}) threshold for nighttime noise at the closest property lines. Although residences would be set back farther (about 65 feet away) from tie-in locations, at this distance, exterior noise levels would be lower (ranging from 66 to 73 dBA for all equipment except the quieter dewatering pump), but would still exceed the 60-dBA (L_{eq}) threshold for one night at two tie-in-locations (near the Windsor Drive/Old Tunnel Road and Leland Drive/Meek Place intersections). Such noise levels during the noise-sensitive nighttime hours could result in sleep disturbance on one night at these two tie-in locations, which is considered to be a significant impact. Implementation of **Mitigation Measure NOI-1b**, provision of alternative lodging for affected residents, would reduce this impact but not necessarily to a less-than-significant level because residents may choose not to move to alternative lodging for one night and would be subject to nighttime noise. As a result, the potential sleep disturbance effects of nighttime construction at the tie-in sites for one night are considered to be significant and unavoidable.

Truck Traffic Increases on Local Roadways

Truck noise levels depend on vehicle speed, load, terrain, and other factors. The effects of construction-related truck traffic would depend on the level of background noise already occurring at a particular receptor site. In quiet environments or during quieter times of the day, truck noise is mainly a single-event disturbance. Although the hourly average noise level associated with short, single events is not very high, individual noise peaks of 75 to 80 dBA at 50 feet are common during a truck passage.[4] However, in noisy environments or during less noise-sensitive daytime hours, truck noise is perceived as part of the total noise environment rather than as an individual disturbance. Therefore, this analysis focuses on noise levels associated with hourly haul truck volumes (rather than a single passing truck).

As indicated in the Project's traffic impact study (CHS Consulting Group, 2017; see **Appendix M**), truck and worker vehicle volumes would vary with each construction phase. In order to assess the Project's

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[4] California Vehicle Code (Section 27204) limits noise from trucks to 80 dBA (models after 1987).

maximum traffic noise impact, the maximum hourly truck and worker vehicle volumes estimated in the Project's traffic impact analysis were assigned to two primary routes: (1) Leland Drive, Old Tunnel Road, and possibly Condit Road; and (2) Leland Drive, Condit Road, Windsor Drive, and Old Tunnel Road. Even though any neighborhood street between the Project site and Pleasant Hill Road could be used, it is expected that most project-related construction traffic associated with reservoir replacement would use the first route, while construction traffic associated with the pipeline work would use the second route. However, by assigning all construction-related traffic equally to each street along these routes, this analysis evaluates the maximum noise increase that could occur on any neighborhood street during the construction of the pipeline and reservoir replacement. If construction traffic were to travel on more than one route, then the incremental increase on each route would be less than the maximum estimated increase for a particular street. While it is possible that vehicles would be more distributed over the neighborhood street network depending on the location of construction activities, it is expected that most would use the shortest, most direct route to access the reservoir site.

Table 3.11-6 presents estimated maximum hourly traffic noise increases along access routes by adding maximum hourly Project-related traffic increases to maximum (PM peak hour) traffic levels (L_{eq}) on neighborhood streets. **Table 3.11-6** also presents maximum 24-hour (Ldn) traffic noise increases along access routes by adding maximum Project-related early morning[5] and daytime traffic increases to existing 24-hour noise levels (L_{dn}) on neighborhood streets. In general, residential streets in the Project vicinity carry very low levels of traffic, and therefore truck traffic increases would likely be noticeable. However, the noise environment in the Project vicinity is influenced by traffic noise from the nearby SR 24 freeway and Pleasant Hill Road. Noise measurements indicate that ambient noise levels in the Project vicinity range from 52 to 59 dBA (L_{dn}, see **Table 3.11-2**) depending on proximity to the freeway. In contrast, when noise levels on residential streets in the Project vicinity are estimated based on traffic volumes, modeled noise levels are generally 1 to 3 dBA lower than measured noise levels (Leland Drive: 51 dBA (L_{dn}) modeled versus 52-53 dBA (L_{dn}) measured; Old Tunnel Road: 54-56 dBA (L_{dn}) modeled versus 57-59 dBA (L_{dn}) measured; see **Table 3.11-2** for measured noise levels and **Table 3.11-6** for modeled noise levels). Given the influence of freeway noise on the ambient noise environment, the analysis evaluates not only the incremental change in noise that would result from increased traffic on neighborhood streets but also the change in ambient noise levels as a result of this incremental change.

Pipeline Construction. As indicated in **Table 3.11-6**, maximum hourly traffic volumes generated during pipeline construction would result in incremental L_{eq} increases of 2 dBA to 5 dBA along neighborhood streets during any given hour. A 3-dBA change is perceptible while a 5-dBA change is readily noticeable and therefore, traffic noise increases associated with pipeline construction could be noticeable on streets like Windsor Drive and Leland Drive, but barely perceptible on Old Tunnel Road and Condit Road. When the maximum hourly Project-related early morning and daytime traffic increases are added to existing 24-hour noise levels (L_{dn}) along neighborhood streets, similar Project-related noise increases of 2 to 5 dBA (L_{dn}) could occur, which would also be readily noticeable on some neighborhood streets. However, noise levels would remain at levels considered "conditionally acceptable" for residential and school uses (the City of Lafayette's Land Use and Noise Compatibility Standards [**Table 3.11-3**] identifies noise levels of up to 75 dBA [L_{dn}] as "conditionally acceptable"), even when measured background noise levels that are 1 to 3 dBA higher are considered. Therefore, traffic noise increases on neighborhood streets during the

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[5] When calculating L_{dn} noise levels, a 10-dBA penalty is added to any traffic increases occurring between 10 p.m. and 7 a.m. Therefore, a 10-dBA penalty was added to truck traffic increases occurring between 6:30 a.m. to 7:00 a.m., with a slightly earlier start time of 5:30 a.m. to 7:00 a.m. on the 16 concrete pour days.

Table 3.11-6: Estimated Construction Traffic Noise Increases

	Noise Level (dBA) at 50 Feet from Roadway Centerline					
Segment	**Existing Leq**	**Existing + Project Leq**	**Change**	**Existing Ldn**	**Existing + Project Ldn**	**Change**
Pipeline Construction						
Pipeline Installation (With Addition of Maximum 4 Trucks and 24 Cars Per Hour Over 35 Days)						
Old Tunnel Rd. (East of Pleasant Hill Rd.)	57	59	2	56	58	2
Old Tunnel Rd. (West of Windsor Dr.)	56	58	2	55	57	3
Old Tunnel Rd. (Windsor Dr. to Leland Dr.)	55	58	3	54	57	3
Windsor Dr. (South of Old Tunnel Rd.)	51	56	5	50	56	5
Windsor Dr. (North of Condit Rd.)	53	57	4	52	56	4
Condit Rd. (West of Windsor Dr.)	56	58	2	55	57	3
Condit Rd. (East of Windsor Dr.)	56	58	2	55	58	3
Leland Dr. (South of Old Tunnel Road)	52	56	4	51	56	5
Reservoir Construction						
Most Demolition Activities, Tank Walls/Pipeline/Storm Drain Construction Activities, and Site Restoration Activities (With Addition of Maximum 1 to 4 Trucks and 2 to 24 Cars Per Hour Over 3 Years)						
Old Tunnel Rd. (East of Pleasant Hill Rd.)	57	57-59	1-3	56	56-58	1-3
Old Tunnel Rd. (West of Windsor Dr.)	56	57-59	1-3	55	55-57	1-3
Old Tunnel Rd. (Windsor Dr. to Leland Dr.)	55	56-59	1-3	54	55-27	1-3
Condit Rd. (West of Windsor Dr.)	56	57-59	1-3	55	56-58	1-3
Condit Rd. (East of Windsor Dr.)	56	57-59	1-3	55	56-58	1-3
Leland Dr. (South of Old Tunnel Road)	52	54-57	2-5	51	53-56	2-5
Open Cut Excavation and Soil Hauling (With Addition of Maximum 10 Trucks and 10 Cars Per Hour Over 120 Days)						
Old Tunnel Rd. (East of Pleasant Hill Rd.)	57	61	5	56	60	5
Old Tunnel Rd. (West of Windsor Dr.)	56	61	5	55	60	5
Old Tunnel Rd. (Windsor Dr. to Leland Dr.)	55	61	6	54	60	5
Condit Rd. (West of Windsor Dr.)	56	61	5	55	60	5
Condit Rd. (East of Windsor Dr.)	56	61	5	55	60	5
Leland Dr. (South of Old Tunnel Road)	52	60	8	51	60	8
Concrete Foundation and Roof Slab (With Addition of Maximum of up to 16 Trucks and up to 23 Cars Per Hour Over 16 Days[a])						
Old Tunnel Rd. (East of Pleasant Hill Rd.)	57	63	6	56	63	8
Old Tunnel Rd. (West of Windsor Dr.)	56	63	7	55	63	8
Old Tunnel Rd. (Windsor Dr. to Leland Dr.)	55	62	7	54	63	9
Condit Rd. (West of Windsor Dr.)	56	63	7	55	63	8
Condit Rd. (East of Windsor Dr.)	56	63	7	55	63	8
Leland Dr. (South of Old Tunnel Road)	52	62	10	51	63	11

Notes: Because the adjusted noise levels have been rounded to the nearest whole number, the difference/change may vary by up to 1 dBA. Traffic noise modeling completed using FHWA RD-77-108 model. Assumptions include: travel speeds of 25 mph on local streets (posted speed limit); vehicle mixes based on heavy vehicle counts included in data collected by CHS Consulting Group in June 2016; and construction-related vehicles could travel on neighborhood streets as early as 6:30 a.m. and as late as 7:30 p.m. based on proposed construction hours of 7:00 a.m. to 7:00 p.m., even though most work days would only be 8 to 10 hours long. Background noise levels due to traffic on other roadways (e.g. Pleasant Hill Rd or SR 24) and non-traffic-related activities are not reflected in these noise levels. Noise levels in this table are intended to indicate incremental noise changes during Project construction. Based on noise measurements collected on Old Tunnel Road and Leland Drive, actual noise levels can be slightly higher, depending on location and exposure to freeway noise.

[a] Maximum hourly volume of 16 trucks and 23 cars is the maximum construction volume expected during the reservoir construction phase of the project. The reservoir construction maximum hourly volume is specific to the concrete foundation slab pour days for the two new concrete tanks. Each foundation slab would require four concrete pours, eight pours total for both tanks, to complete the concrete slab pour activity. The concrete foundation pours would occur over a period of eight days. After the walls and internal columns are constructed, the concrete roof slab would be poured, and this could generate a maximum volume of 15 trucks and 18 cars for another period of eight days.

Source: Orion Environmental Associates (2017)

pipeline construction duration could be noticeable but considered to be less than significant because the residential noise environment would continue to be "conditionally acceptable."

Reservoir Construction. During most of the three-year reservoir construction duration, truck and worker traffic increases would result in barely perceptible noise increases of up to 3 dBA (Leq and Ldn) on Old Tunnel Road and Condit Road, and more noticeable increases of up to 5 dBA on Leland Drive (see **Table 3.11-6**). However, there would be two periods with higher traffic noise increases: (1) during reservoir demolition, open cut excavation and soil hauling would result in traffic noise increases of 5 dBA (Leq and Ldn) on Old Tunnel Road and Condit Road and readily noticeable increases of 8 dBA on Leland Drive for 120 work days (24 weeks); and (2) during the concrete pours for both tank foundations, noticeable noise increases of 6 to 7 dBA (Leq) and 8 to 9 dBA (Ldn) would occur on Old Tunnel Road and Condit Road while very noticeable increases of 10 dBA (Leq) and 11 dBA (Ldn) would occur on Leland Drive for 8 work days. After the tank walls are constructed, concrete pours for both roof slabs would again result in these same noise increases for another 8 work days (see **Table 3.11-6)**. A 1-dBA increase cannot be perceived, a 3-dBA change is barely perceptible, while a 5-dBA change is readily noticeable. A 10-dBA change in continuous noise is perceived to be a doubling in the loudness of the sound.

Although project-related noise increases would range from 1 dBA (no noticeable change) to 11 dBA (Ldn) (perceived as a doubling in the loudness of the sound), the overall noise environment would remain at levels considered "conditionally acceptable" for residential and school uses. The City of Lafayette's Land Use and Noise Compatibility Standards (**Table 3.11-3**) identify noise levels of up to 75 dBA [Ldn] as "conditionally acceptable"), even when measured background noise levels that are 1 to 3 dBA higher are considered. During most of the three-year reservoir construction duration, traffic noise increases would be barely perceptible to residents living on streets like Old Tunnel Road and Condit Road, but readily noticeable on Leland Drive. However, during the 120 days of excavation/soil hauling and 16 days of concrete pour activities, traffic noise increases would be readily noticeable on these streets. Despite these noticeable traffic noise increases, the overall noise environment would continue to be "conditionally acceptable" for residential and school uses. Therefore, traffic noise increases on neighborhood streets during reservoir construction are considered to be a less-than-significant noise impact.

Significance Determination before Mitigation

Significant.

Mitigation Measures

Mitigation Measure NOI-1a: Placement of Hoe Ram and Concrete Crusher (see Impact NOI-1)

Mitigation Measure NOI-1b: Nighttime Construction Measure (see Impact NOI-1)

Mitigation Measure NOI-1c: Construction Issues Liaison (see Impact NOI-1)

Significance Determination after Mitigation

As explained above, nighttime work is required to complete the Project's pipeline tie-ins. The nighttime pipeline tie-in construction work could result in sleep disturbance effects for one night at two tie-in locations. Implementation of **Mitigation Measure NOI-1b** would mitigate noise impacts associated with pipeline tie-ins by providing affected residents with the option to temporarily relocate to alternative lodging. However, **Mitigation Measure NOI-1b** would not necessarily reduce this impact to a less-than-significant level because residents may choose not to move to alternative lodging for one night and therefore would be subject to nighttime noise. Therefore, the potential for sleep disturbance on one night at two tie-in locations is considered to be a substantial temporary noise increases that is significant and unavoidable.

A substantial temporary noise increase during the daytime hours is defined above as an increase that exceeds 80 dBA (Leq) at the closest property line or causes the noise environment to be "unacceptable" for longer than 10 work days. The only equipment noise increases that would exceed the 80-dBA (Leq) threshold and would occur for more than 10 work days would be operation of the hoe ram and concrete crusher. Implementation of **Mitigation Measure NOI-1a** would mitigate this noise impact to a less-than-significant level, by ensuring that a temporary noise barrier is used or that this equipment is placed far enough away from residential properties so as to not exceed 80 dBA at the property line. Although construction-related traffic noise increases on neighborhood streets would occur for over three years and would be noticeable, these noise increases were determined to be less than significant because the overall noise environment along these streets would continue to be “conditionally acceptable” for residential and school uses.

Impact NOI-3 Result in exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels (Criterion 3).

The Project would include construction activities that could produce excessive groundborne vibration. An impact hammer would be used for demolition of the existing reservoir. Other types of construction equipment that would be used include jackhammers for pipeline construction and vibratory compactors for reservoir replacement. Project construction would also entail the use of heavy trucks for material deliveries and for off-site hauling of excavated materials and demolition debris, which could generate groundborne vibration along haul routes.

If groundborne vibration generated by Project-related demolition and construction activities were to exceed 0.5 in/sec PPV, vibration could cause damage to nearby structures, including adjacent buildings. As detailed in the Project Description, a number of EBMUD standard practices and procedures, applicable to all EBMUD projects, have been incorporated into the Project, including Standard Construction Specification 01 35 44, Environmental Requirements. Section 3.5 of EBMUD Standard Construction Specification 01 35 44 establishes a threshold vibration limit of 0.5 in/sec PPV to minimize the potential for structural damage from vibration. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standards specifications language.

Table 3.11-7 lists typical vibration levels associated with the operation of various types of construction equipment at specified distances, some of which are similar to those proposed to be used for the Project. No pile driving is proposed as part of pipeline construction or reservoir replacement, which would substantially reduce the potential for cosmetic damage to occur from construction-related vibration effects. However, if vibration levels generated by a hoe-ram, which is a mounted impact hammer, are conservatively considered to be similar to those generated by impact hammers associated with pile driving, maximum vibration levels at distances of less than 75 feet could exceed 0.5 in/sec PPV.

Vibration levels corresponding to the closest adjacent residential structures are listed in **Table 3.11-7**. While vibration attenuation with distance can vary depending on subsoils, typical vibration levels generated by impact hammers would not exceed the 0.5 in/sec PPV threshold at nearby residential structures if the impact hammer is operated more than 75 feet away from the nearest structures. Since the closest residential structure to the existing reservoir is approximately 100 feet away, vibration generated by use of a hoe-ram to demolish the existing reservoir would not exceed the 0.5 in/sec PPV threshold for cosmetic damage. Operation of compactors and other types of construction equipment would generate lower vibration levels and also would not exceed the 0.5 in/sec PPV threshold level.

While cosmetic damage would not occur, vibration levels during operation of the hoe-ram or vibratory rollers or compactors within 100 feet of a residence during pipeline construction or reservoir replacement would be noticeable to residents. However, since construction would occur during the daytime hours (7:00 a.m. to 7 p.m.), such noticeable vibrations would not result in sleep disruption and therefore would be a less-than-significant vibration impact.

Table 3.11-7: Typical Vibration Levels from Construction Equipment

Equipment	Peak Particle Velocity (PPV) (in/sec)[a] at Specified Distances			
	40 Feet[b]	75 Feet[c]	100 Feet[d]	380 Feet[e]
Impact Hammer				
• Range	n/a	0.1 – 0.5	<0.1 – 0.4	≤0.1
• Typical	n/a	0.2	0.2	<0.1
Vibratory Roller/Compactor	0.1	0.1	0.1	<0.1
Large Bulldozer, Caisson Drilling, Loaded Trucks, Jackhammer, Small Vibratory Compactor, Small Bulldozer	<0.1	<0.1	<0.1	<0.1
Vibration Threshold for Damage to Reinforced Structures	0.5	0.5	0.5	0.5
Strongly Perceptible Threshold for Vibration	0.1	0.1	0.1	0.1

Notes: in/sec = inches per second; PPV = peak particle velocity

[a] Vibration amplitudes for construction equipment assume normal propagation conditions and are calculated using the following formula:

PPV equip = $PPV_{ref} \times (25/D)^{1.0}$ where:

PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from pages 30-37 and Table 18 of the Caltrans Vibration Guidance Manual
D = the distance from the equipment to the receiver

[b] Minimum distance between the closest pipeline location (seven feet from the face of curb) and nearest residence.

[c] Minimum distance between vibration source and receptor that would not exceed threshold for cosmetic damage to structures.

[d] Minimum distance between the existing reservoir and residences to the west.

[e] Minimum distance between the existing reservoir and residences to the east.

Source: Caltrans (2013b)

During the pipeline tie-in process, a backhoe or front end loader could be operated occasionally, which would generate a vibration level similar to bulldozers and other heavy equipment, which is estimated at less than 0.1 in/sec PPV at 40 feet (**Table 3.11-7**). As indicated in **Table 3.11-7**, the threshold level for strong perceptibility is 0.1 in/sec PPV and at this level, sleep disturbance could occur. However, since vibration from equipment operations associated with the tie-in process would not exceed the 0.5 in/sec PPV threshold level at the closest residences and would also be less than 0.1 in/sec PPV, potential nighttime vibration effects during the pipeline tie-in process would be less than significant.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

The geographic scope of potential cumulative impacts to noise and vibration encompasses the area within or adjacent to the Leland Reservoir site and pipeline alignment. The Hoedel Court Subdivision, Lafayette Park Terrace and Homes at Deer Hill are all proposed to be constructed in the general vicinity of the Project area. In general, cumulative noise and vibration increases associated with Project construction could result if these projects were constructed at the same time and would cause noise increases at the same sensitive receptors affected by Project construction. It is expected that construction of these three projects would not overlap with Project construction because they are expected to be completed prior to the start of Project construction in 2022. In addition, all of these projects would be required to comply with the City’s noise ordinance and none of these projects are located in close enough proximity to Project facilities so as to cumulatively affect the same sensitive receptors with one possible exception.

While construction of the Hoedel Court Subdivision improvements would not overlap with Project construction, it is possible that individual homes in this subdivision could be constructed at the same time as the Project pipeline in Windsor Drive. If this were to happen, cumulative noise impacts could occur at a few residences on the west side of Windsor Drive (between Mars Court and Windsor Court) because they would be located both east of the Hoedel Court Subdivision lots and west of the Project pipeline in Windsor Court. Any cumulative construction noise increases resulting from concurrent construction would occur for less than two weeks (10 work days) as pipeline construction progresses along Windsor Drive. Based on the above significance threshold applied in Impact NOI-2 (noise increases over 80 dBA (L_{eq}) for more than two weeks or 10 work days), such cumulative impacts would be less than significant. Because vibration levels from any heavy equipment sources would be very low (≤0.1 in/sec PPV at distances as close as 40 feet for most equipment types), any cumulative vibration impacts resulting from concurrent construction (of Hoedel Court and the Windsor Drive pipeline) would remain well below the 0.5 in/sec PPV threshold for cosmetic damage. Given the low vibration levels generated by most construction equipment, low potential for vibration-generating equipment to be used simultaneously by both projects and within 40 feet of the same receptor, and occurrence only during daytime hours, potential cumulative vibration effects would not be cumulatively considerable, a less-than-significant cumulative impact.

3.11.5 References

California Department of Transportation (Caltrans), *Technical Noise Supplement (TeNS) to the Traffic Noise Analysis Protocol*, pp. 2-20, 2-44 to 2-45, 2-48. September 2013a. Available online at http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf.

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3.12 Recreation

This section presents the physical setting for recreation within the study area, which includes the Project site and adjacent recreational facilities. Existing parks and recreational facilities in the vicinity are described. The impact analysis considers the potential for the Project to affect the neighboring recreational facilities.

3.7.1 Environmental Setting

Parks and Recreation

Regional Parks

The East Bay Regional Park District (EBRPD) acquires and develops regional parks, open spaces, and trails throughout the East Bay. Spanning more than 100,000 acres in Alameda and Contra Costa counties, the EBRPD owns and maintains 65 parks and over 1,250 miles of trails (EBRPD 2016). Of these, Briones Regional Park is nearest to the Project site. The park encompasses 6,256 acres just north of Lafayette, and provides hiking, equestrian, and picnic facilities (EBRPD 2016). The park is separated from the Project site by SR 24 and residential areas. At its nearest point, the park is approximately three-quarters of a mile from the Project site; however, the bulk of the park is approximately three miles from the Project site.

No other regional parks are present within one mile of the reservoir site or pipeline route.

Local Parks

The City of Lafayette Parks, Trails, and Recreation Department manages five parks, seven trails, and a community center and provides recreation programs to the community, including exercise classes, child care, and summer camps.

The closest City of Lafayette parks to the Project site are Leigh Creekside Park and Buckeye Fields. Leigh Creekside Park (0.6 acres) provides picnic areas and informal paths. Buckeye Fields (11.5 acres) provides a range of sporting facilities, including baseball fields, a soccer field, batting cages, and picnic spaces. Both parks are over 1 mile away from the Project site.

The Lamorinda Trail Loop is a 17.5-mile continuous loop that connects the neighboring cities of Lafayette, Orinda, and Moraga. The loop includes on-street bike lanes and incorporates the Lafayette-Moraga Regional Trail, a 7.65-mile off-street trail and linear park that travels through Lafayette and Moraga. Signage and markers on the trail loop are maintained by the Lamorinda Trails Connection Committee, which was established by the cities of Lafayette, Orinda, and Moraga in order to create a comprehensive trail system throughout the area. The portion of the trail nearest the site is an on-street section that runs along Pleasant Hill Road, over one-quarter mile from the site. Local parks are shown in **Figure 3.12-1**.

Recreation Facilities

Meher Field, located about 100 feet south of the Leland Reservoir site, is a playing field owned by the Lafayette School District. The playing field is used by local recreational sports leagues such as the Lafayette-Moraga Youth Association, which has soccer games on Saturday mornings, and Little League baseball, which uses the field in spring. Two club soccer teams also use the field for after-school practice and weekend games (personal communication, Marilyn Sibley).

Figure 3.12-1: Parks and Recreation Facilities near Leland Reservoir

The Sun Valley Swimming Pool is a non-profit club open to the public by membership. The pool offers recreational and lap swimming and social activities and supports a recreational swim team for young swimmers. The facility is approximately 800 feet south of the Project site, located at 1000 Leland Drive. The pool is open from April to October from 6:00 am to 9:00 pm, and during these months, members often park along Leland Drive to access the pool, because off-street parking is limited. The pool generates especially large levels of parking demand during summer swim meets, which occur from mid-June to the end of July on Wednesday evenings at 6:00 pm and Saturday mornings from 9:00 a.m. to 12:00 p.m. Meher Field and Sun Valley Swimming Pool are shown in **Figure 3.12-1**.

3.12.2 Regulatory Framework

This section describes local policies and regulations that may apply to the Project. No federal or state policies are applicable to the Project's potential effects on recreation.

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protection policies for guidance.

Lafayette General Plan

The “Parks, Trails, and Recreation” section of the Lafayette General Plan addresses the City’s needs for parks and recreational facilities, and provides a policy framework for providing recreation opportunities (City of Lafayette 2008). The main goals of this section are to:

- “Provide an attractive system of parks, trails, and recreation facilities throughout the City to meet the needs and interests of all ages and capabilities.”
- “Provide recreational, educational, and cultural programs to meet the needs and interests of all age groups.”
- Implement the *Lafayette Master Trails Plan.*

The “Open Space and Conservation” section of the General Plan serves as a long-range plan for protection of the natural environment and community use of open spaces. The City has two overarching goals for open space: to “preserve areas of visual prominence and special ecological significance as Open Space;” and to “expand the amount of publicly owned open space” (City of Lafayette 2002).

Lafayette Municipal Code

Title 11 of the Lafayette Municipal Code provides park regulations, including fees, permits, and proper use of facilities. This section applies to the use of parks by the public, and does not cover effects of projects on parks (City of Lafayette 2015).

3.12.3 Impact Analysis

Methodology for Analysis

Recreational impacts are assessed based on the Project’s level of physical impact on existing and planned parks and recreational facilities in the vicinity.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact would be considered significant if the Project would:

1. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
2. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Additionally, the Project’s effect related to recreation would be considered significant if it would:

3. Impair use of existing parks or other recreational facilities, or conflict with local polices regarding parks, trails or recreation.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.* The Project would not generate or attract additional population and therefore would not affect demand for recreational facilities; therefore, there would be no impacts.

- *Criterion 2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.* The Project consists exclusively of water storage and distribution system facilities and does not require the construction or expansion of recreational facilities; therefore, there would be no impacts.

Impacts and Mitigation Measures

Impact REC-1 Impair use of existing parks or other recreational facilities, or conflict with local policies regarding parks, trails or recreation (Criterion 3).

Neither the Lafayette Municipal Code nor the General Plan contain regulations or goals with which the Project would conflict. The Municipal Code governs acceptable use of parks owned and maintained by the City of Lafayette, and construction of recreational facilities. Because the Project would not affect any Lafayette City parks, regional parks or trails, the Project would not conflict with any City plans or policies regarding recreation.

Although the Project would not have long-term effects on recreational use there is a potential that construction could temporarily affect recreational uses adjacent to the Leland Reservoir. All regional and local parks are more than one-quarter mile away from the Project site, and/or are separated from the Project site by highways, and would thus not be affected by construction. There are two recreational facilities adjacent to the Project site: Meher Field and the Sun Valley Swimming Pool. Construction would not prevent the community from accessing the field or pool, but could decrease the ease of access during construction. Recreational users must access both facilities via Leland Drive, and pool users often park along the same road. Access may thus be affected over the short-term, but the possibility of conflicts is reduced by the fact that construction would not occur on weekends, which are a peak use time for both facilities. Construction hours could overlap with some evening recreational activities, but reservoir and pipeline construction would not directly affect either Meher Field or the Sun Valley Swimming Pool because reservoir construction would be confined to the reservoir site, which is about 500 feet north of both facilities. Pipeline construction, though it would extend to the intersection of Meek Place and Leland Drive (about 200 feet south of Sun Valley Swimming Pool and 450 feet south of Meher Field) would be confined to the public ROW and would be of relatively short duration, and would thus not be expected to affect recreational activities at either facility.

The potential for construction to affect traffic and parking on Leland Drive is addressed in the Traffic and Transportation section. Once construction is complete, normal access to the Sun Valley Swimming Pool and Meher Field would be restored. Due to the limited geographical extent and duration of the Project, impacts to recreation are considered to be less than significant because, as described above, there would be no direct impacts on parks or recreation facilities, and access to facilities would be maintained through measures that are described in the Traffic and Transportation section.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Cumulative Impact Analysis

Project construction could temporarily affect access to Meher Field and the Sun Valley Swimming Pool due to potential road closures on Leland Drive and Condit Road, which would be addressed through preparation of a Traffic Control Plan that would provide detour routes, ensuring that access is maintained. However, none of the other projects in Lafayette would cumulatively constrain access to Meher Field and the Sun Valley Swimming Pool; the Hoedel Court Subdivision, Lafayette Park Terrace, Homes at Deer Hill, and Byron Park Expansion are all expected to be constructed before construction of the Project begins. No other projects have been identified that would affect access to recreation.

3.12.4 References

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3.13 Transportation

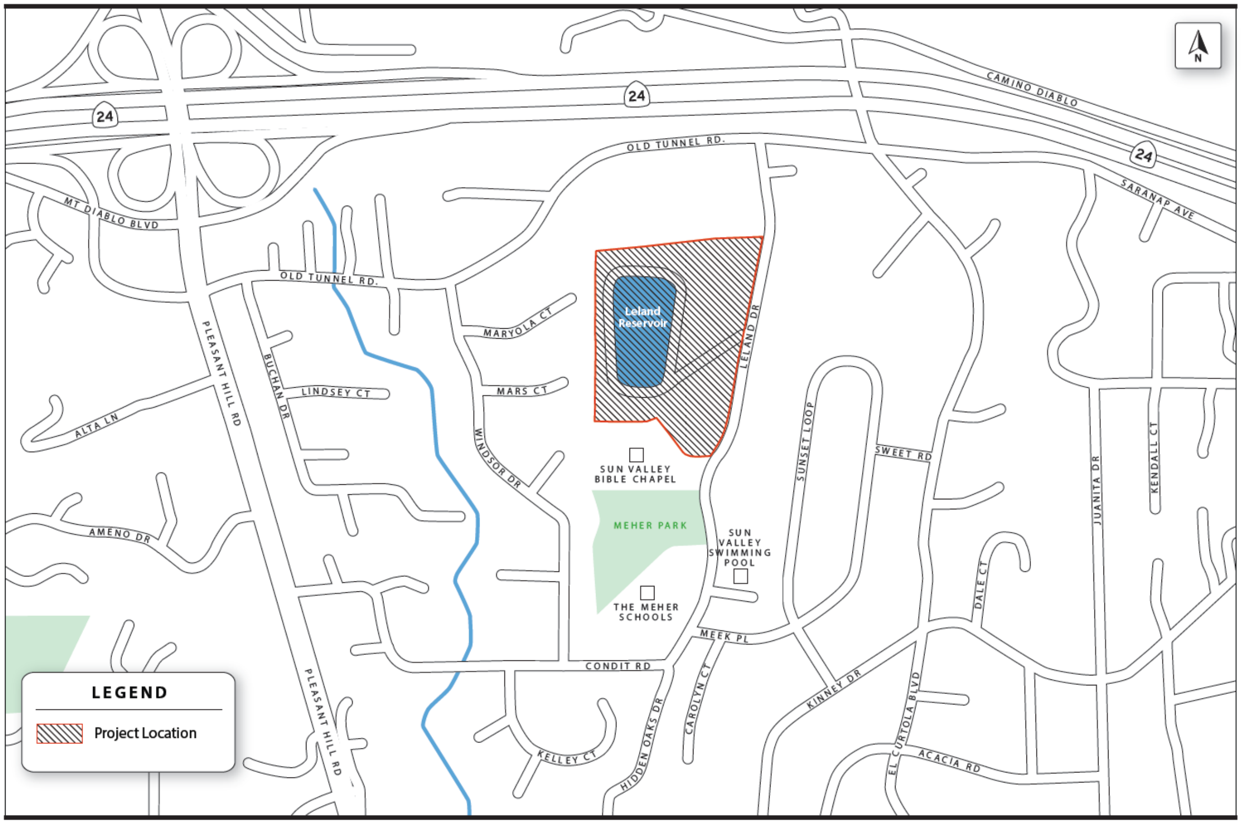
This section evaluates whether construction and operation of the Project would result in potentially adverse impacts related to transportation. The section is based on a Transportation Impact Study (TIS) that was prepared as a resource document for the Leland Reservoir Replacement Project (CHS Consulting Group 2017) (see **Appendix M**). The TIS focused on construction related transportation impacts, given that the Project's operational period activities would be similar to activities at the Project site under existing conditions.

3.13.1 Environmental Setting

Roadway Network

As shown in **Figure 3.13-1**, the transportation and circulation study area extends beyond the Project area and includes roadways and transportation facilities that could be affected by Project construction. The existing setting includes descriptions of roadways and documentation of existing vehicular traffic, transit service, bicycle, pedestrian, and parking conditions.

Figure 3.13-1: Leland Reservoir Replacement Site Study Area



Source: CHS Consulting Group 2017

Regional Access

The Project site is located approximately one mile east of the SR 24 and Interstate 680 (I-680) interchange, and both SR 24 and I-680 provide freeway access to and from the Project site.

SR 24 is a 15-mile-long east-west freeway that runs between I-580 in Oakland and I-680 in Walnut Creek and travels through the Caldecott Tunnel approximately seven miles west of the Project site. In the vicinity of the Project site, SR 24 is an eight-lane freeway with four lanes in each direction. The Project site can be directly accessed from the Pleasant Hill Road off-ramps in the eastbound and the westbound directions, and the nearest on-ramps are also located on Pleasant Hill Road for the eastbound and the westbound directions. In the vicinity of the Project site, the average daily traffic volume on SR 24 is approximately 188,000 vehicles. The AM and PM peak-hour traffic volumes near the Pleasant Hill Road on-ramps are approximately 10,000 and 9,400 vehicles, respectively.

I-680 is a north-south freeway that runs between Interstate 80 in Fairfield and the I-280/U.S. Highway 101 interchange in San Jose. In the vicinity of the Project site, I-680 is an eight-lane freeway with four lanes in each direction, and the Project area can be directly accessed from the Olympic Boulevard off-ramps in the northbound and the southbound directions. The nearest on-ramps are also on Olympic Boulevard for both the northbound and southbound directions. However, given the proximity to the SR 24/I-680 interchange located approximately one mile east of the Project site, traffic going to or coming from east of the Project area via I-680 would likely use the SR 24 on- and off-ramps at Pleasant Hill Road. In the vicinity of the Project site, the average daily traffic volume on I-680 is approximately 168,000 vehicles, and the AM and PM peak-hour traffic volumes are approximately 10,100 and 9,400 vehicles, respectively.

Local Access

The Project site is located within a residential area, and neighboring land uses along Leland Drive include single-family homes, a school (The Meher Schools), recreational facilities (Sun Valley Swimming Pool and Meher Field), and a church (Sun Valley Bible Chapel). Local access is provided by Arterial, Collector and Local Streets in proximity to the Project site within the City of Lafayette. Descriptions of the local roadways are presented below and are shown in **Figure 3.13-1**. The functional designation of local roadways was obtained from the City of Lafayette General Plan (General Plan) (City of Lafayette 2012).

Pleasant Hill Road is a two-way north-south street that runs between Taylor Boulevard and Olympic Boulevard. In the vicinity of the Project site, Pleasant Hill Road is approximately 100 feet wide and has two travel lanes and Class 2 bike lanes in each direction with a center median. There are Class 1 bike paths/sidewalks on both sides of the street. The posted speed limit on Pleasant Hill Road is 40 miles per hour (mph). There is no on-street parking on either side of the street south of Mt. Diablo Boulevard. The General Plan identifies Pleasant Hill Road as an Arterial Street. Pleasant Hill Road is also part of designated truck routes in the City of Lafayette.

Mt. Diablo Boulevard is a two-way east-west street that runs between Acalanes Road and Pleasant Hill Road. In the vicinity of the Project site, Mt. Diablo Boulevard is approximately 110 feet wide and has two travel lanes in each direction with a center median. The posted speed limit along Mt. Diablo Boulevard is 35 mph. On-street parking is generally allowed on both sides of the street. The General Plan identifies Mt. Diablo Boulevard as an Arterial Street.

Old Tunnel Road is a two-way east-west street that runs between Pleasant Hill Road and El Curtola Boulevard. In the vicinity of the Project site, Old Tunnel Road is approximately 40 feet wide and has one travel lane in each direction, and on-street parking is generally allowed on both sides of the street. The posted speed limit on Old Tunnel Road is 25 mph. The General Plan considers Old Tunnel Road as a

Collector Street, as it provides direct access to properties and serves traffic between arterial and local streets.

Leland Drive is a two-way north-south street that runs between Old Tunnel Road and Condit Road. It is approximately 30 feet wide and has one travel lane in each direction, and on-street parking is generally allowed on both sides of the street. The posted speed limit on Leland Drive is 25 mph. The General Plan considers Leland Drive as a Local Street, as it provides direct access to properties and is designed to discourage through traffic by minimizing connectivity.

Windsor Drive is a two-way north-south street that runs between Old Tunnel Road and Condit Road. It is approximately 35 feet wide and has one travel lane in each direction, and on-street parking is generally allowed on both sides of the street. The posted speed limit on Windsor Drive is 25 mph. The General Plan considers Windsor Drive a Local Street, as it provides direct access to properties and is designed to discourage through traffic by minimizing connectivity.

Condit Road is a two-way east-west street that runs between Pleasant Hill Road and Leland Drive. It is approximately 35 feet wide and has one travel lane in each direction, and on-street parking is allowed on the north side of the street only. The posted speed limit on Condit Road is 25 mph. The General Plan considers Condit Road as a Local Street, as it provides direct access to properties and is designed to discourage through traffic by minimizing connectivity.

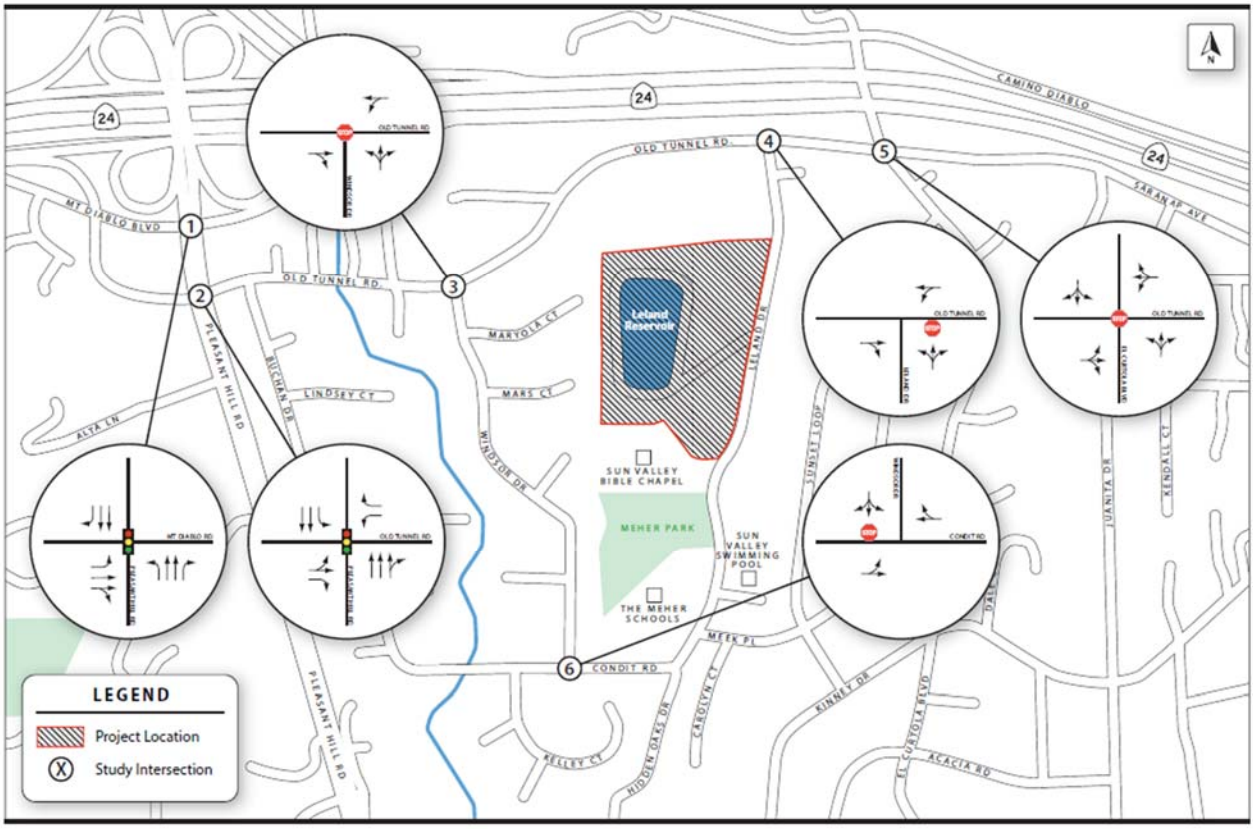
Existing Traffic Operations

Intersection Levels of Service

A total of six intersections were analyzed for the Project. **Figure 13.13-2** illustrates the location of these intersections. Intersection level of service (LOS) for each intersection was analyzed for a 60-minute period when the highest traffic volume was recorded at each intersection during the peak period. Existing intersection turning movement counts were collected on Thursday, June 2, 2016 during the AM (7:00 a.m. to 9:00 a.m.) and PM (4:00 p.m. to 6:00 p.m.) peak periods. The six intersections that were analyzed are:

1. Pleasant Hill Road / Mt. Diablo Boulevard
2. Pleasant Hill Road / Old Tunnel Road
3. Old Tunnel Road / Windsor Drive
4. Old Tunnel Road / Leland Drive
5. Old Tunnel Road / El Curtola Boulevard
6. Condit Road / Windsor Drive

Figure 3.13-2: Leland Reservoir Replacement Site Study Intersections



Source: CHS Consulting Group 2017

Traffic operating characteristics of intersections are described by the concept of LOS, which is a qualitative description of an intersection's performance based on the average delay per vehicle. Intersection LOS ranges from A, which indicates free flow or excellent conditions with short delays, to F, which indicates congested or overloaded conditions with extremely long delays. The General Plan considers LOS D with a delay of 33 seconds the lowest acceptable condition for signalized intersections outside of the downtown area (City of Lafayette 2012). For unsignalized intersections, LOS D is the lowest acceptable condition.

The intersections were evaluated using the 2000 Highway Capacity Manual (HCM) operations methodology, which determines the capacity for each lane group approaching the intersection. LOS is based on the average stopped delay per vehicle (seconds per vehicle) for the various movements within the intersection. **Table 3.13-1** presents the LOS and delay data for the study intersections under existing conditions.

As shown in **Table 3-13.1**, all study intersections currently operate at acceptable service levels (LOS D or better) during the AM and PM peak hours under existing conditions, except for the intersection of Pleasant Hill Road and Mt. Diablo Boulevard which currently operates at unacceptable LOS conditions (LOS E) during the PM peak hour, with approximately 60 seconds of average delay and poorly operating traffic conditions along the eastbound through movement on Mt. Diablo Boulevard.

Table 3.13-1: Intersection Level of Service: Existing Weekday AM and PM Peak Hours

Intersection	Control[1]	AM Peak Hour Delay[2]	AM Peak Hour LOS[2]	PM Peak Hour Delay[2]	PM Peak Hour LOS[2]
1. Pleasant Hill Road / Mt. Diablo Boulevard	Signal	16.8	B	**60.6**	**E (EB)**
2. Pleasant Hill Road / Old Tunnel Road	Signal	9.9	A	10.2	B
3. Old Tunnel Road / Windsor Drive	AWSC	8.1	A	8.0	A
4. Old Tunnel Road / Leland Drive	SSSC	10.1	B	9.9	A
5. Old Tunnel Road / El Curtola Boulevard	AWSC	8.1	A	8.3	A
6. Condit Road / Windsor Drive	AWSC	8.4	A	7.8	A

Source: CHS Consulting Group 2017
Notes:
1. Signal = signalized intersection; AWSC = all-way stop-controlled intersection; SSSC = side street stop-controlled intersection
2. The LOS and delay (in seconds per vehicle) for signalized intersections represent conditions for the overall intersection. **BOLD** indicates unacceptable LOS conditions (LOS E or F).
3. Poorly operating approach (at LOS E or F) is indicated in parenthesis; EB = Eastbound

Daily Traffic Conditions

In order to assess existing traffic conditions along residential streets, 120-hour traffic counts were collected from Thursday, June 9, 2016 through Monday, June 13, 2016 along Old Tunnel Road, Leland Drive, Condit Road, and Windsor Drive. Old Tunnel Road and Condit Drive carry a substantial amount of daily traffic volumes with approximately 2,569 and 1,861 vehicles throughout the day, respectively. Leland Drive and Windsor Drive carry lower traffic volumes with approximately 655 and 407 vehicles on an average weekday, respectively. **Table 3-13.2** presents the summary of daily, 12-hour, and peak hour traffic volumes along Old Tunnel Road, Leland Drive, Condit Road and Windsor Drive.

Table 3.13-2: Weekday Daily, 12-Hour, and Peak Hour Traffic Volumes along Residential Streets

Street	Direction	Daily Volume[1]	12-Hour Volume[2]	Peak Hour Time	Peak Hour Volume	Peak Hour Percent of Daily
Old Tunnel Road	Eastbound	1,317	1,074	5:00 PM – 6:00PM	154	12
	Westbound	1,252	1,042		91	7
	Total	**2,569**	**2,116**		245	10
Leland Drive	Northbound	330	289	7:45 AM – 8:45 AM	39	12
	Southbound	325	287		63	19
	Total	**655**	**576**		102	16
Condit Road	Eastbound	920	786	8:00 AM – 9:00 AM	100	11
	Westbound	941	831		142	15
	Total	**1,861**	**1,618**		242	13
Windsor Drive	Northbound	200	160	1:15 PM – 2:15 PM	15	7
	Southbound	207	161		25	12
	Total	**407**	**321**		40	10

Source: CHS Consulting Group 2017
Notes:
1. Represents the average of 24-hour counts collected on Thursday, Friday and Monday.
2. Represents the average of 12-hour counts collected between 7:00 a.m. and 7:00 p.m. on Thursday, Friday and Monday.

Traffic volumes on weekends are substantially lower than weekdays. Old Tunnel Road and Condit Road carry approximately 65 percent of weekday traffic on weekends. Leland Drive and Windsor Drive carry approximately 43 and 13 percent of weekday traffic on weekends, respectively.

Transit Network

The Central Contra Costa Transit Authority (CCCTA)'s County Connection operates one bus route in the vicinity of the Project site. Route 25 operates between the Lafayette Bay Area Rapid Transit (BART) Station and Walnut Creek BART Station via Mt. Diablo Boulevard, Pleasant Hill Boulevard, and Olympic Boulevard. Service is provided from 7:30 a.m. to 6:30 p.m. at one-hour headways throughout the day. The nearest bus stop to the Project site is located at the intersection of Old Tunnel Road and Pleasant Hill Road, approximately 2,000 feet west of the Project site. Regional transit service is primarily provided by BART at the Lafayette BART Station, located about 2.5-mile southwest of the Project site.

The Lamorinda School Bus Transportation Agency (LSBTA) operates the Lamorinda School Bus Program in the City of Lafayette. In the vicinity of the Project site, Route 21 for Stanley Middle School and Route 25 for Burton Valley Elementary operate along Pleasant Hill Road, Old Tunnel Road, Windsor Drive and Leland Drive; and Route 28 for Burton Valley Elementary operates along Mt. Diablo Boulevard, Pleasant Hill Road, and Old Tunnel Road. Service is provided once each morning (between 7:00 a.m. and 8:00 a.m.) and afternoon (between 3:00 p.m. and 4:00 p.m.) for each route.

Bicycle Circulation

Bikeways are typically classified as Class I, Class II, or Class III facilities. Class I bikeways are bike paths with exclusive rights-of-way for use by bicyclists, with minimal cross flow by motorized vehicles. Class II bikeways are bike lanes striped within the paved areas of roadways and established for the exclusive use of bicyclists. Class III bikeways are signed bike routes that allow bicycles to share streets with vehicles.

In the vicinity of the Project site, there are both Class I and Class II bike facilities along Pleasant Hill Road in each direction. A Class I bike path on Pleasant Hill Road runs between Mt. Diablo Boulevard and Olympic Boulevard and serves as a multi-purpose path for both bicyclists and pedestrians. The City of Lafayette Bikeways Plan (City of Lafayette 2006) shows that there are proposed Class III bike routes along Old Tunnel Road and Condit Road east of Pleasant Hill Road.

Based on bicycle counts during the weekday AM (7:00 a.m. to 9:00 a.m.) and PM (4:00 p.m. to 6:00 p.m.) peak periods on Thursday, June 2, 2016, Pleasant Hill Road, Old Tunnel Road, Leland Drive and Condit Road experienced very low bicycle volumes at the study intersections. The highest bicycle volumes occurred at the Pleasant Hill Road and Old Tunnel Road intersection with approximately 11 bicyclists during the AM peak hour and at the Pleasant Hill Road and Mt. Diablo Road intersection with approximately 5 bicyclists during the PM peak hour.

Pedestrian Circulation

In the vicinity of the Project site, pedestrian volumes are low and pedestrian amenities are limited. There are multi-purpose paths along Pleasant Hill Road on both sides of the street that are shared among bicyclists and pedestrians. There are sidewalks on the east side of Leland Drive except for an approximately 240-foot segment located 270 feet south of Old Tunnel Road, and on the south side of Condit Road. There are generally no sidewalks along Old Tunnel Road except for a 600-foot segment between Pleasant Hill Road and Caselton Place, or along Windsor Drive. In the vicinity of the Project site, there are marked crosswalks on Leland Drive near The Meher Schools parking lot, approximately 1,200 feet south of the reservoir access road.

Based on pedestrian counts during the weekday AM (7:00 a.m. to 9:00 a.m.) and PM (4:00 p.m. to 6:00 p.m.) peak periods on Thursday, June 2, 2016, pedestrian volumes are generally low in the Project vicinity due to the prevalence of single family residential land uses, and limited sidewalks and crosswalks. The highest pedestrian volumes occurred at the Pleasant Hill Road and Mt. Diablo Road intersection, with approximately 25 pedestrians during the AM and 5 during the PM peak hours, respectively.

Parking Conditions

The Project site is located in a residential area, and on-street parking is generally allowed on both sides of the street where curb space is provided, except for the south side of Condit Road between Windsor Drive and Leland Drive. In order to assess parking availability and utilization surrounding the Project site, an on-street parking survey was conducted on Tuesday, July 12, 2016 during the midday period between 1:00 p.m. and 3:00 p.m. The survey area included Leland Drive between Old Tunnel Road and Condit Road, Condit Road between Leland Drive and Windsor Drive, and Windsor Drive between Old Tunnel Road and Leland Drive. Parking supply and occupancy information is provided in **Table 3.13-3**. There are a total of 229 publicly available on-street parking spaces in the survey area, and most of the spaces were available, with an average occupancy rate of less than ten percent during the midday period.

There is a 44-space off-street parking lot on Leland Drive across from Meek Place, which is exclusively used by The Meher Schools teachers and parents. The off-street parking spaces were generally well utilized, with an approximately 61 percent occupancy ratio during the midday period. There are a few weekdays during the summer when there is high parking demand due to swim meets at the Sun Valley Swimming Pool, which is located on Leland Drive south of the reservoir site.

Table 3.13-3: Parking Supply and Occupancy during Weekday Midday Period

Street	From	To	Supply (spaces)	Occupancy (spaces)	Occupancy (percent)
On-Street					
Leland Drive	Old Tunnel Road	Project Access Road	63	0	0
	Project Access Road	Condit Road	47	9	19
Condit Road	Leland Drive	Windsor Court	15	0	0
Windsor Drive	Condit Road	Windsor Court	46	5	11
	Windsor Court	Mars Court	30	4	13
	Mars Court	Maryola Court	14	2	14
	Maryola Court	Old Tunnel Road	14	0	0
Subtotal			229	20	9
Off-Street					
West of Leland Drive Adjacent to The Meher Schools			44	27	61
Total			**273**	**47**	**17**

Source: CHS Consulting Group, July 12, 2016
Note: Due to the residential uses in the Project area, most on-street parking spaces are unmarked open spaces. Total number of parking spaces represents a rough estimate of publicly available parking spaces, assuming about 20 feet per vehicle for parallel parking.

3.13.2 Regulatory Framework

This section describes local policies and regulations that may apply to the Project. No federal or state policies are applicable to the Project relative to transportation.

Local Policies and Regulations

Pursuant to California Government Code Section 53091, EBMUD as a local agency and utility district serving a broad regional area, is not subject to local regulations or ordinances for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protection policies for guidance.

Contra Costa Transportation Authority Congestion Management Plan

The Contra Costa Transportation Authority (CCTA) is responsible for preparing and regularly updating a Congestion Management Plan (CMP) for the County. The CMP establishes Level of Service Standards for all state highways and those roadways in the County that are designated as "principal arterials", which are defined as arterials that are at least four lanes wide for a mile in length, carry at least 20,000 vehicles each day, and have been designated by the appropriate regional transportation planning committee. In the Project area, SR 24 is the only route of regional significance identified in the CMP that would be directly affected by the Proposed Project.

City of Lafayette General Plan

The City of Lafayette General Plan Circulation Element includes the following policy that is relevant to the Project. The Project areas is considered to be outside the downtown area as defined in the General Plan Circulation Element.

Policy C-1.2 Level of Service Standards and Goals: Establish the following level of service (LOS) standards and goals. Transportation improvements must be consistent with the community's strong desire to preserve Lafayette's unique identity and quality of life.

Signalized Intersections	**LOS Standard**	**Standard V/C Ratio**	**HCM Goal Stopped Delay at Peak Hours**
Intersections Outside Downtown[1]	Good D	0.80 to 0.84	25 to 33 Sec.

Lafayette Municipal Code, Ordinance No. 646

Sections 8-702, 8-703 and 8-704 of the City of Lafayette Municipal Code were amended on March 28, 2016 to address the allowable weight of vehicles traveling along streets within the City. The Ordinance specifies that vehicles weighing more than 10,000 pounds shall not travel on any street within the City other than designated truck routes except for commercial vehicles needed for the construction, installation or repair of a public utility. Designated truck routes in the City of Lafayette are Pleasant Hill Road, Deer Hill Road, First Street, Oak Hill Road, Mt. Diablo Boulevard, Olympic Boulevard, and Moraga Road. Because Project construction would involve construction of a public utility, Project-generated truck trips are exempt from this ordinance.

EBMUD Standard Construction Specifications

The Project would be required to comply with EBMUD's Standard Construction Specification 01 55 26 (Traffic Regulation) and the California Manual on Uniform Traffic Control Devices (CA MUTCD). The

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[1] As noted in Circulation Element, the downtown corridor is defined as the area along Mount Diablo Boulevard from the westerly to easterly limits of the downtown area. Downtown intersections are those that are located on Mt. Diablo Boulevard. between Risa Road and Carol Lane, and the intersections of Moraga Road with Moraga Boulevard. and Brook Street/School Street.

Specification requires preparation of a Traffic Control Plan, which would require implementation of different measures, depending on Project-specific construction impacts; the characteristics of the existing transportation network; and daily and peak hour vehicle, pedestrian, and bicycle volumes. As outlined in Standard Construction Specification 01 55 26, the Project's Traffic Control Plan would include, but is not necessarily limited to, the following measures:

- Circulation and detour plans to minimize impacts to local street circulation and use of haul routes to minimize truck traffic on local roadways to the extent possible (Section 1.2 A.1).
- Description of emergency response vehicle access. If the road or area is completely blocked, preventing access by an emergency responder, a contingency plan must be included (Section 1.2 A.2).
- Construction area signs for street closure and detours shall be posted a minimum of forty-eight hours prior to the commencement of street closure. Contractor shall maintain safe access around the Project limit at all times (Section 1.1 C).
- Flaggers shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Flagging Instruction Handbook" of Caltrans (Section 3.3 A.1).
- Where alternating one-way traffic has been authorized, the following shall be posted at each end of the one-way traffic section at least one week prior to start of work (Section 3.2 A):
  - The approximate beginning and ending dates that traffic delays will be encountered.
  - The maximum time that traffic will be delayed.
- Convenient access to driveways in the vicinity of work shall be maintained as much as possible. Temporary approaches to, and crossing of, intersecting traffic lanes shall be provided and kept in good condition (Section 3.1 B).
- Traffic signs, flashing lights, barricades and other traffic safety devices used to control traffic shall conform to the requirements of the most recently adopted edition of California Manual on Uniform Traffic Control Devices and the agency having jurisdiction (Section 2.1 A).
- All equipment and materials shall be stored in designated contractor staging areas on or adjacent to the work site, in a manner intended to minimize obstruction of traffic (Section 1.2 A.4).

3.13.3 Impact Analysis

Assumptions and Methodology for Analysis

The following assumptions and methodology were used to evaluate the Project's potential transportation related impacts:

Scenario Development

The traffic analysis evaluated transportation impacts under Existing, Existing plus Project, and Future plus Project conditions. Existing conditions were assumed to represent existing conditions "on the ground" at the commencement of environmental review; Existing plus Project conditions represent Existing conditions with added construction traffic and potential lane closures due to pipeline replacements; and Future plus Project conditions represent traffic conditions associated with operational Project trips in the future.

Trip Generation

Trip generation assumptions are summarized in **Table 3.13-4**, which shows projected trips during the period with the highest volume of traffic, and assumptions are explained below. Table 1A of the Trip

Generation Worksheets in the Transportation Impact Study contains a detailed tabulation of trip generation by phase (see **Appendix M**). To evaluate potential impacts of the Project on the regional and local roadway system, Project trip generation was estimated based on the number of construction related vehicle trips. Construction related vehicle trips include trips made by construction workers traveling to and from the Project area, material and equipment deliveries, and hauling truck trips associated with excavation and transfer of soils. The number of Project related trips would vary on a daily basis, depending on the construction phase, planned activity, and material delivery needs. Travel demand generated by the Project was estimated using the following design criteria:

Table 3.13-4: Project Vehicle Trip Generation

Vehicle Type	Daily			AM Peak Hour			PM Peak Hour		
	IB	OB	Total	IB	OB	Total	IB	OB	Total
Worker Vehicle Trips	23	23	46	23	0	23	0	23	23
Equipment / Material Delivery Trips	53	53	106	8	8	16	8	8	16
Hauling Truck Trips[1]	0	0	0	0	0	0	0	0	0
Total	**76**	**76**	**152**	**31**	**8**	**39**	**8**	**31**	**39**

Source: CHS Consulting Group 2017
Notes:
1. The highest volume of combined traffic volume including worker trips, hauling truck trips and material and equipment delivery trips would occur during the construction of concrete foundation for the reservoir. However, there would be no hauling truck trips during this period.
IB = Inbound; OB = Outbound

Construction Worker Trips

The number of daily worker trips was estimated based on the number of daily construction workers assigned for each construction phase. The number of workers would vary substantially from 2 to 24 workers a day depending on the phase of construction. Construction shifts would generally occur between 7:00 a.m. and 7:00 p.m[2]. To provide a conservative assessment of potential traffic impacts, all construction workers were assumed to arrive and depart the Project site during the weekday AM (7:00 a.m. to 9:00 a.m.) and PM (5:00 p.m. to 7:00 p.m.) peak periods, respectively. Therefore, half of the daily construction worker trips were assumed to be inbound trips during the AM peak hour, and the remaining half were assumed to be outbound trips during the PM peak hour.

As a conservative measure, it is assumed that all workers would drive alone to the Project site and park their vehicles along the west side of Leland Drive adjacent to the reservoir site. As an analytical assumption, about half of the workers are assumed to originate from west of the Project site (via SR 24 eastbound) and the remaining half of the workers are assumed to originate from east of the Project site (via SR 24 westbound). It is anticipated that all workers would use the most direct access routes to the Project site from freeways via Pleasant Hill Road, Old Tunnel Road and Leland Drive.

Hauling Truck Trips

Pipeline construction activities would involve the excavation of trenches and the transport of excavated soil to off-site locations. Each linear foot of pipe trench is expected to generate approximately 1.3 cubic yard (CY) of excavated spoil, and the entire 3,650 linear feet of new pipeline construction (2,700 linear feet on public roadways and 950 feet within reservoir site) would generate a total of approximately 4,745 CY of excavated material (3,650 linear feet*1.3=4,745 CY). This would be equivalent to a total of 297

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[2] A 6:00 start time is needed during reservoir foundation and roof slab concrete pour work, which is estimated to occur over about 16 days of the entire construction period. During these periods worker trips would occur outside the AM peak hour.

truckloads assuming 16 CY truck size (4,745 CY/16 CY) or a total of 594 hauling truck trips accounting for one inbound trip and one outbound trip for each truckload.

Construction activities would generate haul truck trips for soil disposal and transporting of demolition debris. Constructing the reservoir would require transporting approximately 66,000 CY soil and demolition debris to off-site locations. Therefore, the Project would dispose of a total of 4,125 truckloads assuming 16 CY truck size (66,000 CY/16CY) or a total of 8,250 hauling truck trips accounting for one inbound and one outbound trip for each truckload. Hauling truck trips associated with reservoir construction would occur over the course of the demolition period.

Since tank construction would start after pipeline construction is completed on public roadways, there would be no overlap of hauling truck trips for the two Project components. The number of daily hauling truck trips would vary substantially throughout the entire Project duration from 0 to 70 truck trips a day depending on the phase of construction. Assuming the daily hauling trips are spread over a seven-hour period, the Project would generate 0 to 10 truck trips during the peak hour.

Excavated soil would be transported from the Project site to various disposal sites. Disposal facilities are located throughout California as well as in Nevada and Texas. As an analytical assumption, half of the hauling truck trips are assumed to travel east of the Project area (via SR 24 eastbound) and the remaining half of the hauling truck trips are assumed to travel west of the Project area (via SR 24 westbound). It is anticipated that haul trucks would use the most direct access routes from and to freeways via Pleasant Hill Road, Old Tunnel Road and Leland Drive.

Material and Equipment Delivery Trips

Pipeline construction would generate an average of three daily material and equipment delivery trips including one for pipeline, one for appurtenances, and one for equipment. Material and equipment delivery trips for reservoir construction would include the transport of building materials, piping, paving, and general equipment delivery ranging from 0 to 106 material/equipment delivery trips on a daily basis depending on the phase of construction. Assuming the daily material and equipment delivery trips are spread over a seven-hour period, the Project would generate 0 to 16 truck trips during the peak hour.

Half of the material and equipment delivery trips were assumed to come from west of the Project area (via SR 24 eastbound) and the remaining half of delivery trips were assumed to travel from east of the Project area (via SR 24 westbound). It is anticipated that material and equipment delivery trucks would use the most direct access routes to the Project site from freeways via Pleasant Hill Road, Old Tunnel Road and Leland Drive.

Overall Project Trips

Project construction activities would occur at varying levels of intensity over the course of about three years from fall 2022 through late 2025. The highest volume period for worker trips, hauling truck trips, and material/equipment delivery trips would differ depending on the phase of construction. For example, the highest volume of worker trips would occur around winter 2023 for the construction of the concrete foundation for the reservoir; whereas the highest volume of hauling truck trips would occur around summer 2023 during the demolition of the existing reservoir. The total daily vehicle trips would range from 6 to 152 trips a day depending on the construction phase with an average of approximately 65 vehicle trips a day. Overall, the highest combined construction traffic volume including worker trips, hauling truck trips and material and equipment delivery trips would occur in winter 2023 and last for approximately eight weeks (five percent of the total construction period) during the construction of the concrete foundation for the reservoir. Hauling occurs earlier in the construction process, during tank demolition. During tank construction, when the highest overall trip volume occurs, there would be no hauling truck trips. The highest volume of hauling truck trips would occur around summer 2023 during the demolition of the existing reservoir. The level of construction traffic outside of the highest volume period would be substantially lower for the majority of the time.

In order to develop a conservative estimation of daily construction traffic volumes, the highest combined volume of worker trips, hauling truck trips, and material/equipment delivery trips was used. The Project would generate a total of 152 daily vehicle trips during the highest volume period, including 39 vehicle trips during both the AM and PM peak hours. Of the 39 vehicle trips generated during the AM and PM peak hours, approximately 62 percent would be construction worker trips and 38 percent would be truck trips. **Table 3.13-4** shows the daily and the peak hour Project trip generation by vehicle type during the highest volume period.

Significance Criteria

Consistent with Appendix G of the *CEQA Guidelines* an impact related to traffic and transportation would be considered significant if the Project would:

1. 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;
2. 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;
3. 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;
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
5. Result in inadequate emergency access; or
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The following are relevant significance criteria and regulations used by the City of Lafayette for determination of impacts associated with the Project:

7. General Plan policy considers LOS D with a delay of 33 seconds the lowest acceptable condition for signalized intersections outside of the downtown area. For unsignalized intersections, LOS D is the lowest acceptable condition.[3] In the City of Lafayette, Pleasant Hill Road north of SR 24 is a Route of Regional Significance, which is subject to Traffic Service Objectives established as part of the CCTA's Countywide Comprehensive Transportation Plan. However, since Project traffic would not contribute any trips to Pleasant Hill Road north of SR 24, study intersections along Pleasant Hill Road (Pleasant Hill Road / Mt. Diablo Boulevard and Pleasant Hill Road / Old Tunnel Road) were assessed using the HCM LOS calculation procedures.
8. According to the City of Lafayette Ordinance No. 646, vehicles weighing more than 10,000 pounds shall not travel on any street within the City other than designated truck routes except for commercial vehicles needed for the construction, installation or repair of a public utility.

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[3] The City of Lafayette General Plan, Circulation Element, does not explicitly establish an LOS standard for unsignalized intersections, but does state that LOS F for an unsignalized intersection does not meet the General Plan LOS goal. An LOS goal of D or better for unsignalized intersections is thus assumed for this analysis.

Designated truck routes in the City of Lafayette are Pleasant Hill Road, Deer Hill Road, First Street, Oak Hill Road, Mt. Diablo Boulevard, Olympic Boulevard, and Moraga Road. Because Project construction would involve construction of a public utility, Project-generated truck trips are exempt from this ordinance.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Leland Reservoir Replacement Project are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Criterion 2: 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.* Construction of the Project would not conflict with established CCTA's standards for their congestion management program (LOS standards, Transportation Demand Management) for roads and highways. SR 24 is the only road in the Project area that is included in the CMP network. The Project would not trigger a CCTA analysis on the CMP roadway network because it would not generate over 100 peak hour trips. There would be no significant increase in traffic on a long-term basis as a result of the Project because the traffic generated by the Project is temporary. No impact would occur from conflicting with established Contra Costa County standards for their congestion management program.
- *Criterion 3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.* The Project involves construction of buried underground pipelines and replacement of an existing reservoir and would have no impacts on air traffic patterns.

Impacts and Mitigation Measures

Impact TRA-1 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 (Criteria 1 and 7).

Traffic conditions were evaluated at study intersections that would be directly affected by Project construction traffic. **Table 3.13-5** presents projected LOS and delay data for the study intersections with the increase in traffic ("with Project") under the Existing plus Project condition. All study intersections would continue to operate satisfactorily at LOS D or better during the AM and PM peak hours, except for the intersection of Pleasant Hill Road and Mt. Diablo Boulevard during the PM peak hour. The intersection of Pleasant Hill Road and Mt. Diablo Boulevard currently operates at LOS E during the PM peak hour due to extended delays along the eastbound through movement on Mt. Diablo Boulevard. With the addition of Project trips (about 40 vehicles), the intersection operating condition is expected to be similar because the Project would add trips to an approach that is less capacity constrained than other approaches and the overall weighted average of delays would be lower.

Table 3.13-5: Intersection Level of Service: Existing Plus Project Weekday AM and PM Peak Hours

		AM Peak Hour				PM Peak Hour			
		Existing		EPP		Existing		EPP	
Intersection	Control[1]	Delay [2]	LOS[2]	Delay[2]	LOS[2]	Delay[2]	LOS[2]	Delay[2]	LOS[2]
Pleasant Hill Road / Mt. Diablo Boulevard	Signal	16.8	B	16.7	B	**60.6**	**E**	**60.1**	**E**
Pleasant Hill Road / Old Tunnel Road	Signal	9.9	A	10.3	B	10.2	B	10.6	B
Old Tunnel Road / Windsor Drive	AWSC	8.1	A	8.3	A	8.0	A	8.1	A
Old Tunnel Road / Leland Drive	SSSC	10.1	B	10.5	B	9.9	A	10.6	B
Old Tunnel Road / El Curtola Boulevard	AWSC	8.1	A	8.1	A	8.3	A	8.3	A
Condit Road / Windsor Drive	AWSC	8.4	A	8.4	A	7.8	A	7.8	A

Source: CHS Consulting Group 2017
Notes:
1. Signal = signalized intersection; AWSC = all-way stop-controlled intersection; SSSC = side street stop-controlled intersection
2. The LOS and delay (in seconds per vehicle) for signalized intersections and all-way stop-controlled intersection represent conditions for the overall intersection; LOS and delay for side street stop-controlled intersection reports the worst approach on stop controlled approach.
3. EPP = Existing Plus Project
4. BOLD indicates unacceptable LOS conditions (LOS E or F).

It is noted that the intersection operating conditions in years 2022 through 2025 during the Project construction period would not be substantially different from the Existing plus Project scenario presented above, because the Project vicinity encompassing the six study intersections is mostly built out with single family houses and there are no approved or funded plans that would directly affect roadway capacity at these study intersections. Therefore, the Project would not conflict with General Plan Policy C-1.2, which regulates acceptable intersection LOS for locations outside the City's downtown corridor.

There are four approved development projects in the Project vicinity including three projects south of SR 24 (i.e., six new single-family residences in Hoedel Court, Lafayette Park Terrace, which includes 18 condominium units at 3235 Mt. Diablo Court, and Byron Park Expansion, which includes a 33,649 square-foot residential care facility) and one project north of SR 24 (i.e., 44 single-family residences and a community park at 3233 and 3312 Deer Hill Road, also known as the Homes at Deer Hill). The three projects located south of SR 24 would not generate a sufficient number of trips to deteriorate the operating conditions at study intersections during the peak hour[4], and the project located north of SR 24 would not likely contribute a significant amount of trips onto study intersections since its access routes do not overlap with the Project access route.

As presented above, the study intersections would operate at LOS A or B with the addition of Project trips, except for the Pleasant Hill Road and Mt. Diablo Boulevard intersection. The Pleasant Hill Road and Mt. Diablo Boulevard intersection currently operates at LOS E during the PM peak hour, and the intersection operating condition is expected to be similar with the addition of Project trips because the Project would add trips to an approach that is less capacity constrained than other approaches and the overall weighted average of delays would be lower. Therefore, traffic operating conditions at study

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[4] The three development projects located south of SR 24 combined together are expected to generate approximately 25 vehicle trips during the PM peak hour, based on the Institute of Transportation Engineers Trip Generation (i.e., 1.01 trips for each single family residence, .52 trips for each dwelling unit in condominium, and .29 trips per each unit in residential care facility). These trips would disperse in different directions, and potential contribution to study intersections would be negligible.

intersections in years 2022 through 2025 with the Project would not present substantial differences from the Existing plus Project condition.

The Project would generate a total of about 39 vehicle trips during the AM or PM peak hours. Trips would spread onto multiple streets in the vicinity of the Project site. The Leland Drive / Old Tunnel Road intersection and Pleasant Hill Road / Mt. Diablo Boulevard intersection would experience the highest volume of Project traffic with up to 39 Project generated vehicle trips through the intersection during the AM and PM peak hours. This increase in volumes would represent approximately 14 percent of the existing volume at the Leland Drive / Old Tunnel Road intersection and less than two percent of the existing volumes at the Pleasant Hill Road / Mt. Diablo Boulevard intersection. Although the increases in volumes may be noticeable to local residents, the additional construction related vehicles would not cause traffic volumes along local streets to exceed or approach the carrying capacity of the roadways or cause queuing issues along Leland Drive. Therefore, potential Project impacts related to intersection level of service would be considered less than significant.

Project related impacts on pedestrians, bicyclists and users of mass transit are discussed below in Impact TRA-4.

Although there is not a CEQA significance criterion addressing parking, the temporary loss of on-street vehicle parking along pipeline construction routes has been considered. Partial or full roadway closures due to construction activities would require the temporary prohibition of on-street parking along the affected roadways (i.e., Windsor Drive, Condit Road and Leland Drive). The removal of parking would allow adequate room for construction activities, and help to expedite construction activities. Construction workers would park along the eastern edge of the reservoir site on the shoulder of Leland Drive, where sufficient parking is available. Because on-street parking is typically underutilized, loss of parking is not expected to inconvenience local residents.

Significance Determination before Mitigation

Less than significant.

Mitigation Measures

No mitigation measures are required.

Impact TRA-2 Substantially increase hazards due to a design feature or incompatible uses (Criteria 4 and 8).

The City of Lafayette considers truck traffic to be incompatible with residential streets. However, the Project would have no impact relative to Ordinance No. 646, which prohibits travel of vehicles over 10,000 pounds in weight on any road that is not a designated truck route. Because Project construction would involve construction of a public utility, Project-generated truck trips are exempt from this ordinance.

The presence of open trenches, construction equipment, construction workers, and vehicles in proximity to flowing traffic would create a potential temporary hazard for both workers and vehicular traffic. Roadways with open trenches would be partially or fully closed, which could result in a hazard for vehicular traffic associated with reduced travel lanes, confusion in identifying detours, and the potential for a vehicle to accidently collide with cones or equipment. Proposed pipeline construction would install a total of 3,650 linear feet of new pipelines including 2,700 feet in public roadways and 950 feet along the east side of the reservoir site. The new pipelines would be constructed using an open trench construction method and would proceed at a rate of about 80 feet per day. The open trench would be a minimum 56 inches wide, and a minimum construction easement width of 25 feet would be required to accommodate pipeline storage and trucks and equipment access along the trench. In some areas where the pipeline would need to be installed at a greater depth to avoid other utilities, a wider trench and construction easement may be required. It is anticipated that the construction of 2,700 feet of pipelines in Windsor

Drive, Condit Road and Leland Drive would last approximately seven weeks (not including construction mobilization activities), and construction on local roadways would occur between 7:00 a.m. and 7:00 p.m., Monday through Friday.

During pipeline construction activities requiring full roadway closures, the affected roadway segments would be closed to through-traffic except emergency vehicles, garbage collection, and the U.S. Postal Service. Access for local residences would generally be maintained with controlled access to and from their locations. Only the roadway segments under construction would be closed. Upon completion of construction for a specific segment, access to that segment would be restored. Open trenches would be covered with plates during non-construction hours and road closures would be removed to allows for access during non-work periods. It is likely that some construction equipment may be left in the work area and/or staging areas. Potential circulation and safety impacts along affected roadways are described in detail below.

Windsor Drive

Pipeline construction on Windsor Drive would occur along the entire approximately 1,900-foot-long roadway between Old Tunnel Road and Condit Road. Windsor Drive is approximately 35 feet wide and provides one travel lane and on-street parking in each direction. Since pipeline construction would require a construction easement of at least 25 feet in width, it would require a closure of at least one travel lane or full road closure to through traffic. The construction zone would move along Windsor Drive by about 80 feet per day.

Windsor Drive currently carries approximately 407 vehicle trips throughout the day, and during the peak hour (1:15 p.m. to 2:15 p.m.) there are approximately 40 vehicle trips including 15 vehicle trips in the northbound direction and 25 vehicle trips in the southbound direction. Although the volumes are low, a temporary reduction in roadway capacity from two to one travel lane for both directions of traffic would create potential safety hazards for vehicles. Per EBMUD's Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan and would include flaggers to control traffic where alternating one-way traffic is necessary. The use of flaggers would provide guidance to motorists as to when and how to safely move through the Project site during construction. Additionally, the contractors would be required to post at each end of the one-way traffic section at least one week prior to start of work, the approximate beginning and ending dates that traffic delays would be encountered and the maximum time that traffic would be delayed. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. **Mitigation Measure TRA-1** includes specific measures that would be implemented for the streets in the Project area. The maximum queue length on either end of the construction zone on Windsor Road when alternating one-way traffic would be approximately 28 feet (two car lengths) with no more than 28 seconds of delays and would not cause any substantial delays.

In the event of full road closure to through traffic, residents or visitors accessing Windsor Drive north of the construction zone from the south would need to be redirected to use Old Tunnel Road (via Leland Drive), and those traveling to the south of construction zone from the north would be redirected to Condit Road (via Leland Drive) as an alternative travel path during the construction period. The closure would affect approximately 407 daily vehicles currently traveling along Windsor Drive between Old Tunnel Road and Condit Road (about 40 of which occur during the peak hour). While the detour would be an inconvenience for motorists and bicyclists, detour routes would represent minimal additional travel time for affected vehicles. Old Tunnel Road, Condit Road, and Leland Drive have sufficient capacity to accommodate diverted traffic without substantial effects on local street traffic circulation. Per EBMUD's Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan and include installation of warning and detour signs advising motorists to follow appropriate detour routes well in advance of the Windsor Drive closure to through traffic. Use of these warning and detour signs would provide ensure that motorists are aware of potential road closures in advance and understand how to move safely through the Project site during construction. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. Details regarding warning and detour signs are specified in **Mitigation Measure TRA-1**.

Condit Road

Pipeline construction on Condit Road would occur along an approximately 500-foot-long segment of Condit Road between Windsor Drive and Leland Drive. The construction along Condit Road would last approximately seven working days. Condit Road is approximately 35 feet wide and provides one travel lane in each direction. On-street parking is prohibited on the south side of the street. Since pipeline construction would require a construction easement of at least 25 feet in width, the plan would require a closure of at least one travel lane or full road closure to through traffic. The construction zone would move along Condit Road by about 80 feet per day. Condit Road currently carries approximately 1,861 vehicle trips throughout the day, and during the peak hour (8:00 a.m. to 9:00 a.m.), there are approximately 242 vehicle trips including 100 vehicle trips in the eastbound direction and 142 vehicle trips in the westbound direction. A temporary reduction in roadway capacity from two to one travel lane for both directions of traffic would create potential safety hazards for vehicles. Per EBMUD’s Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan and **Mitigation Measure TRA-1** would require flaggers at both ends of the construction zone on Condit Road directing and alternating one direction of traffic at a time. The use of flaggers would provide guidance to motorists as to when and how to safely move through the Project site during construction. Additionally, the contractors would be required to post at each end of the one-way traffic section at least one week prior to start of work the approximately beginning and ending dates that traffic delays will be encountered and the maximum time that traffic will be delayed. The maximum queue length on either end of the construction zone on Condit Road when alternating one-way traffic would be approximately 105 feet (six car lengths) with no more than 35 seconds of delay and would not cause any substantial delays. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

In the event of full road closure to through traffic, residents or visitors accessing Condit Road west of the construction zone from the east would need to be redirected to use Pleasant Hill Road (via Old Tunnel Road), and those traveling to the east of construction zone from the west would be redirected to Leland Drive (via Old Tunnel Road) as an alternative travel path during the construction period. The closure would affect approximately 1,618 vehicles currently traveling along Condit Road between Windsor Drive and Leland Drive between 7:00 a.m. and 7:00 p.m. (about 242 of which occur during the peak hour). While the detour would be an inconvenience for motorists and bicyclists, detour routes would represent minimal additional travel time for affected vehicles. Old Tunnel Road, Leland Drive, and Pleasant Hill Road generally have sufficient capacity to accommodate diverted traffic without substantial effects on local street traffic circulation. Per EBMUD’s Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan which includes installation of warning and detour signs advising motorists to follow appropriate detour routes well in advance of the Windsor Drive closure to through traffic. Use of these warning and detour signs would provide guidance to motorists as to how to move safely and through the Project site during construction. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Leland Drive

Pipeline construction on Leland Drive would occur along an approximately 300-foot-long segment of Leland Drive between Condit Road and Meek Place. The construction along Leland Drive would last for approximately four working days. Leland Drive is approximately 30 feet wide and provides one travel lane in each direction. On-street parking is prohibited on the east side of the street in the Project area. Since pipeline construction would require a minimum construction easement of 25 feet, it would require full road closure to through traffic during construction. The construction zone would move along Leland Drive by about 80 feet per day. In addition to pipeline construction on Leland Drive, EBMUD would construct a 30-inch drain line crossing Leland Drive from Patty Way directly across Leland Drive.

The construction of the drain line would also require a closure of Leland Drive to through traffic. The residents or visitors accessing Leland Drive north of construction zone from the south would need to be redirected to use Old Tunnel Road, and those traveling to the south of construction zone from the north would be redirected to Condit Road as an alternative travel path during this period. The closure would affect approximately 576 vehicles currently traveling along Leland Drive between Old Tunnel Road and Condit Road between 7:00 a.m. and 7:00 p.m. (about 102 of which occur during the peak hour). While the detour would be an inconvenience for motorists and bicyclists, detour routes would represent minimal additional travel time for affected vehicles and would last for a short duration. Both Old Tunnel Road and Condit Road have sufficient capacity to accommodate diverted traffic without substantial effects on local street traffic circulation Per EBMUD's Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan which includes installation of warning and detour signs advising motorists to follow appropriate detour routes well in advance of the Leland Drive closure. Use of these warning and detour signs would provide guidance to motorists as to how to most efficiently move through the Project site during construction. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

The parking lot for The Meher Schools is located on the west side of Leland Drive adjacent to the construction zone, and access to the parking lot may be affected during construction. The Meher Schools are generally open between the hours of 7:00 a.m. and 6:30 p.m., with peak drop-off and pick-up activities occurring from 8:00 a.m. to 9:00 a.m. and from 1:45 p.m. to 2:45 p.m., respectively (The Meher Schools 2016). Due to its proximity, pipeline construction on Leland Drive may affect access to the parking lot and create a potential conflict with school traffic. As noted in the Project Description, to minimize interruptions on the pipeline construction in front of The Meher Schools, pipeline construction in front of the school would be scheduled during periods when school is not in session. The Sun Valley Swimming Pool is located just north of the pipeline construction area, and its access would not be directly affected during construction. Per EBMUD's Standard Construction Specification 01 55 26, the Project would require preparation of a traffic control plan and **Mitigation Measure TRA-1** would include adjusting truck trips on Leland Drive near The Meher Schools to avoid drop-off and pick-up hours for the schools. Adjustment of truck travel in this manner would allow for safer and more efficient movement of people picking up and dropping children off at school. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standards specification language.

Overall, Project construction would not substantially affect traffic operations along nearby streets or permanently reduce roadway capacity because alternate routes of travel through locations in the vicinity of the Project site would be possible, and traffic operations would return to their current state after the end of construction activities.

A temporary reduction in roadway capacity would create potential safety hazards for motorists, given that travel on these roadways would be constrained and modified in a manner that could present challenges to drivers unaccustomed to these changes. However, with the implementation of Standard Construction Specification 01 55 26 and **Mitigation Measure TRA-1**, the Project's impacts related to traffic hazards would be reduced to a level of less than significant.

Significance Determination before Mitigation

Potentially significant.

Mitigation Measures

Mitigation Measure TRA-1: Traffic Control Measures for Windsor Drive, Condit Road and Leland Drive

The following measures will be implemented throughout the entire duration of the Project construction, to reduce the Project's temporary impacts to traffic circulation through the Project site:

- When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, construction contractor shall provide advance warning signs and flaggers at both ends of construction zone on Windsor Drive and Condit Road to alternate one-way traffic through the construction zone.
- When Windsor Drive, Condit Road, or Leland Drive is closed to through traffic, the construction contractor shall provide advance warning signs and detour signs along Pleasant Hill Road, Old Tunnel Road, and other affected roadways to advise motorists and bicyclists to follow appropriate detour routes well in advance of the roadway closure to through traffic.
- During the entire period of Project construction (including both reservoir and pipeline construction), truck trips shall be avoided during the typical school drop-off and pick-up hours for The Meher Schools along a portion of Leland Drive within approximately 300 feet radius from the entrance to the school. Typically, the school is open between 7:00 a.m. and 6:30 p.m. and the peak drop-off and pick-up hours occur from 8:00 a.m. to 9:00 a.m. and from 1:45 p.m. to 2:45 p.m., respectively. The construction contractor shall confirm the start and dismissal times prior to the beginning of each school year. If avoiding drop-off and pick-up hours is infeasible, the construction contractor shall provide additional flaggers during school drop-off and pick-up hours near the construction zone on Leland Drive to manage traffic flow and maintain traffic safety.
- When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, roadside safety protocols shall be implemented. Advance "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) shall be provided to achieve required speed reductions for safer traffic flow through Leland Drive, Condit Road, and Windsor Drive.
- When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, advance warning signs (e.g., "Truck Crossing") shall be installed along Leland Drive, advising motorists and bicyclists of construction traffic to minimize hazards associated with truck traffic on the residential road.
- Pedestrian and bicycle access and circulation shall be maintained during Project construction where safe to do so.
- Construction contractor shall notify LSBTA of roadway closures along Leland Drive or Windsor Drive and facilitate school bus access as much as possible or provide detour routes during the construction period. Additionally, the contractor shall provide flaggers at active school bus stops in the vicinity of construction area to ensure safe student pick-up and drop-off activities where safe to do so.

Significance Determination after Mitigation

Implementation of Mitigation Measure TRA-1 would ensure that appropriate measures are included in the Traffic Control Plan to ensure maintenance of safe access to homes, schools and recreational facilities in the Project area, and to avoid potential conflict between construction trucks and school traffic. These measures would reduce impacts associated with traffic hazards to less than significant.

Impact TRA-3 Result in inadequate emergency access (Criterion 5).

Project construction would require full and partial closures of roadways within the City of Lafayette and could result in inadequate emergency access. Implementation of EBMUD Standard Construction Specification 01 55 26, would require a contingency plan for emergency access and **Mitigation Measure TRA-2** requires (1) notification of and coordination with emergency response services as well as notification of businesses, commercial offices, and residents located within 300 feet of construction areas prior to road closures; (2) the use of easily removed, temporary barricades; and (3) the removal of barricades and closure of open trenches at the end of the day. Impacts to emergency access would be less than significant after implementation of EBMUD Standard Construction Specification 01 55 26 and **Mitigation Measure TRA-2** because the measures outlined above would notify first responders of roadway closures and would facilitate access as much as possible during the construction period. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Significance Determination before Mitigation

Potentially significant.

Mitigation Measures

Mitigation Measure TRA-2 – Maintain Emergency Access

Emergency responders (i.e., local police, fire, and ambulance services) shall be notified at least seven days in advance of any activities requiring full or partial roadway closures. Emergency access detour routes shall be determined in consultation with emergency responders as part of the notification process. Schools, businesses, recreational facilities, and residents located within 300 feet of construction zone shall be notified at least seven days in advance of activities requiring roadway closures, outlining the Project schedule and the duration of construction activities. EBMUD will send notices to the individuals and organizations on the Project's mailing list to update them prior to any roadway closures. Temporary barricades and directional cones that can be readily removed shall be used during full or partial roadway closures. Road barricades shall be removed and open trenches shall be covered (plated) at the end of the day on a daily basis to provide access. A portion of the on-street parking zones may be retained to allow for storage and/or staging of construction equipment.

Significance Determination after Mitigation

Implementation of Mitigation Measure TRA-2 would ensure that emergency responders can access the project area, and would reduce impacts to emergency access to less than significant.

Impact TRA-4 Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities (Criterion 6).

Transit Impacts

As discussed above, County Connection operates one bus route (Route 25) in the vicinity of the Project site. Route 25 operates between Lafayette BART Station and Walnut Creek BART Station via Mt. Diablo Boulevard, Pleasant Hill Road, and Olympic Boulevard, and the nearest bus stop to the Project site is located at the intersection of Old Tunnel Road and Pleasant Hill Road, approximately 2,000 feet west of the Project site. The Project would add approximately 39 vehicle trips to this intersection during the AM and PM peak hours, and the intersection would continue to operate with the same LOS with the addition of Project generated trips. The bus stop and its operation would not be affected by Project construction because the Project would not result in a lower LOS at the intersection of Old Tunnel Road and Pleasant Hill Road compared to existing conditions.

The LSBTA operates three Lamorinda school bus routes (i.e., Routes 21, 25, and 28) in the vicinity of the Project site. These routes operate along Pleasant Hill Road, Mt. Diablo Boulevard, Old Tunnel Road, Windsor Drive and Leland Drive during morning (between 7:00 a.m. and 8:00 a.m.) and afternoon (between 3:00 p.m. and 4:00 p.m.) periods. Due to the overlap in school bus routes and pipeline construction areas on Windsor Drive and Leland Drive, construction activities may conflict with school bus traffic. Impacts to transit would be less than significant after implementation of EBMUD Standard Construction Specification 01 55 26 and **Mitigation Measure TR-1** because the measures outlined above would require that LSBTA be notified of roadway closures and would facilitate school bus access as much as possible or provide detour routes during the construction period. Additionally, contractors would be required to provide flaggers at active school bus stops in the vicinity of construction areas to ensure safe student pick-up and drop-off activities at appropriate locations. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language.

Pedestrian and Bicycle Impacts

Based on the counts collected during the AM and PM peak periods on Tuesday, June 2, 2016, there are very few pedestrian and bicycle trips in the vicinity of the Project site. Pleasant Hill Road has the highest volumes of pedestrian and bicyclist traffic with up to 25 pedestrians and 11 bicyclists during the peak hour. Residential streets such as Leland Drive have substantially fewer pedestrian and bicycle traffic with up to four pedestrians or bicyclists during the peak hour. While the existing bicycle and pedestrian volumes are low in the vicinity of the Project site, anticipated construction activities on public roadways along Windsor Drive, Condit Road and Leland Drive could create potentially hazardous conditions for pedestrians and bicyclists due to a temporary reduction in roadway capacity, which would be a significant impact.

Implementation of EBMUD Standard Specification 01 55 26 and **Mitigation Measure TRA-1**, which require the preparation of a traffic control plan, would include flaggers at each end of pipeline construction zones along Windsor Drive, Condit Road, and Leland Drive to facilitate traffic movements and ensure safe passage of pedestrians and bicyclists through pipeline construction zones. Advance warning signs would also inform the pedestrians and bicyclists about construction activities and provide alternate routes when any street is closed to through traffic. Use of these warning signs would provide guidance to pedestrians and bicyclists as to how most efficiently to move through the Project site during construction. The EBMUD Practices and Procedures Monitoring and Reporting Plan (**Table 7-2** in Chapter 7) lists the applicable standard specifications language. Therefore, the Project's impacts on pedestrians and bicycles would be less than significant.

Significance Determination before Mitigation

Potentially significant.

Mitigation Measures

See **Mitigation Measure TRA-1** above**.**

Significance Determination after Mitigation

Implementation of EBMUD Standard Specification 01 55 26 and **Mitigation Measure TRA-1** would ensure safe access for transit, pedestrians and bicycles in the project area and would reduce impacts to less than significant.

Cumulative Impact Analysis

The geographical extent for cumulative impacts related to transportation includes areas in the vicinity of the Project site that would experience construction activity at the same time as the Project. Given that the Project would not result in additional traffic during its operational period, only the construction period is evaluated relative to potential cumulative impacts. None of the cumulative projects listed in **Table 3.0-1** is expected to be under construction at the same time as the Project; by 2022, when Project construction is expected to start, construction of all of the cumulative projects is expected to be complete. The Hoedel Court and Lafayette Park Terrace projects are expected to add a minimal amount of operational trips at study intersections. Traffic from the Homes at Deer Hill and Byron Park Expansion projects would have minimal effect on intersections south of SR 24. Cumulative impacts from Project construction traffic plus operation of cumulative projects is thus expected to be less than significant.

As described above, implementation of mitigation measures and compliance with EBMUD's standard practices and procedures would ensure that the Project's construction-period transportation impacts would be less than significant. The Project thus would not result in a cumulatively considerably impact.

3.13.4 References

CHS Consulting Group. 2017. EBMUD Leland Reservoir Replacement Project. Transportation Study Final. October 2017. Included as Appendix M of this EIR.

City of Lafayette. 2006. City of Lafayette Bikeways Plan.

City of Lafayette. 2012. City of Lafayette General Plan. Circulation Chapter. Available online at http://www.lovelafayette.org/Home/ShowDocument?id=1932. Accessed on July 27, 2017.

The Meher Schools. 2016. Letter from Ivy Summers and Vince d'Asis, Co-Principals of the Meher Schools to Oscar Herrera of EBMUD. Dated September 26, 2016.

Chapter 4 Alternatives

This chapter evaluates alternatives to the proposed Project and examines the potential environmental impacts associated with each alternative to the Project. Alternatives are compared to the No Project Alternative, and the relative environmental advantages and disadvantages of each are identified.

4.1 Alternatives Analysis Approach

4.1.1 Consideration of Alternatives Under CEQA

The CEQA Guidelines Section 15126.6 requires EIRs to evaluate a range of reasonable alternatives to a project, or to the location of a project that would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. The following criteria for selecting alternatives are set forth in the Guidelines:

- An EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. The range of alternatives addressed in an EIR should be governed by a rule of reason. Not every conceivable alternative must be addressed, nor do infeasible alternatives need to be considered (CEQA Guidelines Section 15126.6(a)). When addressing feasibility, factors that may be taken into account may include site suitability, economic viability, availability of infrastructure, other plans or regulatory limitations, jurisdictional boundaries, and the proponent’s ability to reasonably acquire, control, or otherwise have access to an alternative site.
- Evaluation is to focus on those alternatives capable of either avoiding or substantially lessening any significant environmental effects of the project, even if the alternative would impede, to some degree, the attainment of the project objectives, which are identified in *Chapter 2, Project Description* of this EIR, or would be more costly.
- The EIR should identify alternatives that were considered by the lead agency but were rejected as infeasible and the reasons for the lead agency’s determination (Section 15126.6(c))
- A “No Project” alternative must be evaluated and the EIR must also identify an environmentally superior alternative (Section 15126.6(e))

The discussion should not consider those alternatives whose implementation is remote or speculative, and the analysis need not be presented in the same level of detail as the assessment of the proposed project.

Alternatives may take the form of no project, reduced project size, different project design, or suitable alternative project sites.

Based on the CEQA Guidelines, several factors should be considered in determining the range of alternatives to be analyzed in an EIR and the level of analytical detail that should be provided for each alternative. These factors include:

1. The potential for the proposed project to result in significant impacts;
2. The ability of alternatives to reduce or avoid the significant impacts associated with the proposed project;
3. The ability of the alternatives to meet the objectives of the proposed project; and
4. The feasibility of the alternatives.

4.1.2 Approach to Analysis

Alternatives considered in this analysis include those alternatives identified by EBMUD in the March 2014 Leland Reservoir Replacement Facilities Plan, alternatives suggested by members of the public during scoping (which focused on alternative pipeline alignments), plus alternatives identified by the EIR preparers based on the environmental impacts described in Chapter 3 of this EIR. The analysis in this EIR indicates the Project would result in significant and unavoidable impacts related to construction noise. There are no long-term operational impacts associated with the Project. The alternatives analysis thus considers whether there is an alternative that would avoid or reduce this short-term construction impact. The Project objectives are defined in **Table 2-1** in Chapter 2, Project Description.

The EBMUD Board of Directors will review and consider the information contained in this EIR before deciding whether to approve, disapprove, or modify the Project.

4.2 Alternatives Development Process

The 2006 WTTIP EIR included replacement of Leland Reservoir at a program-level, including consideration of alternative locations for a new Leland Pressure Zone reservoir. Subsequent to the WTTIP EIR, EBMUD determined that a new Leland Pressure Zone reservoir at an alternative site was not needed. As a result, alternatives for replacing the reservoir at the existing Leland Reservoir site were further developed during preparation of the Facilities Plan for the Project (EBMUD 2014).

The Facilities Plan considered alternatives to address the reservoir infrastructure and the existing pipeline that currently runs beneath the reservoir. The initial analysis considered whether to rehabilitate the existing reservoir or demolish and replace it, followed by an analysis of replacement design alternatives and pipeline alignment alternatives, as described in the sections that follow.

Both rehabilitation and replacement are described below in Sections 4.2.1 and 4.2.2. The evaluation of design alternatives is described in Section 4.3.

4.2.1 Rehabilitate Existing Reservoir

This alternative would include repair of all of the major structural components of the existing reservoir to bring the facility up to current standards. Work would include:

- Demolition and removal of existing roofing system;
- Construction of new roofing system;
- Repair and/or construction of concrete liner;
- Construction of new valve pit and electrical equipment;
- Meeting DSOD freeboard[1] requirement through construction of a new parapet wall, raising the embankment, or lowering the overflow siphon; and
- Rerouting of the 36-inch pipeline that currently runs under the reservoir into either public streets using open trench construction, public streets with tunnel or jack and bore, or within reservoir property with a tunnel.

4.2.2 Replace Existing Reservoir

Under this alternative the existing reservoir would be replaced with two new tanks. Work would include:

- Demolition of the existing reservoir;
- Earthwork and grading to breach the embankment and to re-contour the existing basin;

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[1] Freeboard is the vertical distance between the crest of the embankment and the reservoir water surface.

- Construction of temporary retaining walls for construction of the tanks;
- Construction of the two new 8-MG concrete tanks;
- Construction of new inlet/outlet pipeline;
- New electrical and mechanical equipment for facility (e.g., new valve pits and piping);
- Removal of the existing backbone transmission pipeline and installation of new 36-inch diameter pipeline within the reservoir basin; and
- Landscaping.

4.3 Design Alternatives

4.3.1 Reservoir Replacement Alternatives

EBMUD considered four design alternatives as part of the Facilities Plan process (EBMUD 2014). Each alternative included two new 8-MG tanks, but differed in the handling of earthwork on the site. Because replacement of the reservoir would require breaching the existing embankment to allow construction within the reservoir basin, large quantities of soil must be moved during construction. EBMUD evaluated both the benefits and potential impacts of keeping soil on site as opposed to removal (off haul) of most of the soil. The following alternatives were considered.

No Off Haul

This alternative would retain all of the soil from the existing embankment on the site in stockpile areas between Leland Drive and the existing reservoir embankment. This would require removal of essentially all of the trees on the eastern side of the reservoir site. Upon completion of construction the soil would be replaced around the tanks, which would be buried up to the roofline of the tank, to a maximum depth of about 37 feet.

Limit Off Haul

This alternative is similar to the No Off Haul Alternative, but would include some off haul of soil from the site. This alternative was considered because it was not clear that there was enough room on the site to stockpile all soil on site and completely eliminate off haul. Soil would still be stockpiled on the eastern side of the reservoir, but at the completion of construction tanks would be buried up to the level of the existing perimeter roadway, to a maximum depth of about 30 feet.

Off Haul Most – Backfill Cut Slopes

Under this alternative, backfill around the new tanks would be limited to the portions of the tanks adjacent to the western, southern and northern embankments, resulting in partially buried tanks within the basin. A portion of the existing basin floor would remain open to accommodate valve pits and parking. Soil stockpiles adjacent to Leland Drive would still be needed, but would be smaller than under the previous two alternatives.

Off Haul Most - with Permanent Retaining Wall

This alternative is similar to the Off Haul Most – Backfill Cut Slopes Alternative, but would include a permanent retaining wall behind the tanks so as to avoid partially burying the tanks. After completion of tank construction soil would be backfilled behind the retaining wall, and used to restore the embankment on the east side of the reservoir so as to screen the tanks from views from Leland Drive. Some soil stockpiling on site is still expected to be needed.

4.3.2 Pipeline Alternatives

The existing pipeline connecting the reservoir to the transmission system, which is shown in **Figure 2-3**, extends from Old Tunnel Road through a narrow easement into the northwest corner of the reservoir site, crossing under the existing reservoir and exiting the site at its southeast corner. EBMUD considered six alignment options for the pipeline, which include four alternatives that stay within the existing reservoir site and two alternative alignments within public ROW (Old Tunnel Road/Leland Drive and Windsor Drive/Condit Road). Key items in evaluating pipeline alternatives were to improve ability to maintain water service and emergency flows during construction and to ensure accessibility of structures for maintenance.

Retain Pipeline Route through Reservoir Site

Under this alternative the pipeline would continue to be routed through the reservoir site. EBMUD considered four construction alternatives that would enable keeping the pipeline alignment through the reservoir, including a tunnel across the northern portion of the site, a concrete-encased pipeline in the reservoir basin, a tunnel through the existing embankment with the pipe encased in concrete or a “chase” (a structure to enclose the pipeline), and excavation of a valley through the embankment with the pipe encased in a chase. Each alternative would retain the existing pipeline from Old Tunnel Road through the narrow easement into the bottom of the reservoir basin, and would only replace the pipeline within the reservoir site. The pipeline within the reservoir basin would have to be constructed before the tanks were built and would need to stay in service during the entire period of reservoir construction.

Old Tunnel Road/Leland Drive Alignment

This alternative for the pipeline alignment would include construction of 3,200 linear feet of 36-inch pipeline extending along Old Tunnel Road to Leland Drive. The pipeline would extend from the existing EBMUD easement, which enters the reservoir property from a point on Old Tunnel Road between Windsor Drive and Linda Vista Lane, to the intersection of Old Tunnel Road and Leland Drive, then down Leland Drive to the EBMUD access road opposite 1050 Leland Drive. Because Old Tunnel Road is at a higher elevation than the bottom of the reservoir, about 900 linear feet of the pipeline would have to be tunneled.

Windsor Road/Condit Road

This is the proposed alignment that is now included in the Project, and includes construction of pipeline from the intersection of Windsor Road and Old Tunnel Road down Windsor Drive to the intersection of Condit Road, then down Condit Road to Leland Drive, connecting to the existing system at the intersection of Meek Road and Leland Drive.

4.4 Alternatives Rejected from Further Consideration

4.4.1 Reservoir Alternatives

Rehabilitate Existing Reservoir

The Facilities Plan determined that rehabilitation of the existing reservoir would not reduce costs when compared to a total replacement alternative and would not have the benefit of reducing the operations and maintenance costs that are associated with ongoing operation of a dam. Reservoir rehabilitation would have short-term construction impacts similar to reservoir replacement because of the extensive repair, reservoir outage requirements, and replacement activities that would be required. This alternative would still have significant noise impacts associated with construction of a new roof. Because this alternative provides fewer benefits with similar cost and environmental disruption, reservoir rehabilitation was not considered further.

Reservoir Design Alternatives

EBMUD determined that there was not sufficient space on the reservoir site to store the quantities of soil that would be retained on site for the No Off Haul and Limit Off Haul Alternatives. There is almost no level terrain on the site, and the areas with minimal slope that are suitable for soil stockpiles are limited to the areas north and south of the existing access road, which are shown in **Figure 2-9**. The stockpile areas do not provide sufficient space to stockpile the quantities of soil that would need to be retained on site for the No Off Haul and Limit Off Haul Alternatives, which were thus not considered further because they would not be feasible. Even if it was feasible to stockpile sufficient soil on site to implement these alternatives, they would not eliminate the significant noise impacts associated with the Project.

The Off Haul Most – With Permanent Retaining Wall Alternative is virtually identical to the Project, but with the addition of retaining walls inside the basin. The retaining walls were determined not to be necessary because the concrete tanks could be designed to structurally withstand the soil backfilled against the tank walls. Construction of the retaining wall would actually have resulted in construction occurring closer to residences located west of the reservoir site. This alternative thus would not reduce or eliminate the significant noise impacts associated with the Project, and was thus not considered further.

4.4.2 Pipeline Alternatives

Pipeline through Reservoir Site

It was determined that all of the options for routing the pipeline through the reservoir site would not be acceptable because it would not be possible to maintain the pipeline in the future. Because the pipeline would be located within the narrow easement between Old Tunnel Road, extending under the reservoir embankment on the northern side of the site, the pipeline would be buried too deeply to be maintained. Additionally, a pipeline alignment through the reservoir site would complicate construction of the tanks because the pipeline would need to remain in service and would have to be protected during tank construction. Placement of the new 36-inch pipeline in the existing alignment (through the reservoir site) would put the existing critical 36-inch pipeline, which must remain in service until a new pipeline is installed, at high risk of damage during construction activities. Construction over the existing 36-inch pipeline during demolition of the existing reservoir, installation of the new 36-inch pipeline, and construction of the new concrete tanks would be extremely difficult and was, therefore, not selected. The pipeline alternatives would not eliminate the significant noise impacts associated with the Project.

Old Tunnel Road/Leland Drive Alignment

The Old Tunnel Road/Leland Drive alignment was rejected because the resulting pipeline would be buried under Old Tunnel Road at depths of approximately 40 feet, and would be inaccessible for maintenance. An alignment in Old Tunnel Road is not feasible using standard cut-and-cover construction techniques, as the elevation of Old Tunnel Road is located above the top of the existing reservoir and would require tunneling resulting in deeply- buried pipelines (approximately 20 to 40 feet deep), thus creating future operations and maintenance challenges. This alignment alternative would not eliminate the significant noise impacts associated with the Project.

4.5 No Project Alternative

4.5.1 Alternative Description

Under the No Project Alternative, EBMUD would not drain the existing reservoir and replace it with new tanks, and the new pipeline in Windsor Road, Condit Road and Leland Drive would not be constructed. However, because the reservoir is a critical facility at the end of its useful service life, EBMUD would still need to complete major structural rehabilitation of the existing reservoir, including removal and replacement of the existing roof system and modifications to the existing reservoir to meet DSOD freeboard requirements, as described above for the Rehabilitate Existing Reservoir Alternative. The reservoir would remain under DSOD jurisdiction and EBMUD may also have to make future improvements to resolve any dam embankment issues, if requested by DSOD. For purposes of analysis, it is assumed that the No Project Alternative would not include rerouting of the existing pipeline that runs underneath the reservoir.

4.5.2 Project Objectives

Project Objectives are presented below in **Table 4-1** and are listed below along with an evaluation of whether the No Project Alternative meets those objectives. As explained below in **Table 4-1** the No Project Alternative does not meet most of the project objectives for reliability, operations and maintenance.

4.5.3 Impact Discussion

Because of the substantial work that would be required to replace the roof and meet DSOD requirements, the No Project Alternative would not avoid all of the construction impacts that would be associated with the Project. However, because the No Project Alternative would not include construction of a new pipeline, construction impacts associated with disruption of access on Windsor Drive, Condit Road and Leland Drive would be avoided. Pipeline tie-ins would not be needed, so nighttime construction would not be required and this would eliminate one of the significant unavoidable impacts associated with the Project. Noise and construction traffic impacts associated with replacement of the reservoir roof would be similar to those associated with the Project, but the duration of construction might be shorter. EBMUD would use standard construction hours (7:00 a.m. to 7:00 p.m.) for the roof replacement so significant noise impacts during construction would still be expected to occur.

Table 4-1: Evaluation of No Project Alternative and Project Objectives

Project Objectives	Does No Project Alternative Achieve Objective?
Primary Operational Objectives	
Improve water service reliability by adding flexibility via two reservoirs where each can be operated independently if needed.	No, with No Project there would only be one reservoir at the site.
Improve maintenance and repair accessibility: • By adding capability to take one reservoir out of service while the other remains. • By relocating the inaccessible backbone transmission pipeline so that the pipeline is not beneath the existing reservoir.	No, with No Project there would be no backup if the reservoir must be taken out of service for maintenance, and the pipeline serving the reservoir would not be accessible for maintenance.
Improve water quality	No, with No Project the water quality improvements associated with two new tanks would not be obtained.
Improve redundancy and reliability for future outages	No, with No Project there would be no improvement in redundancy or reliability.
Maintain a safe facility while reducing the monitoring, permitting and other operational costs associated with managing a dam.	No, there would be additional operational costs associated with maintaining a safe dam.
Maximize the useful life of existing facilities in a manner that reduces costs for customers.	No, although replacing the roof would extend the life of that structure, the remainder of the reservoir would still be over 60 years old and would require replacement at some point.
Minimize life-cycle costs (capital, operating, and maintenance) to EBMUD's customers.	No, capital costs would be similar to the Project and long-term operational costs would be higher.
Construction Impact Objectives	
Minimize environmental impacts on the community during construction.	Yes, hauling of excavated soils and demolition debris would be much less, but noise impacts would remain significant.
Maintain a similar and acceptable aesthetic site environment post construction.	Yes, replacement of the roof of the existing reservoir would result in minimal change in the visual character of the site.
Reuse or recycle building materials on site to the extent feasible, including concrete demolition materials and excavated earth.	Yes, if only the roof is replaced there would be fewer materials that would need to be reused or recycled.
Maintain water service and emergency flows during construction.	Yes, it is anticipated that even with the need for roof repairs EBMUD would be able to maintain service.
Protect the local community from construction hazards.	Yes, it is expected that the roof could be replaced safely.
Provide safe travel routes for motorists and pedestrians	Yes, it is expected that safe travel routes for motorists and pedestrians would be maintained.
Provide safe construction site conditions	Yes, roof replacement would be subject to the same safety requirements as the Project.

4.6 New Leland Pressure Zone Reservoir Alternative

Section 15126.6 of the CEQA Guidelines states that “Evaluation is to focus on those alternatives capable of either avoiding or substantially lessening any significant environmental effects of the project”. For the Leland Reservoir Replacement, the only significant unavoidable impacts are construction noise. Standard construction hours are 7:00 a.m. to 7:00 p.m., and per EBMUD’s Standard Construction Specification 01 14 00, Work Restrictions, any construction work that generates noise levels above 90 dBA would not be allowed to occur before 8:00 a.m. or after 4:00 p.m. The Lafayette Noise Ordinance limits construction hours to 8:00 a.m. to 8:00 p.m., so even though EBMUD limits the types of activities that can occur between 7:00 a.m. and 8:00 a.m., starting construction before 8:00 a.m. is not consistent with the ordinance, and is thus considered to be a significant impact. Limited nighttime construction is also proposed for pipeline tie-ins, but due to the nature of the tie-in process, this activity is unavoidable. In addition to the conflict with the noise ordinance, noise levels for truck traffic during reservoir construction and nighttime construction of pipeline connections would constitute a significant impact. EBMUD has thus considered alternatives to reduce construction noise at the Leland Reservoir site.

4.6.1 Alternative Description

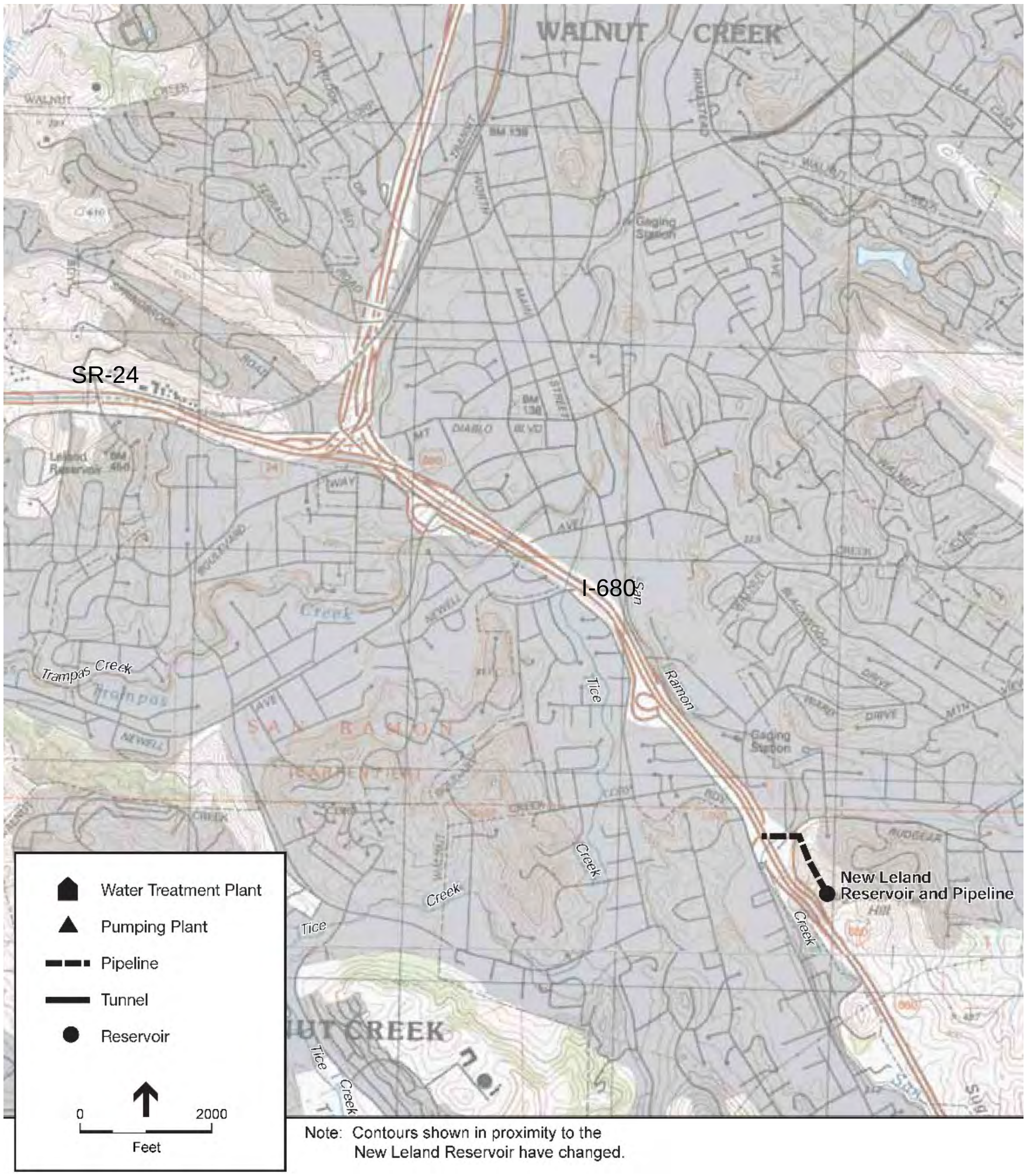
In 2006, replacement of the Leland Reservoir was evaluated at a program level as part of the Water Treatment and Transmission Improvements Program (WTTIP) EIR. At that time EBMUD had determined that because the existing Leland Reservoir would be out of service for several years during the construction period “Additional storage would be required within the Leland Pressure Zone to accommodate the multi-year outage required to decommission the existing reservoir and construct a new reservoir. Construction of this additional storage, the New Leland Pressure Zone Reservoir, would occur before demolition of the existing Leland Reservoir” (EBMUD 2006). The New Leland Pressure Zone Reservoir was proposed to be a 9-MG tank located on a 10-acre site on a hillside east of I-680 and south of Rudgear Road in the city of Walnut Creek (see **Figure 4-1**). The replacement reservoir would also require a construction of a pipeline between the tank site and a transmission main in South Main Street, which would necessitate a bore and jack crossing of San Ramon Creek. The reservoir site is on a steep previously cut and terraced hillside primarily on California Department of Transportation (Caltrans) property; the easternmost portion of the tank site is privately owned. The tank would be almost completely buried, which would require extensive grading on the site. With construction of a new tank at the Rudgear Road site, the capacity of the new tank at the Leland Reservoir site could be reduced by about half, and only a single tank would need to be constructed.

EBMUD subsequently determined that the Leland Reservoir could be taken out of service for construction of the Project without the need to construct additional storage at another location. Although the New Leland Pressure Zone Reservoir is not necessary, this analysis considers whether construction of two tanks at different locations would reduce environmental impacts, with specific emphasis on the significant unavoidable noise impacts that would occur during construction of the new tanks and pipeline at the existing Leland Reservoir site.

4.6.2 Impact Discussion

EBMUD would use standard construction hours (7:00 a.m. to 7:00 p.m.) for construction of a single tank at the Leland Reservoir Site, so there would still be significant construction noise impacts in the City of Lafayette because construction would conflict with the City of Lafayette Noise Ordinance. The duration of the early morning noise impacts associated with both construction traffic and construction activities would, however, be anticipated to be shorter because constructing a single tank is expected to take less time than construction of two tanks. Noise associated with haul truck traffic would also be reduced because less soil would need to be removed from the Leland Reservoir site; with a single tank, additional soil could be stored on site within the existing reservoir basin.

Figure 4-1: New Leland Pressure Zone Reservoir Site



Note: Contours shown in proximity to the New Leland Reservoir have changed.

Source: EBMUD 2006

The Rudgear Road reservoir site is located within 60 feet of residences so construction at this site would also result in potentially significant noise impacts associated with both construction activities and noise from haul trucks. EBMUD construction hours for the New Leland Pressure Zone Reservoir would be in conflict with the City of Walnut Creek Municipal Code (City of Walnut Creek 2017), which only allows construction from 7:00 a.m. to 6:00 p.m. Nighttime construction would also be required at the Rudgear Road site for tie-in of the new pipeline connecting the tank to the existing EBMUD transmission system. The New Leland Pressure Zone Reservoir Alternative would thus reduce noise impacts at the Leland Reservoir site, though not to a less-than-significant level, but would result in significant and unavoidable noise impacts at the Rudgear Road site in Walnut Creek due to construction activity at that site, which is assumed to occur at the same hours as those proposed for the Project: 7:00 am to 7:00 pm.

In addition to noise impacts, the WTTIP EIR identified the following significant impacts associated with the New Leland Pressure Zone Reservoir:

- The site is visible from I-680, which is a designated state scenic highway at this location. Construction would affect open ridgelines and views from I-680, public trails, and nearby residences. Even with mitigation the visual impacts are considered significant and unavoidable.
- The bore and jack crossing of San Ramon Creek for the pipeline connection would have potentially significant impacts to aquatic biological resources such as jurisdictional wetland features, including riparian corridors.
- The extensive excavation and soil removal required to construct a buried tank would generate substantial haul truck traffic, potentially resulting in significant unavoidable traffic impacts.

Because of the reduced size of the Project at the Leland Reservoir site (under this alternative only one tank would be needed at the Leland Reservoir Site), the New Leland Reservoir Pressure Zone Alternative has the potential to reduce the duration of construction-period noise, traffic and air quality impacts to the neighborhood around the Leland Reservoir site. However, impacts would remain significant and unavoidable and would also result in similar impacts at the Rudgear Road site where the New Leland Pressure Zone Reservoir would be constructed. Visual, traffic and biological resources impacts at the Rudgear Road site potentially would be greater than impacts to these resources areas at the Leland Reservoir site.

4.7 Comparison of Alternatives

Table 4-2 provides a comparison of the Project, No Project Alternative and New Leland Pressure Zone Reservoir Alternative. The No Project Alternative avoids impacts associated with pipeline construction because it is assumed that only critical reservoir rehabilitation work would take place. The No Project Alternative would not achieve the primary operational project objectives and would still result in a number of construction impacts because it is expected that replacement of the Leland Reservoir roof would be necessary if the reservoir is not replaced. While impacts would thus be somewhat less than with the Project, they would not be substantially lessened, and significant unavoidable construction noise impacts would still be expected to occur. Both the Project and New Leland Pressure Zone Reservoir alternatives would achieve the primary operational project objectives. The New Leland Pressure Zone Reservoir Alternative would have essentially the same impacts as the Project for all environmental issues, and the addition of a second reservoir site would create additional impacts at that location, some of which are more severe. Construction noise impacts at the Leland Reservoir site would be somewhat reduced under the New Leland Pressure Zone Reservoir Alternative, but significant unavoidable noise impacts would still occur.

4.8 Environmentally Superior Alternative

The Project and New Leland Pressure Zone Reservoir Alternative have no operational impacts, and most of the temporary impacts associated with construction can be mitigated to a less than significant level. However, both projects alternatives would have significant and unavoidable noise impacts during construction: Impact NOI-1: the Project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; Impact NOI-2: the Project would result in substantial temporary or periodic increase in ambient noise levels in the project vicinity of above levels existing without the project. The nighttime construction that is required for a pipeline tie-in would result in two significant and unavoidable impacts, both violating local noise ordinances and resulting in a substantial increase in nighttime noise levels. The nighttime construction noise impact cannot be eliminated for construction of any project that includes replacement of the existing pipeline, because work to connect the new pipeline to the existing system must be conducted continuously over more than 70 hours. The New Leland Pressure Zone Reservoir Alternative would reduce the duration of early morning construction impacts at the Leland Reservoir site, but would still have significant nighttime construction impacts. Only the No Project

Alternative, which is assumed not to include a new pipeline, would avoid the significant nighttime construction noise impact. The No Project Alternative is thus environmentally superior because it eliminates the significant and unavoidable adverse impacts associated with nighttime construction, but as described above in **Table 4-1**, the No Project Alternative fails to meet any of the primary operational objectives for the Project.

Section 15126.6(e)(2) of the CEQA Guidelines specifies that "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Although it reduces the duration of some noise impacts at the Leland Reservoir site, the New Leland Pressure Zone Reservoir Alternative cannot eliminate all of the significant unavoidable construction period noise impacts, and there are additional impacts associated with construction a second reservoir at the Rudgear Road site. Because of the significant impacts associated with the New Leland Pressure Zone Alternative, there is no clearly environmental superior alternative. The Project, as proposed, is environmentally superior to the alternatives. EBMUD has worked with the community to incorporate suggestions in the landscape design of the Project, and has developed a Project that would provide long-term water supply reliability without any significant long-term operational impacts.

Table 4-2: Comparison of Alternatives

	Significance		
Impact Statement	**Project**	**No Project Alternative**	**New Leland Pressure Zone Reservoir Alternative**
Aesthetics			
AES-1: Substantially degrade the existing visual character or quality of the site and its surroundings	LTS	LTS	LTS
AES-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area	LSM	NI	LSM
Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway	NI	NI	**SU**
Air Quality			
AIR-1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation	LTS	LTS	LTS
AIR-2: Expose sensitive receptors to substantial pollutant concentrations	LTS	LTS	LTS
AIR-3: Conflict with or obstruct implementation of the applicable air quality plan	LTS	LTS	LTS
AIR-4: Create objectionable odors affecting a substantial number of people	LTS	LTS	LTS
AIR-5: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors)	LTS	LTS	LTS

	Significance		
Impact Statement	**Project**	**No Project Alternative**	**New Leland Pressure Zone Reservoir Alternative**
Biological Resources			
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	LSM	LTS	LSM
BIO-2: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	LTS	NI	PS
Cultural Resources			
CUL-1: Cause a substantial adverse change in the significance of a historical resource, pursuant to Section 15064.5	LTS	LTS	LTS
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5	LTS	NI	LTS
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	LTS	NI	LTS
CUL-4: Disturb any human remains, including those interred outside of dedicated cemeteries.	LTS	NI	LTS
CUL-5: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.	LTS	NI	LTS
Energy			
EN-1: Potential to result in a significant consumption of energy.	LTS	LTS	LTS
Geology and Soils			
GEO-1: Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides.	LTS	LTS	LTS
GEO-2: Potential to result in substantial soil erosion or the loss of topsoil.	LTS	LTS	LTS
GEO-3: Potential to be located on a geologic unit or soil that is unstable or that would become unstable as a result of the proposed project, and potentially could result in on-site or off-site landslides, lateral spreading, subsidence (i.e., settlement), liquefaction, or collapse	LTS	LTS	LTS

	Significance		
Impact Statement	Project	No Project Alternative	New Leland Pressure Zone Reservoir Alternative
GEO-4: Potential to be located on expansive or corrosive soils that would create substantial risks to life or property.	LTS	LTS	LTS
Greenhouse Gas Emissions			
GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	LTS	LTS
GHG-2: Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	LTS	LTS
Hazards and Hazardous Materials			
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	LTS	LTS	LTS
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	LTS	LTS	LTS
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	LTS	LTS	LTS
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LTS	NI	LTS
Hydrology and Water Quality			
HYD-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality..	LTS	LTS	LTS
HYD-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level	LTS	LTS	LTS
HYD-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	LTS	LTS	LTS

	Significance		
Impact Statement	Project	No Project Alternative	New Leland Pressure Zone Reservoir Alternative
HYD-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.	LTS	LTS	LTS
Land Use			
LU-1: Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect	LTS	LTS	LTS
Noise			
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies	**SU**	**SU**	**SU**
NOI-2: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project	**SU**	**SU**	**SU**
NOI-3: Result in exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels	LTS	LTS	LTS
Recreation			
REC-1: Impair use of existing parks or other recreational facilities, or conflict with local policies regarding parks, trails or recreation	LTS	LTS	LTS
Traffic and Transportation			
TRA-1: 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	LTS	LTS	**SU**
TRA-2: Substantially increase hazards due to a design feature or incompatible uses	LSM	NI	LSM
TRA-3: Result in inadequate emergency access	LSM	NI	LSM
TRA-4: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities	LSM	NI	LSM

Notes: NI= No Impact, LTS = Less than Significant, PS = Potentially Significant, S = Significant; LSM = Less than Significant with Mitigation, SU = Significant and Unavoidable (Impact shown in **BOLD**).

4.9 References

City of Walnut Creek. 2017. Walnut Creek Municipal Code, Title 4, Noise, accessed August 3, 2016, available at: http://www.codepublishing.com/CA/WalnutCreek/html/WalnutCreek04/WalnutCreek0406.html#4-6.201

EBMUD. 2006. Draft EIR for Water Treatment and Transmission Improvements Program, June 2006. Prepared by Environmental Science Associates.

EBMUD. 2014. Leland Reservoir Replacement Facilities Plan. March 2014

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Chapter 5 Other CEQA Considerations

5.1 Significant and Unavoidable Impacts

EBMUD will be required to adopt Findings and prepare a Statement of Overriding Considerations for unavoidable, adverse impacts as part of its approval of the Project. The Project would not entail any operational impacts, and as described in the EIR analysis the majority of impacts during construction can be reduced to a less-than-significant level. The only significant and unavoidable impacts identified for the Project are temporary construction-period noise impacts. The following impacts were determined to be significant and unavoidable:

Impact NOI-1: the Project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. It would not be feasible for Project construction to comply with the City of Lafayette Noise Ordinance, which limits construction activities to 8:00 a.m. to 8:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and legal holidays. EBMUD has considered the practicability of prohibiting construction work before 8:00 a.m. in order to meet the ordinance time limit and has determined that this is not feasible. To safely accomplish required tasks at the reservoir site, construction hours would need to be 7:00 a.m. to 7:00 p.m. Monday through Friday. During concrete foundation and roof slab pour tasks a 6:00 a.m start time would be required to minimize interruptions of the concrete pour activitities. Pipeline construction tie-ins would also require nighttime work and noise generating activities would occur primarily during one 24-hour time period for each tie-in. Noise levels during the tie-in process would exceed the 53-dBA Nightime Ordinance Noise Limit at the nearest sensitive receptors. Per **Mitigation Measure NOI-1c**, EBMUD will maintain ongoing communication with residents and will address noise issues during construction, and **Mitigation Measure NOI-1b**, Nighttime Construction Measure, would provide alternative lodging for affected residents, but the impact would still be considered significant because residents may choose not to move to alternative lodging for one night and would be subject to nighttime noise. As a result, the impacts of Project construction outside of the noise ordinance’s 8 a.m. to 8 p.m. timeframe would be significant and unavoidable because construction noise prior to 7 a.m. could exceed the Lafayette Noise Ordinance’s applicable limits of 58 dBA (Leq) between 7 a.m. and 8 a.m. and 53 dBA between 10 p.m. and 7 a.m. for nighttime work.

For daytime work, some equipment used during construction would exceed both of the construction ordinance limits of 83 dBA (L_{max}) at 50 feet or 80 DBA (L_{eq}) at the closest property line. **Mitigation Measure NOI-1a** would reduce impacts associated with the hoe ram and concrete crusher used for reservoir construction by using a temporary noise barrier or setbacks from nearby residences, resulting in a less than significant impact. However, there are four types of equipment used during pipeline construction that would produce noise levels that exceed both ordinance limits, even with implementation of standard noise controls. Therefore, conflicts with the noise ordinance would be a significant and unavoidable impact.

Impact NOI-2: the Project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Daytime construction noise levels would be acceptable, but nighttime noise levels would exceed the 53-dBA Ordinance Noise Limit at several locations adjacent to the areas where pipeline tie-ins would be constructed. **Mitigation Measure NOI-1b**, Nighttime Construction Measure, would provide alternative lodging for affected residents, but the impact would still be considered significant because of the potential for sleep disruption, even with the implementation of the mitigation measure.

Both of these noise impacts are thus considered to be significant and unavoidable.

5.2 Irreversible and Irretrievable Commitments of Resources

The State of California CEQA Guidelines (Section 15126(c)) require that an EIR include a discussion of the significant irreversible environmental changes that would be caused by a project should it be implemented.

Irreversible commitment of resources occurs as a result of the use or destruction of a specific resource (e.g., minerals extraction, destruction of cultural resources) which cannot be replaced or, at a minimum, restored over a long period of time. Irretrievable commitment of resources refers to actions resulting in the loss of production or use of natural resources and represents the effects that the use of nonrenewable resources could have on future generations (e.g., land conversion to new uses; construction of levees preventing the natural flooding of flood plains).

The Project would result in the irreversible and irretrievable commitment of the following resources during construction, operation, and maintenance:

- Construction materials such as asphalt, concrete, and steel;
- Energy resources such as electricity, fuel, oil, and natural gas for construction equipment; and
- Nonrenewable materials such as gravel, petroleum products, steel.

Similar to any infrastructure project of its size and kind, the Project would require commitment of material resources to the construction of new facilities. No other irreversible permanent changes such as those that might result from construction of a large-scale mining project, a hydroelectric dam, or other industrial project would result from development of the Project. Construction of the new tanks would occur within the footprint of the existing Leland Reservoir site and pipelines would be underground, and would not result in irreversible or irretrievable commitment of the Project area as a land resource.

Operation of the Project would be similar to current operations, and would not require commitment of additional energy resources, which would only be needed for construction.

5.3 Growth Inducing Impacts

CEQA requires the Lead Agency to evaluate whether a Project would directly or indirectly induce growth of population, economic development, or housing construction. Specifically, CEQA Guidelines Section 15126.2(d) states the need to evaluate the potential for a project to “foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas).” Directly induced growth is associated with residential or commercial development projects that would result in a population increase or in an increase in the number of employees. Indirectly induced growth is associated with reducing or removing barriers to growth, or creating a condition that encourages additional population or economic activity. Ultimately, both types of growth induction result in population increase, which “may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects” (CEQA Guidelines Section 15126.2[d]). Other potential environmental impacts related to growth include increased traffic, air emissions, and noise; degradation of water quality; loss of sensitive biological and cultural resources; increased demand on public services and infrastructure; and changes in land use and conversion of agricultural or open space to accommodate development.

Under CEQA, growth inducement is not considered necessarily detrimental, beneficial, or of little significance to the environment. Projects are considered to have growth-inducing implications when economic, housing, or population growth would be stimulated, either directly or indirectly.

The Project would replace the aging 18-MG Leland Reservoir with two new 8-MG tanks within the existing reservoir basin. The Project is necessary because of the unsafe condition of the existing roof and the need to replace obsolete mechanical and electrical equipment and improve access to a critical pipeline. The Project would not increase storage capacity and would not increase the availability of water supply to the Leland Pressure Zone, which is served by the Leland Reservoir.

The Project would have no potential to directly foster population growth or to result in the construction of additional housing in the Leland Pressure Zone because the amount of water stored at the site would be reduced. Operation of the Project would not require new permanent employees who would generate a demand for new housing. Project construction would contribute to local economic growth from construction expenditures for labor and materials, but given the existing population of unemployed construction workers, it is expected that all project construction labor needs would be readily met by current residents of the region. As such, the Project has no potential to directly induce growth.

Local land use plans provide for land use development patterns and growth policies that allow the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service. Typically, the growth-inducing potential of a project or program would be considered significant if it encourages growth or a concentration of population in excess of what is projected in the adopted general plan of the community in which the project is located, or significantly exceeds the population and employment projections made by regional planning agencies.

In accordance with California Government Code Section 65300, land use agencies in EBMUD’s service area, such as the City of Lafayette, develop and adopt long-term planning documents such as general plans for the physical development within their jurisdiction. These planning documents determine the nature and intensity of land uses to be served by EBMUD. The City of Lafayette’s General Plan, including components that influence water demand such as the Land Use and Housing Elements, was adopted by the Lafayette City Council and amended over time. For example, the City of Lafayette’s Housing Element was updated in 2015 and identified opportunities for housing on new larger tracts of land available for subdivision and opportunities for infill growth within areas of the City of Lafayette already designated for development consistent with adopted General Plan policies. Also included in the City of Lafayette’s General Plan is one area-specific plan, the Downtown Specific Plan. Demand associated with Lafayette’s planned growth, as set forth in those approved planning documents, was accounted for in EBMUD’s 2040 Demand Study which was used to determine Project sizing and design.

Completed in 2009, the 2040 Demand Study is an extensive and exhaustive study of factors to forecast future water demands to the year 2040 in EBMUD’s service area. The 2040 Demand Study divided EBMUD’s service area into 11 regions and future water demands were forecasted by region based upon planned land use and development within each region, as identified in the general plans of the land use agencies within each region. Considering the development forecast by the City of Lafayette in its General Plan, as part of the 2040 Demand Study, EBMUD determined Lafayette’s future water demand. The Project is designed to serve demands for the City of Lafayette identified in the 2040 Demand Study, and those demands were determined based largely on projected land use changes identified in the City of Lafayette’s General Plan.

In 2014 EBMUD completed a Mid-Cycle Demand Assessment which updated the 2040 Demand Study projections based on recent changes in development within its service area, including within the City of Lafayette, due to General Plan changes and also due to drought and economic conditions since the 2040 Demand Study was originally adopted. The Mid-Cycle Demand Assessment found that the magnitude of demand projections would remain the same but the timing of growth would be delayed. Thus, the original demand estimates developed for the City of Lafayette remain valid and are tied to planned development therein.

As explained above, the Project would serve planned land-use changes and redevelopment projects within the City of Lafayette as identified in the City of Lafayette's General Plan, which informed the water demands identified in the 2040 Demand Study. The project is designed to meet the demand projections of the 2040 Demand Study. Because the 2040 Demand Study's demand projections for the City of Lafayette are based on planned development already disclosed and incorporated into the City of Lafayette's General Plan and subsequent amendments thereto, implementation of the Project would not support growth beyond planned levels or in areas not planned for development by the City of Lafayette. The Project would neither directly nor indirectly support unplanned economic expansion, population growth, or residential construction within the City of Lafayette or elsewhere in the EBMUD service area. Therefore, any potential growth-inducing impacts from the Project would be less than significant.

5.4 Cumulative Impacts

The cumulative impact analysis for each individual resource topic is included in each resource section.

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Chapter 7 Mitigation Monitoring and Reporting Program

7.1 CEQA Requirements

CEQA requires the adoption of feasible mitigation measures to reduce the severity and magnitude of potentially significant environmental impacts associated with project development.

Section 20181.6 of the California Public Resources Code requires a CEQA lead or responsible agency that approves or carries out a project where an EIR has identified measures to mitigate significant environmental effects to "adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation."

CEQA Guidelines Section 15097 (a) states that "In order to assure the mitigation measures and project revisions identified in the EIR or negative declaration are implemented, the public agency shall adopt a program for monitoring or reporting on the revision which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects."

This chapter includes the Draft Mitigation Monitoring and Reporting Program (MMRP) for the proposed project. This MMRP will be finalized after the preparation of the Final EIR, based on the outcome of the analysis and findings for the project.

7.2 MMRP Matrix

The Draft MMRP is presented in **Table 7-1** and **Table 7-2** and lists all impacts identified in the Draft EIR as significant or potentially significant along with the proposed mitigation measures (**Table 7-1**) and EBMUD's Practices and Procedures (**Table 7-2**) that are required to reduce impacts to less than significant levels. Note that the language of the mitigation measures may change in the Final EIR. The impacts are briefly summarized in the table.

For each mitigation measure or EBMUD Practice and Procedure, the following information is provided:

- **Significance Criteria.** This column indicates impact areas that could be considered significant
- **Mitigation Measure.** This column contains the full text of the mitigation measures, excerpt from the relevant standard specification, or identifies the applicable EBMUD design standard.
- **EBMUD Practices and Procedures/Standard Specifications.** This column contains excerpts from the relevant standard specification, or identifies the applicable EBMUD design standard.
- **Responsible for Implementation.** This column provides additional information on how the mitigation measures will be implemented to help clarify how compliance can be monitored
- **Responsible for Monitoring and/or Enforcement**. This column contains an assignment of responsibility for the monitoring and reporting tasks
- **Timing of Implementation.** This column indicates when the mitigation measure would be applied.

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Table 7-1: Mitigation Monitoring and Reporting Plan

Significance Criteria	Mitigation Measure	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
Aesthetics				
AES-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	**AES-1: Nighttime Lighting Controls** To the extent possible, EBMUD will ensure that temporary stationary lighting used during nighttime construction is of limited duration, shielded and directed downward or oriented such that little or no light is directly visible from nearby residences.	EBMUD and EBMUD's Construction Contractor	EBMUD	For the duration of nighttime construction
Biological Resources				
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**BIO-1a: Preconstruction Rare Plant Survey** In the year prior to commencing ground-disturbing activities, a qualified botanist will conduct a floristic plant survey in vegetated areas to be disturbed by Project activities including the reservoir embankment, soil stockpile area, new access road, new storm drain, new inlet/outlet pipeline, construction trailer site and any other areas where vegetation would be removed. Surveys will be conducted in accordance with CNPS and CDFW rare plant survey guidelines. Surveys will be conducted during the flowering period(s) when species are most readily identifiable. • If no special-status plant species are identified, no further mitigation is required. • If special-status plant species are found during the surveys, the qualified botanist will flag and map any observed sensitive plant species for avoidance where feasible. EBMUD will notify CDFW, USFWS, and/or CNPS of the preconstruction survey results, depending on the status of species encountered. EBMUD will employ the following measures: o Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD of up to one day for site supervisors, foremen and project managers and up to 30 minutes for nonsupervisory Contractor personnel. Contractor construction personnel will receive a worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the sensitive plant species in the Project vicinity, including natural history and habitat, the general protection measures to be implemented to protect the species, and a delineation of the limits of the work areas. Contractor construction personnel will be required to sign documents stating that they understand that take of special-status plant species and destruction or damage of their habitat may be a violation of state and/or federal law. o Project boundaries will be delineated and flagged prior to construction by the Contractor. All construction activities will be conducted within the delineated Project boundaries. o Staging areas and construction access points will be delineated in the field away from sensitive plant species, and all staging will occur within these designated areas. o Sensitive plant species will be avoided or minimized by limiting ground disturbance where sensitive plants occur. Disturbance shall be avoided by establishing a visible buffer zone around the plant localities and maintaining the buffer throughout construction. o If construction activities cannot be altered to avoid special-status plants, EBMUD will relocate the affected population and/or restore similar habitat in another location, either on the Leland Reservoir site or off site, in coordination with a qualified biologist and the appropriate resource agencies. EBMUD will salvage the affected plants and transplant them to a similar habitat in the Project vicinity. The reestablished population should achieve a 1:1 ratio (transplanted:re-established) after two years. If this performance criterion cannot be met, an in-lieu fee will be paid to the state CNPS program, or as otherwise required by CESA and/or FESA. o If plants listed under CESA and/or FESA are discovered and cannot be avoided, the Project will require take coverage under Section 2081 of CFGC and Section 10 of the ESA. o Mitigation for sensitive plant species may include: repairing, rehabilitating or restoring the impacted area; preserving in-situ populations on site; or by providing offsite compensation. Offsite compensation may include the permanent protection of an offsite population through a conservation easement or the purchase of mitigation banking credits at a 1:2 ratio.	EBMUD	EBMUD	Survey at least 1 year and no more than 3 years prior to Construction; training before start of construction; avoidance or relocation during construction if present
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**BIO-1b: Avoidance or minimization measures for the San Francisco Dusky-footed Woodrat** • Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by EBMUD. Contractor construction personnel will receive worker environmental awareness training from a qualified biologist (EBMUD). The training will include a description of the San Francisco dusky-footed woodrat, including natural history and habitat, a review of the status of the species, the general protection measures to be implemented to protect the San Francisco dusky-footed woodrat, and a delineation of the limits of the work areas. Contractor construction personnel will be required to sign documents stating that they understand the training and consequences of impacting the species or its habitat. • A preconstruction survey will be performed by a qualified biologist (EBMUD) within seven days prior to the start of ground-disturbing activities to identify the locations of active San Francisco dusky-footed woodrat nests within the Project boundary. Any woodrat nests detected will be mapped and flagged for avoidance by the qualified biologist (EBMUD).	EBMUD's Biologist	EBMUD	Survey within 30 days before vegetation removal; training before start of construction; avoidance or relocation during construction if present

Significance Criteria	Mitigation Measure	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	• If active nests are determined to be present, avoidance measures will be implemented first. Because San Francisco dusky-footed woodrats are year-round residents, avoidance mitigation is limited to restricting Project activities to avoid direct impacts to San Francisco dusky-footed woodrats and their active nests to the extent feasible. A minimum ten-foot buffer should be maintained between Project construction activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if, in the opinion of a qualified biologist (EBMUD), removing the nest would be a greater impact than that anticipated as a result of Project activities. • If an unoccupied woodrat nest is found within the Project site and it cannot be avoided, the nest should be disassembled by hand by a qualified biologist (EBMUD). The nest materials should be relocated off site to prevent rebuilding. • If occupied nests are found within the Project site, and a litter of young is found or suspected, the nest shall be left alone for two to three weeks before a recheck to verify that young are capable of independent survival before proceeding with nest dismantling. Dismantling shall be done by hand, allowing any animals to escape either along existing woodrat trails or toward other available habitat. • EBMUD will notify CDFW of any nests, unoccupied or occupied, before they are dismantled. Because Mitigation Measure BIO-1b requires preconstruction dusky-footed woodrat surveys, avoidance measures and buffer zones for active nests, and mitigations for both occupied and unoccupied nests, implementation of Mitigation Measure BIO-1b would reduce impacts, due to short-term construction, on the San Francisco dusky-footed woodrat to less than significant levels.			
Hazards and Hazardous Materials				
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. **TRA-3:** Result in inadequate emergency access.	**TRA-2: Maintain Emergency Access** Emergency responders (i.e., local police, fire, and ambulance services) shall be notified at least seven days in advance of any activities requiring full or partial roadway closures. Emergency access detour routes shall be determined in consultation with emergency responders as part of the notification process. Schools, businesses, recreational facilities, and residents located within 300 feet of construction zone shall be notified at least seven days in advance of activities requiring roadway closures, outlining the Project schedule and the duration of construction activities. EBMUD will send notices to the individuals and organizations on the Project's mailing list to update them prior to any roadway closures. Temporary barricades and directional cones that can be readily removed shall be used during full or partial roadway closures. Road barricades shall be removed and open trenches shall be covered (plated) at the end of the day on a daily basis to provide access. A portion of the on-street parking zones may be retained to allow for storage and/or staging of construction equipment.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction, 7-days prior to partial or full roadway closures
Noise				
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. **NOI-2:** Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	**NOI-1a: Noise Control Measures for Hoe Ram and Concrete Crusher** During reservoir construction, EBMUD shall locate the concrete crusher within the reservoir basin (east of the access road) and at least 110 feet away from the closest property line to the west. During periods when the hoe ram needs to be operated within 70 feet of the closest property line to the west, a temporary noise barrier will be erected as necessary to ensure that the noise from the hoe ram does not exceed the 80-dBA (Leq) ordinance limit at the western property line. **NOI-2a: Nighttime Construction Measure** EBMUD will provide alternative lodging for residents, if requested, that are adversely affected by nighttime pipeline tie-in construction at Windsor Drive /Old Tunnel Road and Leland Drive /Meek Place. This measure would only be implemented if nighttime construction occurs. EBMUD will notify residents that could be affected by nighttime project construction at least ten (10) days in advance. Residences within 500 feet of the tie-in construction sites and with a direct line-of-sight[1] who could be significantly affected by nighttime construction may request alternative lodging for the night(s) of the potential nighttime construction from EBMUD; alternative lodging will consist of a standard room at a hotel located within 6 miles of the affected residence or as close as feasible. Alternative lodging will be provided and approved by EBMUD the day before the known nighttime construction occurs, or sooner, based upon the types of construction activities that may occur during the nighttime hours (10:00 p.m. to 7:00 a.m.). **NOI-1c: Construction Issues Liaison** EBMUD will maintain ongoing communication with residents adjacent to active construction areas. The following measures would be implemented during construction of the proposed Project. • An EBMUD contact person will be designated to respond to construction-related issues, including noise. The phone number of the liaison will be conspicuously posted at construction areas, on all advanced notifications, and on the EBMUD Project website. The EBMUD contact person will take steps to resolve complaints, including coordinating periodic noise monitoring, if necessary. • Residents located within 500 feet of project construction and with a direct line-of-sight to the construction area will be notified at least seven (7) days in advance of noisy activities and the estimated duration of the activity. EBMUD will also send emails to individuals on the Project's mailing list to update them prior to noisy phases.	EBMUD and acoustical consultant	EBMUD	During Construction

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[1] The 500-foot distance applies only to residences with a direct line-of-sight to construction activities, and is determined by applying spherical spreading losses (6 dBA per doubling of distance) to a noise level of 80 dBA (L_{eq}) at 50 feet, resulting in a noise level of 60 dBA (L_{eq}) at 500 feet. While an exterior noise level of 60 dBA (L_{eq}) would still exceed the 53-dBA nighttime ordinance threshold, the exterior shell of a house can reduce exterior noise levels by 25 dBA with the windows closed, which would result in an interior level of 35 dBA (L_{eq}) with

Significance Criteria	Mitigation Measure	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
Traffic and Transportation				
TRA-2: Substantially increase hazards due to a design feature or incompatible uses. **TRA-4:** Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	**TRA-1: Traffic Control Measures for Windsor Drive, Condit Road and Leland Drive** The following measures will be implemented throughout the entire duration of the Project construction, to reduce the Project's temporary impacts to traffic circulation through the Project site: • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, construction contractor shall provide advance warning signs and flaggers at both ends of construction zone on Windsor Drive and Condit Road to alternate one-way traffic through the construction zone. • When Windsor Drive, Condit Road, or Leland Drive is closed to through traffic, the construction contractor shall provide advance warning signs and detour signs along Pleasant Hill Road, Old Tunnel Road, and other affected roadways to advise motorists and bicyclists to follow appropriate detour routes well in advance of the roadway closure to through traffic. • During the entire period Project construction (including both reservoir and pipeline construction), truck trips shall be avoided during the typical school drop-off and pick-up hours for The Meher Schools along a portion of Leland Drive within approximately 300 feet radius from the entrance to the school. Typically, the school is open between 7:00 a.m. and 6:30 p.m. and the peak drop-off and pick-up hours occur from 8:00 a.m. to 9:00 a.m. and from 1:45 p.m. to 2:45 p.m., respectively. The construction contractor shall confirm the start and dismissal times prior to the beginning of each school year. If avoiding drop-off and pick-up hours is infeasible, the construction contractor shall provide additional flaggers during school drop-off and pick-up hours near the construction zone on Leland Drive to manage traffic flow and maintain traffic safety. • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, roadside safety protocols shall be implemented. Advance "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) shall be provided to achieve required speed reductions for safer traffic flow through Leland Drive, Condit Road, and Windsor Drive. • When construction activities occur on Windsor Drive, Condit Road, or Leland Drive, advance warning signs (e.g., "Truck Crossing") shall be installed along Leland Drive, advising motorists and bicyclists of construction traffic to minimize hazards associated with truck traffic on the residential road. • Pedestrian and bicycle access and circulation shall be maintained during Project construction where safe to do so. • Construction contractor shall notify Lamorinda School Bus Transportation Agency of roadway closures along Leland Drive or Windsor Drive and facilitate school bus access as much as possible or provide detour routes during the construction period. Additionally, the contractor shall provide flaggers at active school bus stops in the vicinity of construction area to ensure safe student pick-up and drop-off activities where safe to do so.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and During Construction
TRA-3: Result in inadequate emergency access.	**TRA-2: Maintain Emergency Access** (Details as previously listed)	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction, 7-days prior to partial or full roadway closures

Notes: LTS = Less than Significant, PS = Potentially Significant, S = Significant, LSM = Less than Significant with Mitigation SU = Significant and Unavoidable.

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windows closed. Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable (U.S. EPA, 1974). The requirement that windows must be closed to achieve this acceptable level is assumed to be feasible since exposure would only be for one night.

Table 7-2: EBMUD Practices and Procedures Monitoring and Reporting Plan

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
Aesthetics				
AES-1: Substantially degrade the existing visual character or quality of the site and its surroundings. **GEO-2:** Potential to result in substantial soil erosion or the loss of topsoil. **HAZ-2:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. **HYD-1:** Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality. **HYD-3**: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. **HYD-4:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.	**EBMUD Standard Construction Specification 01 35 44, Section 1.1 (B) Site Activities** B. Site Activities 1. No debris including, but not limited to, demolition material, treated wood waste, stockpile leachate, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement, concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into storm drains or surface waters or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area as specified in the Construction and Demolition Waste Disposal Plan. 2. Excess material shall be disposed of in locations approved by the Engineer consistent with all applicable legal requirements and disposal facility permits. 3. Do not create a nuisance or pollution as defined in the California Water Code. Do not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board, as required by the Clean Water Act. 4. Clean up all spills and immediately notify the Engineer in the event of a spill. 5. Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans. 6. Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work and staging areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of Work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable, in the Engineer's opinion. 7. Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material. 8. Furnish all labor, equipment, and means required and shall carry out effective measures wherever, and as often as necessary, to prevent Contractor's operations from causing visible dust emissions to leave the work areas. These measures shall include, but are not limited to, providing additional watering equipment, reducing vehicle speeds on haul roads, restricting traffic on haul roads, covering haul vehicles, and applying a dust palliative to well-traveled haul roads. The Contractor shall provide the specifications of the dust palliative for Engineer approval prior to use. The Contractor shall be responsible for damage resulting from dust originating from its operations. The dust abatement measures shall be continued for the duration of the Contract. Water the site in the morning and evening, and as often as necessary, and clean vehicles leaving the site as necessary to prevent the transportation of dust and dirt onto public roads. Dust control involving water shall be done in such a manner as to minimize waste and runoff from the site. 9. Construction staging areas shall be graded, or otherwise protected with Best Management Practices (BMPs), to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters including wetlands, drainages, and creeks. 10. All construction equipment shall be properly serviced and maintained in good operating condition to reduce emissions. Contractor shall make copies of equipment service logs available upon request. 11. Any chemical or hazardous material used in the performance of the Work shall be handled, stored, applied, and disposed of in a manner consistent with all applicable federal, state, and local laws and regulations. 12. Contaminated materials excavated and/or removed from the construction area shall be disposed of in a manner consistent with all applicable local, state, and federal laws and regulations.	EBMUD, EBMUD's Construction Contractor	EBMUD	During Construction
AES-1: Substantially degrade the existing visual character or quality of the site and its surroundings. **BIO-2:** Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**EBMUD Standard Construction Specification 01 35 44, Section 3.7, Protection of Native and Non-native Protected Trees** A. Tree Protection 1. Locations of trees to be removed and protected are shown in the construction drawings. Pruning and trimming shall be completed by the Contractor and approved by the Engineer. Pruning shall adhere to the Tree Pruning Guidelines of the International Society of Arboriculture. 2. Erect exclusion fencing five feet outside of the drip lines of trees to be protected. Erect and maintain a temporary minimum 3-foot high orange plastic mesh exclusion fence at the locations as shown in the drawings. The fence posts shall be six-foot minimum length steel shapes, installed at 10-feet minimum on center, and be driven into the ground. The Contractor shall be prohibited from entering or disturbing the protected area within the fence except as directed by the Engineer. Exclusion fencing shall remain in place until construction is completed and the Engineer approves its removal. 3. No grading, construction, demolition, trenching for irrigation, planting or other work, except as specified herein, shall occur within the tree protection zone established by the exclusion fencing installed shown in the drawings. In addition, no excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the tree protection zone.	EBMUD, EBMUD's Construction Contractor, and EBMUD's Engineer	EBMUD	Prior to Construction and During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	4. In areas that are within the tree drip line and outside the tree protection zone that are to be traveled over by vehicles and equipment, the areas shall be covered with a protective mat composed of a 12-inch thickness of wood chips place until construction is completed and the Engineer approves its removal. 5. Tree roots exposed during trench excavation shall be pruned cleanly at the edge of the excavation and treated to the satisfaction of a certified arborist provided by the District. 6. Any tree injured during construction shall be evaluated as soon as possible by a certified arborist provided by the District, and replaced as deemed necessary by the certified arborist.			
AES-1: Substantially degrade the existing visual character or quality of the site and its surroundings.	**EBMUD Standard Construction Specification 01 74 05, Cleaning** 3.1 GENERAL A. At all times maintain areas covered by the Contract and public properties free from accumulations of waste, debris, and rubbish caused by construction operations. B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. Do not burn or bury rubbish and waste materials on project site. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways. C. Use only cleaning materials recommended by manufacturer of surface to be cleaned. D. Use cleaning materials only on surfaces recommended by cleaning material manufacturers. 3.2 CLEANING DURING CONSTRUCTION A. During execution of work, clean site and public properties and legally dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. All soil and any other material tracked onto the streets by the Contractor shall be cleaned immediately. The Contractor shall comply with all rules and regulations as applicable for its cleaning method. B. Dispose of all refuse off District property as often as necessary so that at no time shall there be any unsightly or unsafe accumulation of rubbish. 1. Pine needles, leaves, sticks, and other vegetative debris on the ground shall be removed if they are in the way of construction, present a safety hazard, or present a fire hazard. Otherwise they shall be left in place during construction and final cleaning C. Wet down dry materials and rubbish to lay dust and prevent blowing dust. D. Provide approved containers for collection and disposal of waste materials, debris, and rubbish.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction
Air Quality				
AIR-1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation. **AIR-3:** Conflict with or obstruct implementation of the applicable air quality plan. **AIR-5:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	EBMUD Standard Construction Specification 01 35 44, Section 1.3 Submittals E. Dust Control and Monitoring Plan 1. Submit a plan detailing the means and methods for controlling and monitoring dust generated by demolition and other work on the site for the Engineer's acceptance prior to any work at the jobsite. The plan shall comply with all applicable regulations including but not limited to the Bay Area Air Quality Management District (BAAQMD) visible emissions regulation and Public Nuisance Rule. The plan shall include items such as mitigation measures to control fugitive dust emissions generated by construction activities. The Plan shall outline best management practices for preventing dust emissions, provide guidelines for training of employees, and procedures to be used during operations and maintenance activities. The plan shall also include measures for the control of paint overspray generated during the painting of exterior surfaces. The plan shall detail the equipment and methods used to monitor compliance with the plan. The handling and disposal of water used in compliance with the Dust Control Plan shall be addressed in the Water Control and Disposal Plan. EBMUD Standard Construction Specification 01 35 44, Section 3.3 Dust Control and Monitoring B. Dust Control 1. Contractor shall implement all necessary dust control measures, including but not limited to the following: a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered minimum two times per day or as directed by the Engineer b. Water and/or coarse rock all dust-generating construction areas as directed by Engineer to reduce the potential for airborne dust from leaving the site. c. Cover all haul trucks entering/leaving the site and trim their loads as necessary. d. Using wet power vacuum street sweepers to: 1) Sweep all paved access road, parking areas and staging areas at the construction site daily or as often as necessary. 2) Sweep public roads adjacent to the site at least twice daily or as often as necessary.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	e. The use of dry power sweeping is prohibited. f. All trucks and equipment, including their tires, shall be washed off prior to leaving the site. g. Gravel or apply non-toxic soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. h. Water and/or cover soil stockpiles daily. i. Site accesses to a distance of 100 feet from the paved road shall be treated with 12-inches layer of compacted coarse rock. j. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. k. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. l. Building pads shall be laid as soon as possible after grading. m. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. n. Wind breaks (e.g., fences) shall be installed on the windward sides(s) of actively disturbed areas of construction. Wind breaks should have a maximum 50 percent air porosity. o. The simultaneous occurrence of excavation, grading, and ground disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. p. All excavation, grading and/or demolition activities shall be suspended when average wind speeds exceed 20 mph q. All vehicle speeds shall be limited to fifteen (15) mph or less on the construction site and any adjacent unpaved roads.			
AIR-1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation. **AIR-3:** Conflict with or obstruct implementation of the applicable air quality plan. **AIR-4:** Create objectionable odors affecting a substantial number of people. **EN-1:** Potential to result in a significant consumption of energy. **GHG-1:** Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	**EBMUD Standard Construction Specification 01 35 44, Section 3.4, Emissions Control** A. Air Quality and Emissions Control 1. The Contractor shall ensure that line power is used instead of diesel generators at all construction sites where line power is available. 2. The Contractor shall ensure that for operation of any stationary, compression-ignition engines as part of construction, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards. 3. Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) shall be electrically powered unless the Contractor submits documentation and receives approval from the Engineer that the use of such equipment is not practical, feasible, or available. All portable engines and equipment units used as part of construction shall be properly registered with the California Air Resources Board or otherwise permitted by the appropriate local air district, as required. 4. Contractor shall implement standard air emissions controls such as: a. Minimize the use of diesel generators where possible. b. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes as required by the California Airborne Toxics Control Measure (ATCM) Title 13, Section 2485 of California Code of Regulations. Clear signage shall be provided for construction workers at all access points. c. Follow applicable regulations for fuel, fuel additives, and emission standards for stationary, diesel-fueled engines. d. Locate generators at least 100 feet away from adjacent homes and ball fields. e. Perform regular low-emission tune-ups on all construction equipment, particularly haul trucks and earthwork equipment. 5. Contractor shall implement the following measures to reduce greenhouse gas emissions from fuel combustion: a. On road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals. b. Construction equipment engines shall be maintained to manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. c. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of Oxide of Nitrogen (NOx) and Particulate Matter (PM). d. Demolition debris shall be recycled for reuse to the extent feasible.	EBMUD's Construction Contractor	EBMUD	During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources				
BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**EBMUD Standard Construction Specification 01 35 44, Section 3.8, Protection of Birds Protected Under the Migratory Bird Treaty Act and Roosting Bats** A. The District will conduct biological reconnaissance in advance of construction and will conduct biologic monitoring during construction as necessary. B. Protected Species 1. If protected species or suitable habitat for protected species is found during biological reconnaissance surveys: a. Before beginning construction, all Contractor construction personnel are required to attend an environmental training program provided by the District of up to one-day for site supervisors, foreman and project managers and up to 30-minutes for non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District-designated location, conducted by a qualified biologist provided by the District. The program will discuss all sensitive habitats and sensitive species that may occur within the project work limits, including the responsibilities of Contractor's construction personnel, applicable mitigation measures, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing or performing construction work, all Contractor personnel shall: 1. Sign a wallet card provided by the Engineer verifying that all Contractor construction personnel have attended the appropriate level of training relative to their position; have read and understood the contents of the training program; and shall comply with all project environmental requirements. 2. Display an environmental training hard hat decal (provided by the District after completion of the training) at all times. b. Birds Protected under the Migratory Bird Treaty Act (MBTA): 1. The Migratory Bird Treaty Act states that without a permit issued by the U.S. Department of the Interior, it is unlawful to pursue, hunt, take, capture, or kill any migratory bird. During the nesting bird season, the recommended construction exclusion zone around active passerine nests is 50 to 100 feet, and an exclusion zone of 250 to 500 feet for nesting raptors. 2. Appropriate measures should be taken to begin field construction work between September 1 and January 31, which is outside of the nesting season, when feasible. 3. If site clearing, demolition, and construction do not commence between September 1 and January 31, then a preconstruction survey for nesting birds should be conducted by a qualified biologist provided by the District within 7 days prior to construction to ensure that no nest will be disturbed during project implementation 4. If active nests of migratory bird species (listed in the MBTA and/or raptors) are found within the Project area or in areas subject to disturbance from project activities, a no-disturbance buffer will be required in order to avoid nest disturbance. The avoidance buffer is based on the nest location, topography, cover and species' tolerance to disturbance and is determined by a qualified biologist provided by the District upon consultation with California Department of Fish & Wildlife (CDFW) or the U.S. Fish & Wildlife Service (USFWS). 5. If an avoidance buffer is not achievable, a qualified biologist provided by the District will monitor the nest(s) to document that no take of the nest (nest failure) has occurred. Active nests cannot be taken or destroyed under the MBTA and, for raptors, under the CDFW Code. If it is determined that construction activity is resulting in nest disturbance, work should cease immediately and CDFW should be contacted. 6. If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the no-disturbance buffer for active nests may be removed. Nests initiated during construction (while significant disturbance from construction activities persist) may be presumed to be unaffected, and only a minimal buffer would be necessary. c. Roosting Bats**:** 1. Appropriate measures should be taken to begin field construction work between August 1 and February 28 in order to avoid the bat maternity period, when feasible. 2. If site clearing, demolition, and construction do not commence between August 1 and February 28, then a preconstruction survey for roosting bats should be conducted by a qualified biologist provided by the District within two weeks prior to construction to ensure that no roosting bats will be disturbed during project implementation. 3. If roosting surveys are inconclusive, indicate potential occupation by a special-status bat species, and/or identify a large day roosting population or maternity roost by any bat species within 200 feet of an active construction work area, a qualified biologist provided by the District shall conduct focused day- and/or night-emergence surveys as appropriate. 4. If active maternity roosts or day roosts are found in areas that would be removed or modified as part of project construction, activities shall commence before maternity colonies form (before March 1) or after young are flying (after July 31). Disturbance-free buffer zones (determined by a qualified biologist provided by the District in coordination with CDFW) shall be observed during the maternity roost season (March 1 through July 31) for any active maternity colony identified during the surveys to protect maternity roosts. 5. If a non-breeding bat roost is found in a structure scheduled for modification or removal, the individual(s) shall be safety evicted, under the direction of a qualified biologist provided by the District (as determined in consultation with CDFW) in such a way that ensures individuals are not injured.	EBMUD and EBMUD's Biologist	EBMUD	Prior to Construction and During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	6. If preconstruction surveys indicate that no roosting is present or potential roosting habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by roosting bats or that are located outside the no-disturbance buffer for active roosting sites may be removed. Roosting initiated during construction is presumed to be unaffected, and no buffer would be necessary.			
Cultural Resources				
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5. **CUL-3:** Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **CUL-4:** Disturb any human remains, including those interred outside of dedicated cemeteries. **CUL-5:** Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.	**EBMUD Standard Construction Specification 01 35 44, Section 3.9, Protection of Cultural and Paleontological Resources** A. Confidentiality of Information on Cultural Resources 1. Prior to, or during the course of the Contractor's performance under this contract, the Contractor may obtain information as to the location and/or nature of certain cultural resources, including Native American artifacts and remains. This information may be provided to the Contractor by the District or a third party, or may be discovered directly by the Contractor through its performance under the contract. All such information shall be considered "Confidential Information" for the purposes of this Article. 2. The Contractor agrees that the Contractor, its subcontractors of any tiers, and their respective agents and employees shall not publish or disclose any Confidential Information to any person, unless specifically authorized in advance, in writing by the Engineer. 3. The indemnity obligations of Document 00 72 00 - General Conditions Article 4.7.5 shall apply to any breach of this Article. B. Conform to the requirements of statutes as they relate to the protection and preservation of cultural and paleontological resources. Unauthorized collection of prehistoric or historic artifacts along the Work Area, or at Work facilities, is strictly prohibited. C. Before beginning construction, all Contractor construction personnel shall attend a cultural resources training course provided by the District of up to two hours for site supervisors, foreman, project managers, and non-supervisory contractor personnel. The training program will be completed in person or by watching a video, at a District designated location, conducted by a qualified archaeologist provided by the District, or by District staff. The program will discuss cultural resources awareness within the project work limits, including the responsibilities of Contractor's construction personnel, applicable mitigation measures, confidentiality, and notification requirements. The Contractor is responsible for ensuring that all workers requiring training are identified to the District. Prior to accessing the construction site, or performing site work, all Contractor personnel shall: 1. Sign an attendance sheet provided by the Engineer verifying that all Contractor construction personnel have attended the appropriate level of training; have read and understood the contents of the training; have read and understood the contents of the "Confidentiality of Information on Archaeological Resources" and shall comply with all project environmental requirements. D. In the event that potential cultural or paleontological resources are discovered at the site of construction, the following procedures shall be instituted: 1. Discovery of prehistoric or historic-era archaeological resources requires that all construction activities shall immediately cease at the location of discovery and within 100 feet of the discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel, and shall not recommence work until authorized to do so by the Engineer. b. The District will retain a qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical resource as defined by CEQA (or a historic property as defined by the National Historic Preservation Act of 1966, as amended), construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the District, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric, who shall be identified by the Native American Heritage Commission [NAHC]). In consultation with the District, the archaeologist (and Native American representative) will determine when construction can resume. 2. Discovery of human remains requires that all construction activities immediately cease at, and within 100 feet of the location of discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified archaeologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the proper personnel and shall not recommence work until authorized to do so by the Engineer. b. The District will contact the County Coroner to determine whether or not the remains are Native American. If the remains are determined to be Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects. 3. Discovery of paleontological resources requires that all construction activities immediately cease at, and within 100 feet of the location of discovery. a. The Contractor shall immediately notify the Engineer who will engage a qualified paleontologist provided by the District to evaluate the find. The Contractor is responsible for stopping work and notifying the Engineer, and shall not recommence work until authorized to do so by the Engineer. b. The District will retain a qualified paleontologist to inspect the findings within 24 hours of discovery. The qualified paleontologist, in accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), will assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and management. If it is determined that construction activities could damage a paleontological resource as defined by the Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), construction shall cease in an area determined by the paleontologist until a salvage,	EBMUD, EBMUD's Construction Contractor, EBMUD's Engineer, and EBMUD's Archaeologist	EBMUD	Prior to Construction and During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	treatment, and future monitoring and management plan has been prepared, approved by the District, and implemented to the satisfaction of the paleontologist. In consultation with the paleontologist, the District will determine when construction can resume. E. If the District determines that the find requires further evaluation, at the direction of Engineer, the Contractor shall suspend all construction activities at the location of the find and within a larger radius, as required.			
Geology and Soils				
GEO-1: Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides.	**EBMUD Reservoir Design Guide** EBMUD's Reservoir Design Guide establishes the minimum requirements to be followed in the design of EBMUD above and below ground drinking water reservoirs. The Design Guide provides a list of goals, with each project design team using its engineering judgment for project-specific applications. Chapter 4 includes criteria specific to the design of prestressed concrete reservoirs, which is the type of reservoir design proposed for the Leland Reservoir site. The Design Guide requires completion of a geotechnical investigation during design and incorporation of geotechnical design recommendations in project plans and specifications.	EBMUD's Design Engineers	EBMUD	During Design of Reservoir
GEO-1: Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides. **GEO-4:** Potential to be located on expansive or corrosive soils that would create substantial risks to life or property.	**EBMUD Engineering Standard Practice 512.1, Water Main and Services Design Criteria** This Engineering Standard Practice establishes basic criteria for the design of water pipelines and establishes minimum requirements for pipeline construction materials.	EBMUD's Design Engineers	EBMUD	During Design of Pipeline
GEO-1: Potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure (liquefaction); or landslides. **GEO-4:** Potential to be located on expansive or corrosive soils that would create substantial risks to life or property.	**EBMUD Engineering Standard Practice 550.1, Seismic Design Requirements** This Engineering Standard Practice addresses seismic design of the pipelines to withstand seismic hazards including ground shaking, and requires that EBMUD establish project specific seismic design criteria for pipelines with a diameter of greater than 12-inches, such as the water pipelines that would be installed as part of the Project.	EBMUD's Design Engineers	EBMUD	During Design of Pipeline
GEO-3: Potential to be located on a geologic unit or soil that is unstable or that would become unstable as a result of the proposed project, and potentially could result in on-site or off-site landslides, lateral spreading, subsidence (i.e. settlement), liquefaction, or collapse. **HAZ-2:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**EBMUD Standard Construction Specification 01 35 24, Section 1.3(C), Excavation Safety Plan** 1. Submit detailed plan for worker protection and control of ground movement for the Engineer's review prior to any excavation work at jobsite. Include drawings and details of system or systems to be used, area in which each type of system will be used, de-watering, means of access and egress, storage of materials, and equipment restrictions. If plan is modified or changed, submit revised plan. 2. All surface encumbrances that are located and determined to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees. 3. Tunnel work shall comply with the Tunnel Safety Orders	EBMUD, EBMUD's Construction Contractor, and EBMUD's Engineer	EBMUD	Prior to Construction

<table>
<tr><th>Impacts Being Mitigated</th><th>EBMUD Practices and Procedures/Standard Specification</th><th>Responsible for Implementation</th><th>Responsible for Monitoring and/or Enforcement</th><th>Timing of Implementation</th></tr>
<tr><td>**Greenhouse Gas Emissions**</td><td></td><td></td><td></td><td></td></tr>
<tr><td>**GHG-2:** Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.</td><td>**EBMUD Climate Mitigation Action Plan and Climate Change Monitoring and Response Plans.** These plans ensure that EBMUD operations are consistent with the California Climate Change Scoping Plan.</td><td>EBMUD</td><td>EBMUD</td><td>Ongoing</td></tr>
<tr><td>**Hazards and Hazardous Materials**</td><td></td><td></td><td></td><td></td></tr>
<tr><td>**HAZ-2:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.
HYD-1: Violate any Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Water Quality.
HYD-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.</td><td>**EBMUD Standard Construction Specification 01 35 44, Section 1.3(A), Stormwater Management**
1. Construction General Permit
a. The Contractor shall create a user account on the SWRCB's Storm Water Multi-Application & Report Tracking System (SMARTS). The Engineer will link the Contractor to the District's account as a Data Submitter. The Contractor shall prepare and upload to SMARTS Permit Registration Documents (PRDs), including, but not limited to, a Notice of Intent, a Site Specific Risk Assessment, a Site Map, and a Storm Water Pollution Prevention Plan (SWPPP) for the Engineer's review which meets the requirements of the SWRCB, for coverage under the General Construction Stormwater Permit (Order No. 2009-0009-DWQ) and amendments thereto. Upon acceptance by the Engineer, the Engineer will electronically certify and file the PRDs to gain permit coverage and the Contractor shall submit the registration and the subsequent annual fees as required by the SWRCB.
b. The Contractor shall be responsible for complying with the requirements of the Construction General Permit. The Contractor's responsibilities include, but are not limited to, providing qualified professionals as described in the permit to prepare and certify all permit-required documents/submittals and to implement effective stormwater/non-stormwater management practices, and conducting inspections and monitoring as required by the permit. The Contractor shall, in compliance with the permit, prepare and upload to SMARTS all required documents, photos, data, and/or reports (including the Annual Reports) and ensure permit coverage termination upon construction completion by preparing a Notice of Termination on SMARTS. The Contractor shall inform the Engineer when documents/reports are available on SMARTS for Engineer certification and submittal.
2. Storm Water Pollution Prevention Plan
a. Submit a Stormwater Pollution Prevention Plan that describes measures that shall be implemented to prevent the discharge of contaminated storm water runoff from the jobsite. Contaminants to be addressed include, but are not limited to, soil, sediment, concrete residue, pH less than 6.5 or greater than 8.5, and chlorine residual and all other contaminants known to exist at the jobsite location as described in Document 00 31 24 - Material Assessment Information.</td><td>EBMUD and EBMUD's Construction Contractor</td><td>EBMUD</td><td>Prior to Construction and During Construction</td></tr>
<tr><td>**HAZ-2:** Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.
HYD-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.</td><td>**EBMUD Standard Construction Specification 01 35 44, Section 1.3(B), Water Control and Disposal Plan**
1. The Contractor shall submit a detailed Water Control and Disposal Plan for the Engineer's acceptance prior to any work at the jobsite.
a. Plan shall comply with all requirements of the Specification and applicable discharge permits. Table 1 summarizes discharge permits that may be applicable to District projects.
TABLE 1 - Discharge Permit Summary Table
<table>
<tr><th>Permit*</th><th>Permit Coverage</th><th>Permit Owner</th></tr>
<tr><td>SWRCB Order WQ 2014-0194-DWQ/General Order No. CAG 140001 – NPDES Permit for Drinking Water System Discharges</td><td>Discharges from a drinking water system of water that has been dedicated for drinking water purposes</td><td>EBMUD</td></tr>
<tr><td>SWRCB Order No. 2012-0006-DWQ NPDES No. CAS 000002 – Construction General Permit</td><td>Discharges from construction sites and linear underground/overhead projects greater than 1 acre</td><td>EBMUD – Contractor will provide Qualified SWPPP Practitioner/Developer</td></tr>
<tr><td>Sanitary Sewer Discharge Permit</td><td>Publicly Owned Treatment Works approved discharges</td><td>Contractor</td></tr>
</table>
* The most recent version of applicable permits shall be referenced for compliance.
b. Contractor shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation in the receiving waters.</td><td>EBMUD and EBMUD's Construction Contractor</td><td>EBMUD</td><td>Prior to and During Construction</td></tr>
</table>

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	2. Drinking Water System Discharges a. Plan shall include the estimated flow rate and volume of all proposed discharges to surface waters, including discharges to storm drains. All receiving waters shall be clearly identified. b. Contractor shall track all discharges directly to a surface water body or a storm drain system that drains to a surface water body. A record consisting of discharge locations and volumes shall be submitted to the Engineer prior to Contract Acceptance. c. A monitoring program is required for drinking water system discharges greater than 325,850 gallons in conformance with Attachment E, Monitoring and Reporting Program, of the General Drinking Water Discharges Permit, when the water will be discharged either directly into a surface water body or a storm drain system that drains to a surface water body. A record consisting of discharge locations, volumes and Water Quality (WQ) data shall be submitted to the Engineer. The Planned Discharge Tracking Form, attached to the end of this section, may be used to fulfill this requirement. All monitoring results shall be submitted to the Engineer prior to Contract Acceptance. 1) Contractor shall notify the Engineer, at least one week prior to the start of a planned discharge equal to or greater than 325,850 gallons, of the following: a) The discharge start date; b) The discharge location and the applicable receiving water; c) The flow rate and volume to be discharged; and d) The reason(s) for discharge. d. Contractor shall dechlorinate all drinking water system discharges to achieve a total chlorine residual concentration of < 0.1 mg/L measured with a handheld chlorine meter utilizing a US EPA approved method and provide effective erosion & sediment control to achieve a visual turbidity concentration of ≤ 100 NTU by implementing BMPs which meet the District minimum standards (see Figure 1 attached to the end of this section) or better. e. Instead of discharging to surface waters, where feasible, Contractor shall beneficially reuse water derived from drinking water systems as defined in the General Drinking Water Discharges Permit. Potential reuse strategies include, but are not limited to, landscape irrigation, agricultural irrigation, dust control, and discharge to stormwater capture basins or other groundwater recharge systems. Contractor shall do so without impacting property or the environment. Contractor shall provide a record of reuse location(s) and volume(s) and submit it to the Engineer prior to Contract Acceptance. f. Contractor shall ensure that the pH level of any discharges shall not be depressed below 6.5, nor elevated above 8.5. If there is potential for discharges to be below 6.5 or above 8.5, Contractor shall employ pH adjustment best management practices to ensure discharges are within the range of 6.5 and 8.5. Contractor shall conduct onsite field measurements for pH per quality assurance and quality control (QA/QC) protocol that conform to U.S. EPA guidelines, or procedures approved by the American Water Works Association or other professional drinking water industry association. Contractor shall submit all monitoring results to the Engineer prior to Contract Acceptance. 3. Non-Stormwater Discharges a. Plan shall describe measures for containment, handling, treatment (as necessary), and disposal of discharges such as groundwater (if encountered), runoff of water used for dust control, stockpile leachate, tank heel water, wash water, sawcut slurry, test water and construction water or other liquid that has been in contact with any interior surfaces of District facilities. Contractor shall provide the Engineer with containment, handling, treatment and disposal designs and a sampling & analysis plan for approval before commencing the Work. Sampling and analysis shall be in conformance with Sections 1.3 (K) Analytical Test Results and 3.1 SAMPLING AND ANALYSIS. 4. Sanitary Sewer Discharges a. It is District policy to send superchlorinated discharges from pipeline disinfection to the sanitary sewer system. Plan shall include a sampling and analytical program for superchlorinated discharges in conformance with the Sanitary Sewer Discharge Permit. All monitoring results shall be submitted to the Engineer prior to the end of the Work. b. Obtain and provide to the Engineer documentation from the agency (e.g., wastewater treatment plant, local sewer owner) having jurisdiction, authorizing the Contractor to dispose of the liquid and describing the method of disposal. Discharges destined for the District's main wastewater treatment plant in Oakland can reference Special Discharge Permit (SDP) #50333261, issued to the District's Regulatory Compliance Office, when obtaining authorization from the pertinent local jurisdiction that owns the sewers to be used. Contractor shall, prior to the end of the Work, report to the Engineer the volumes of all discharges performed pursuant to the said SDP along with copies of any profile forms and/or correspondence between Contractor and disposal facility.			
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**EBMUD Standard Construction Specification 01 35 44, Section 1.3(C), Construction and Demolition Waste Disposal Plan** 1. Prepare a Construction and Demolition Waste Disposal Plan and submit a copy of the plan for the Engineer's acceptance prior to disposing of any material (except for water wastes which shall be addressed in the Water Control and Disposal Plan). a. The plan shall identify how the Contractor will remove, handle, transport, and dispose of all materials required to be removed under this contract in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. b. The Contractor shall procure the necessary permits required by the local, state, and federal agencies having jurisdiction over the handling, transportation, and disposal of construction and demolition waste.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to Waste Disposal

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	c. Include a list of reuse facilities, recycling facilities and processing facilities that will be receiving recovered materials. d. Identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the State of California and local ordinance and regulations). e. Identify how the Contractor will comply with The California Department of Toxic Substances Control's (DTSC) Alternative Management Strategies (AMS) when handling and disposing of treated wood waste (TWW) in compliance with 22 CCR 66261.9.5. f. TWW records including but not limited to manifests, bills of lading should be submitted to the Engineer within 5 working days of off-haul. Records should include: (1) name and address of the TWW facility to which the TWW was sent; (2) estimated weight of TWW, or the weight of the TWW as measured by the receiving TWW facility; and (3) date of the shipment of TWW. (Cal. Code Regs., tit. 22, Sections 67386.8(a) and (e)(1)). g. List the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials. h. Identify each type of waste material to be reused, recycled or disposed of and estimate the amount, by weight. i. Plan shall include the sampling and analytical program for characterization of any waste material, as needed, prior to reuse, recycle or disposal. 2. Materials or wastes shall only be recycled, reused, reclaimed, or disposed of at facilities approved of by the District. 3. Submit permission to reuse, recycle, reclaim, or dispose of material from reuse, recycling, reclamation, or disposal site owner along with any other information needed by the District to evaluate the acceptability of the proposed reuse, recycling, or disposal site and obtain acceptance of the Engineer prior to removing any material from the project site. 4. All information pertinent to the characterization of the material or waste shall be disclosed to the District and the reuse, recycling, reclamation, or disposal facility. Submit copies of any profile forms and/or correspondence between the Contractor and the reuse, recycling, reclamation, or disposal facility. 5. Submit name and Environmental Laboratory Accreditation Program Certificate number of laboratory that will analyze samples for suspected hazardous substances. Include statement of laboratory's certified testing areas and analyses that laboratory is qualified to perform. Submit prior to any laboratory testing.			
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. **HYD-1:** Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality. **HYD-3**: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	**EBMUD Standard Construction Specification 01 35 44, Section 1.3(D), Spill Prevention and Response Plan** 1. Submit plan detailing the means and methods for preventing and controlling the spilling of known hazardous substances used on the jobsite or staging areas. The plan shall include a list of the hazardous substances proposed for use or generated by the Contractor on site, including petroleum products, and measures that will be taken to prevent spills, monitor hazardous substances, and provide immediate response to spills. Spill response measures shall address notification of the Engineer and appropriate agencies including phone numbers; spill-related worker, public health, and safety issues; spill control, and spill cleanup. 2. Submit a Material Safety Data Sheet (MSDS) for each hazardous substance proposed to be used prior to delivery of the material to the jobsite.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and During Construction
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**EBMUD Standard Construction Specification 01 35 24, Section 1.3(B), Project Health and Safety Plan** 1. Submit prior to start of the Work for the Engineer's review a Project Safety and Health Plan for the Work to be performed only if actual, potential, or anticipated hazards include: a) hazardous substances; b) fall protection issues; c) confined spaces; d) trenches or excavations; or, e) lockout/tagout. If the actual, potential, or anticipated hazards do not include one or more of these five hazards, no Plan is required. 2. Submit prior to start of Work the name of individual(s) who has been designated as:	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	a. Contractor's Project Safety and Health Representative b. Submit principal and alternate Competent/Qualified Persons for: 1) scaffolding; 2) fall protection systems and equipment; and 3) employee protective systems for trenches and excavations. c. Qualified person to conduct and take samples and air measurements of known or suspect hazardous substance for personnel and environmental exposure. Sample results shall be submitted to the Engineer in writing and electronic format. 3. Plan shall include an emergency action plan in the event of an accident, or serious unplanned event (e.g.: gasoline break, fire, structure collapse, etc.) that requires notifying any responsive agencies (e.g.: fire departments, PG&E, rescue teams, etc).			
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**EBMUD Standard Construction Specification 02 83 13, Lead Hazard Control Activities** 1.1 COMPLIANCE AND INTENT A. Furnish all labor, materials, facilities, equipment, services, employee training and testing, permits, and agreements necessary to perform the lead removal in accordance with these specifications and with the latest regulations from the U.S. Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Air Quality Management District with authority over the project, the Cal/EPA Department of Toxic Substance Control, the California Occupational Safety and Health Administration (Cal/OSHA), and other federal, state, county, and local agencies. Whenever there is a conflict or overlap of the above references, the most stringent provision is applicable. B. During demolition procedures, the Contractor shall protect against contamination of soils, water, adjacent buildings and properties, and the airborne release of hazardous materials and dusts. The costs associated with the implementation of controls will be incurred by the Contractor. C. Any information developed from exploratory work done by the District and any investigation done by the Contractor to acquaint himself with available information will not relieve the Contractor from the responsibility of properly estimating the difficulty or cost of successfully performing the work. The District is not responsible for any conclusions or interpretations made by the Contractor based on the information made available by the District or District's representative. D. Hazardous materials uncovered during the demolition activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests shall be furnished to the Engineer as per Section 01 35 44, Environmental Requirements. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose. 1.2 SCOPE OF WORK A. The work covered by this specification includes the handling, removal, and proper disposal of lead-containing coating as required B. The Contractor shall perform all work according to the procedures outlined in these specifications. C. The hazardous materials removal and disposal include the following: 1. Properly remove and dispose of all lead-containing material as part of the demolition and disposal of the reservoir tank.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**EBMUD Procedure 711, Hazardous Waste Removal** The purpose of this procedure is to define hazardous waste and establish responsibilities for removal of hazardous wastes from District facilities. Responsibilities are delineated as follows: The Unit Supervisor or Project Manager (or his/her designee) • Determines if the Waste is a Hazardous Waste, either with assistance from the Environmental Compliance Section (ECS) or based on knowledge. • Contacts ECS staff to coordinate Waste disposal, reuse, or recycling issues. • Provides all known information about the Waste asked for by the ECS. • Assists in the determination of the analyses to be performed by the District Laboratory or other certified laboratory based on his/her knowledge of the Waste. • Labels, stores, inspects, and maintains inventory records for the Waste in an appropriate manner as directed by ECS. • Ensures that Waste is available for transportation when notified by the ECS that Waste collection is scheduled. • Helps the ECS coordinate interim storage of non-routine Hazardous Waste while it is being characterized for disposal. • Reviews Hazardous Waste manifests prepared by haulers, to confirm the accuracy of information.	EBMUD	EBMUD	During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	• Signs the Hazardous Waste manifest indicating approval if authorized and trained by ECS. • Sends the signed Generator copy of the manifest to the ECS within seven (7) days of the off-haul date, unless previous agreement has been made with ECS and the hauler to send Generator copy directly to ECS. • Provides the ECS with a budget unit number and a job number. Environmental Compliance Section • Coordinates the appropriate steps to characterize the Waste. • Determines, with the help of the requesting department, what analyses are needed to classify the Waste. • Works with the District Laboratory and/or the Hazardous Waste contract hauler to analyze the Hazardous Waste or to assist in identifying other labs certified to perform the analysis. • Obtains Hazardous Waste acceptance documents (e.g., waste profile) from disposal facility and provides to generating department to be included with Hazardous Waste shipment, as needed. • Identifies and approves disposal, reuse or recycling method and disposal, reuse, or recycling facility. • Obtains and provides EPA generator identification number. • Identifies and/or manages companies providing Hazardous Waste management services (for sampling, hauling, and disposal) depending on District departmental needs. • Provides training and guidance to unit or project staff on Hazardous Waste handling and disposal requirements and Hazardous Waste manifest completion requirements. • Reviews completed and signed Hazardous Waste manifests prior to submittal to Department of Toxic Substances Control. • Tracks manifest in a database and generates reports and summaries as needed. • Provides other information as needed.			
HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	**EBMUD Standard Construction Specification 01 55 26, Section 3.1(G), Immediate access for emergency vehicles** G. For complete road closures, immediate emergency access to be provided if needed to emergency response vehicles.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction
Noise				
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	**EBMUD Standard Construction Specification Work Restrictions 01 14 00, Section 1.8(A), Construction Noise** A. Noise-generating activities greater than 90 dBA (impact construction such as concrete breaking, concrete crushing, tree grinding, etc) shall be limited to the hours of 8:00 a.m. and 4:00 p.m., Monday through Friday	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction
NOI-1: Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. **NOI-2:** Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	**EBMUD Standard Construction Specification 01 35 44, Section 3.6, Noise Control** A. Comply with sound control and noise level rules, regulations and ordinances as required herein and in the CEQA documents which apply to any work performed pursuant to the contract. B. Contractor is responsible for taking appropriate measures, including muffling of equipment, selecting quieter equipment, erecting noise barriers, modifying work operations, and other measures as needed to bring construction noise into compliance. C. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler. D. Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks, as necessary. E. Truck operations (haul trucks and concrete delivery trucks) will be limited to the daytime hours specified in Section 01 14 00. F. Stationary noise sources (e.g. chippers, grinders, compressors) shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used. Enclosure opening or venting shall face away from sensitive receptors. Enclosures shall be designed by a registered engineer regularly involved in noise control analysis and design.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	G. Material stockpiles as well as maintenance/equipment staging and parking areas (all on-site) shall be located as far as practicable from residential receptors. H. If impact equipment (e.g., jack hammers, pavement breakers, rock drills etc.) is used during project construction, Contractor is responsible for taking appropriate measures, including but not limited to the following: 1. Hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves shall be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible. It is the Contractor's responsibility to implement any mitigations necessary to meet applicable noise requirements. 2. Impact construction including jackhammers, hydraulic backhoe, concrete crushing/recycling activities, vibratory pile drivers etc. shall be limited to the day time hours specified in Section 01 14 00. 3. Erect temporary noise barriers or noise control blankets around the construction site, particularly along areas adjacent to residential buildings. 4. Utilize noise control blankets around the major noise sources to reduce noise emission from the site. 5. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example. 6. Limit the noisiest phases of construction to 10 work days at a time, where feasible. 7. Notify neighbors/occupants within 300 feet of project construction at least thirty days in advance of extreme noise generating activities about the estimated duration of the activity. 8. Noise Monitoring shall be conducted periodically during noise generating activities. Monitoring shall be conducted using a precision sound-level meter that is in conformance with the American National Standards Institute (ANSI) Standard S1.4, Specification for Sound Level Meters. Monitoring results shall be submitted weekly to the Engineer			
NOI-3: Result in exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels.	**EBMUD Standard Construction Specification 01 35 44, Section 3.5, Vibration Control** A. Limit surface vibration to no more than 0.5 in/sec PPV, measured at the nearest residence or other sensitive structure. See Section 01 14 00. B. Upon homeowner request, and with homeowner permission, the District will conduct preconstruction surveys of homes, sensitive structures and other areas of concern within 15 feet of continuous vibration-generating activities (i.e. vibratory compaction). Any new cracks or other changes in structures will be compared to preconstruction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused the damage, the District will have the damage repaired to the pre-existing condition.	EBMUD and EBMUD's Construction Contractor	EBMUD	During Construction
Traffic and Transportation				
TRA-2: Substantially increase hazards due to a design feature or incompatible uses. **TRA-3:** Results in inadequate emergency access. **TRA-4:** Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	**EBMUD Standard Construction Specification 01 55 26, Traffic Regulation** PART 1 - GENERAL 1.1 DESCRIPTION A. Work included: Comply with the traffic regulation requirements as specified herein. B. Where specific requirements are not detailed herein or in permits, comply with the requirements of the most current version of the CalTrans Manual of Traffic Controls for Construction and Maintenance Work Zones. C. All proposed street closures shall be clearly identified in the Traffic Control Plan (TCP) and shall conform to the section "Traffic Control Devices" below. Construction area signs for street closure and detours shall be posted a minimum of forty-eight (48) hours prior to the commencement of street closure. Contractor shall maintain safe access around the project limit at all times. Street closures shall be limited to those locations indicated on the construction documents. 1.2 SUBMITTALS A. Submit at least 15 calendar days prior to work a detailed traffic control plan, that is approved by all agencies having jurisdiction and that conforms to all requirements of these specifications and the most recently adopted edition of the California Manual on Uniform Control Devices. Traffic Control Plan shall include: 1. Circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. 2. A description of emergency response vehicle access. If the road or area is completely blocked, preventing access by an emergency responder, a contingency plan must be included. 3. Procedures, to the extent feasible, to schedule construction of project elements to minimize overlapping construction phases that require truck hauling. 4. Designated Contractor staging areas for storage of all equipment and materials, in such a manner to minimize obstruction to traffic.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to Construction and During Construction

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	5. Locations for parking by construction workers. 1.3 QUALITY ASSURANCE A. Detailed traffic control plan shall be prepared by a California licensed Traffic Engineer. B. The Traffic Engineer who prepares the detailed traffic control plan shall be available at any time during the life of the contract to modify the traffic control plan if and as required by the agency having jurisdiction. C. No changes or deviations from the approved detailed traffic control plan shall be made, except temporary changes in emergency situations, without prior approval of the Traffic Engineer, the District's Engineer, and all agencies having jurisdiction. D. Immediately notify the Traffic Engineer, the District's Engineer, and the agencies having jurisdiction of occurrences that necessitate modification of the approved traffic control plan. PART 2 - PRODUCTS 2.1 TRAFFIC CONTROL DEVICES A. Traffic signs, flashing lights, barricades and other traffic safety devices used to control traffic shall conform to the requirements of the most recently adopted edition of the California Manual on Uniform Control Devices and the agency having jurisdiction. 1. Portable signals shall not be used unless permission is given in writing by the agency having jurisdiction. 2. Warning signs used for nighttime conditions shall be reflectorized or illuminated. "Reflectorized signs" shall have a reflectorized background and shall conform to the current State of California Department of Transportation specification for reflective sheeting on highway signs. PART 3 - EXECUTION 3.1 GENERAL A. Except where public roads have been approved for closure, traffic shall be permitted to pass through designated traffic lanes with as little inconvenience and delay as possible. B. Install temporary traffic markings where required to direct the flow of traffic. Maintain the traffic markings for the duration of need and remove by abrasive blasting when no longer required. C. Convenient access to driveways and buildings in the vicinity of work shall be maintained as much as possible. Temporary approaches to, and crossing of, intersecting traffic lanes shall be provided and kept in good condition. D. When leaving a work area and entering a roadway carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic. E. Provide temporary signs as required by the traffic control plan and remove signs when no longer required. F. Haul routes for each construction phase shall be provided to all trucks serving the site during the construction period. G. For complete road closures, immediate emergency access to be provided if needed to emergency response vehicles. H. A minimum of twelve (12) foot travel lanes must be maintained unless otherwise approved. 3.2 ALTERNATING ONE-WAY TRAFFIC A. Where alternating one-way traffic has been authorized, the following shall be posted at each end of the one-way traffic section at least one week prior to start of work: 1. The approximate beginning and ending dates that traffic delays will be encountered. 2. The maximum time that traffic will be delayed. B. The maximum delay time shall be approved by the agency having jurisdiction. 3.3 FLAGGING A. Provide flaggers to control traffic where required by the approved traffic control plan. 1. Flaggers shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flaggers" of the California Department of Transportation. 2. Flaggers shall be employed full time on traffic control and shall have no other duties.			

Impacts Being Mitigated	EBMUD Practices and Procedures/Standard Specification	Responsible for Implementation	Responsible for Monitoring and/or Enforcement	Timing of Implementation
	3.4 TEMPORARY TRAFFIC CONTROL A. All traffic control devices shall conform to the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD), and as amended by the latest edition of the MUTCD California supplement. Electronic signage board with changeable message shall be placed on a street in both direction 2 weeks in advance. B. The Contractor shall replace within 72 hours, all traffic signal loop detectors damaged during construction. Any work that disturbs normal traffic signal operations and ensure proper temporary traffic control (lane shifts, lane closures, detours etc.) shall be coordinated with the agency having jurisdiction, at least 72 hours prior to commencing construction. C. A minimum of twelve (12) foot travel lanes must be maintained unless otherwise approved. D. Access to driveways will be maintained at all times unless other arrangements are made. E. All traffic control devices shall be removed from view when not in use. F. Before leaving a work area, ensure the area is left orderly. Trenches must be backfilled or plated during non-working hours. G. Sidewalks for pedestrians will remain open if safe for pedestrians. Alternate routes and signing will be provided if pedestrian routes are to be closed.			

Notes: LTS = Less than Significant, PS = Potentially Significant, S = Significant; LSM = Less than Significant with Mitigation, SU = Significant and Unavoidable.

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