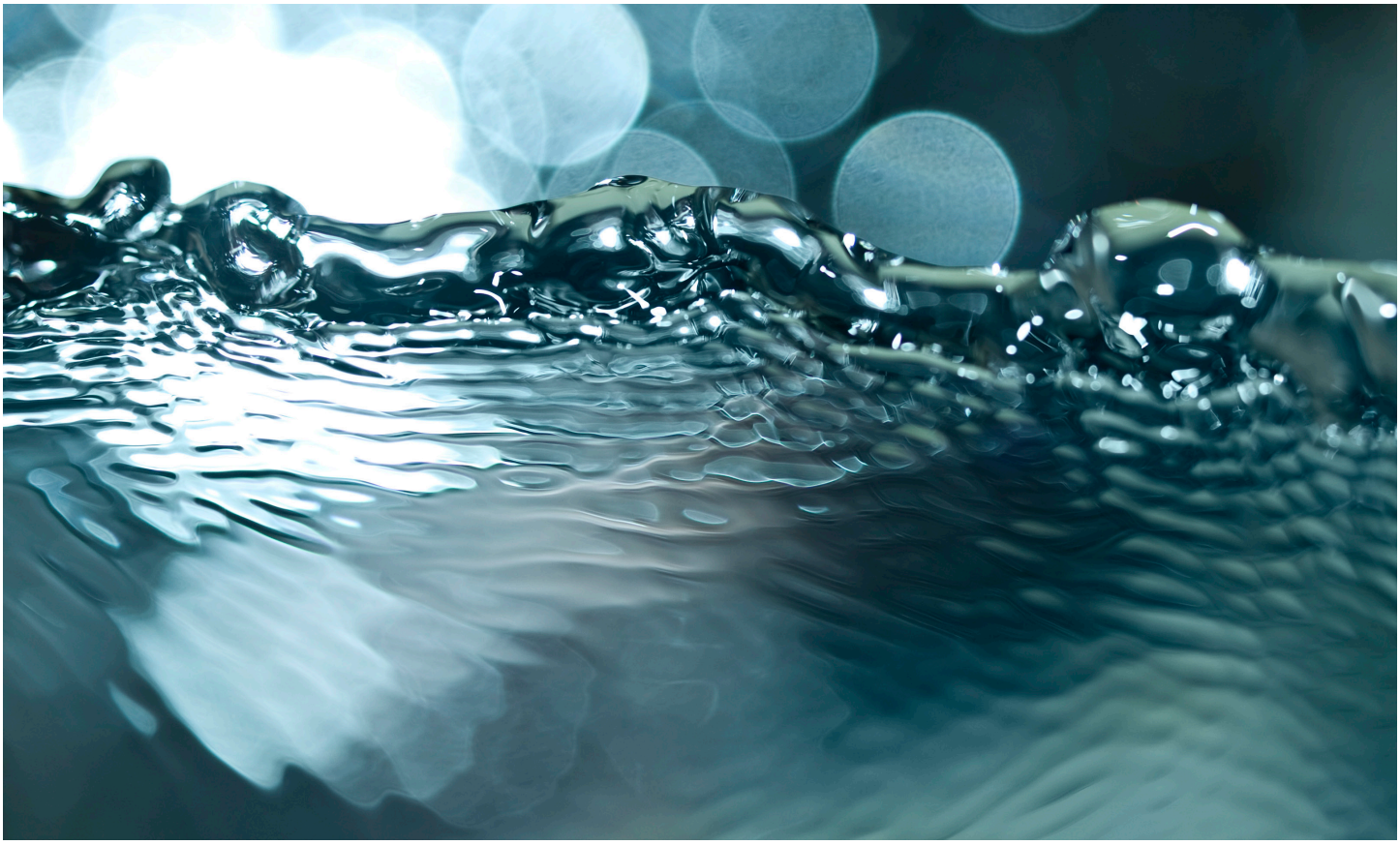
PALMDALE RECYCLED WATER AUTHORITY
RECYCLED WATER FACILITIES PLAN

Initial Study/Mitigated Negative Declaration

Prepared for
Palmdale Recycled
Water Authority

October 2014



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PALMDALE RECYCLED WATER AUTHORITY RECYCLED WATER FACILITIES PLAN

Initial Study

1. Introduction

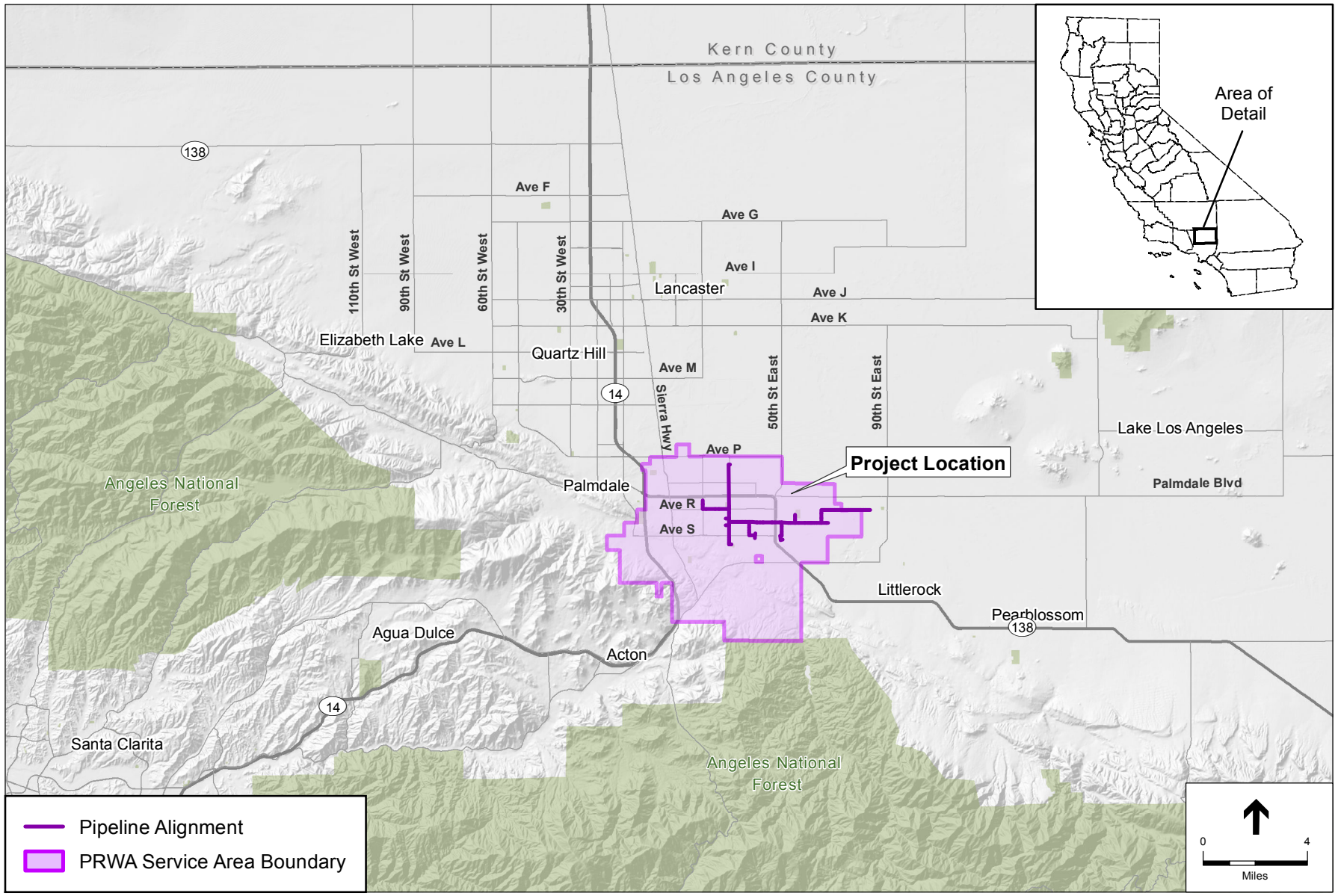
Over the past five years, both the City of Palmdale (City) and the Palmdale Water District (PWD) have been involved in planning for the use of recycled water within and around the City boundaries and PWD's service area. Together with other regional partners including Los Angeles County Waterworks District No. 40, the City and PWD helped develop the Antelope Valley Regional Recycled Water Plan. Both the City and the PWD have produced their own recycled water facility master plans, PWD's 2010 Recycled Water Facilities Plan (PWD, 2010) and the City's 2009 Recycled Water Facilities Plan (City of Palmdale, 2009). In addition, PWD prepared a draft Initial Study/Mitigated Negative Declaration (IS/MND) that provided an environmental review and impact analysis of projects in their 2010 Recycled Water Facilities Plan. As both recycled water master plans were being adopted, the City and PWD entered into litigation against each other over the right to distribute recycled water within the PWD service area.

In the fall of 2012, a mutual joint exercise of powers agreement was executed wherein the Palmdale Recycled Water Authority (PRWA or Authority) was established in order to manage recycled water that is generated and used within the PWD service area. The PRWA service area is shown in **Figure 1**. The PRWA manages all aspects of recycled water use, including the agreements to obtain recycled water from the Los Angeles County Sanitation Districts, planning for, designing and constructing supporting facilities, and financing these efforts. At its first meeting in January 2013, the Authority's Board of Directors directed staff to proceed with updating and consolidating the master planning documents. In January 2014, the Draft Recycled Water Facilities Plan was completed, and the PRWA is proposing to implement this Plan (or "proposed project"), which includes construction and operation of distribution pipelines and one new pump station at the Palmdale Water Reclamation Plant (PWRP).

2. Project Background

2.1 Recycled Water Production

Wastewater collection and treatment in and around the PRWA service area is provided by Los Angeles County Sanitation District (LACSD), Nos. 14 and 20. The two districts serve a combined wastewater service area of approximately 76 square miles and more than 310,000 people.



SOURCE: ESRI

PRWA Recycled Water Facilities Plan IS/MND . 130096

Figure 1

Palmdale Recycled Water Authority Service Area

Collection is provided through a network of 104 miles of trunk sewers, which are designed to provide wastewater conveyance via gravity flow.

The Palmdale Water Reclamation Plant (PWRP) is located in the City of Palmdale and currently provides tertiary treatment for, on average, 9 mgd of wastewater generated in and around the City of Palmdale. The PWRP is operated by the LACSD District No. 20. Currently, the tertiary-treated effluent is provided by the LACSD for irrigation of fodder crops on land leased by the LACSD from the City of Los Angeles Department of Airports through a pipeline located primarily in Avenue N between 30th Street East and 120th Street East.

The Lancaster Water Reclamation Plant (LWRP) is located in the City of Lancaster and currently provides tertiary treatment for, on average, 12 mgd of wastewater generated in both the Cities of Lancaster and Palmdale. The LWRP is operated by the LACSD District No. 14. Similar to the PWRP, tertiary treated effluent water is provided for irrigation of fodder crops through a pipeline located primarily in Avenue E between Sierra Highway and 90th Street East. Additional water is also used to maintain 200 acres of wetland wildlife refuge, as well as maintain the water level at the Apollo Lakes Regional Park.

The Antelope Valley is a closed basin without an outlet to the ocean, and so treated wastewater either evaporates, or is reused, or infiltrates into the Antelope Valley Groundwater Basin. Currently, LACSD leases land from Los Angeles World Airports (LAWA) for agricultural operations that are irrigated with recycled water produced by the PWRP. LACSD has acquired additional land further east for future agricultural operations if needed. As described below, recycled water storage reservoirs and conveyance facilities have been constructed to allow for other beneficial uses of recycled water in the Antelope Valley, and LACSD anticipates reducing the amount of recycled water that it provides for agriculture as other such uses are developed. However, until these alternative uses become operational, the recycled water must still be disposed of via agricultural irrigation.

2.2 Recycled Water Definitions

The State Water Resources Control Board (SWRCB) is responsible for regulating the use of recycled water in California. Title 22 of the California Code of Regulations (CCR) includes Water Recycling Criteria (CCR Title 22, Division 4, Chapter 3) that regulate the use of recycled water through health-based water quality standards and treatment reliability criteria for recycled water. Title 22 identifies the allowable end uses for recycled water and the associated minimum treatment requirements for each end use (CCR Title 22, Division 4, Chapter 3, Article 3, Uses of Recycled Water).

Title 22 sets bacteriological water quality standards based on the expected degree of public contact with recycled water. Title 22 establishes four categories of recycled water: disinfected tertiary, disinfected secondary-2.2, disinfected secondary-23, and undisinfected secondary recycled water. Disinfected tertiary recycled water is defined as a filtered and subsequently disinfected wastewater (CCR Title 2, Division 4, Chapter 3, Section 60301.230).

The proposed project would distribute disinfected tertiary recycled water for beneficial end uses that include irrigation and groundwater recharge in the PRWA service area (see Section 5.3 below). Title 22 allows for disinfected tertiary recycled water to be used for irrigation, including but not limited to parks and playgrounds, school yards, and residential landscaping (CCR Title 22, Division 4, Chapter 3, Article 3, Section 60304). In addition, Title 22 requires recycled water applied to surface recharge basins for purposes of groundwater replenishment also to meet the treatment requirements for disinfected tertiary recycled water (CCR Title 22, Division 4, Chapter 3, Article 5.1, Section 60320.108).

2.3 Recycled Water Supply

LACSD has completed upgrades and expansions at the PWRP that has resulted in commensurate increases in the availability of recycled water in the future. It is estimated that 15,000 AFY of tertiary-treated recycled water would be available from the PWRP in 2015**,** which would increase to 21,000 AFY by 2035 (Waterworks No. 40, 2013). As described above, this recycled water would be used for agricultural irrigation, although decreasingly so as new municipal and industrial (M&I) end uses are developed. For example, the Palmdale Hybrid Power Plant Project is expected to become operational in 2017 and utilize approximately 3,400 AFY of recycled water for its cooling system. The Power Plant will be a 570 megawatt electricity generating facility, utilizing a hybrid design of natural gas combined cycle technology and solar thermal technology. The Power Plant will be serviced by a portion of the Recycled Water Backbone System currently being designed by the City of Palmdale and Waterworks No. 40 (See Section 2.4 below).

In addition, there is potential to use a blend of imported and recycled water to recharge the Antelope Valley Groundwater Basin at Littlerock Creek and/or Amargosa Creek. The City of Palmdale, Antelope Valley – East Kern Water Agency (AVEK), Waterworks No. 40, and PWD are currently designing a project that would recharge imported water at the Amargosa Creek. PWD is undertaking a feasibility study for the portion of the project that will recharge imported, storm and recycled water at the Littlerock Creek. The feasibility study is expected to be completed by the end of 2014.

The Recycled Water Facilities Plan includes an assessment of the estimated recycled water supply from the PWRP, both currently and at build-out. Existing recycled water supplies depend on wastewater flows to the PWRP. In 2011, the PWRP produced 10,640 acre-feet of tertiary treated recycled water. After accounting for the Power Plant demand (3,400 AFY) and other small uses within unincorporated areas of the County (210 AFY), the remaining current supply is approximately 7,230 AFY. Assuming recycled water supplies grow at about one percent annually for the next 40 years, the amount of recycled water available at build-out would be approximately 10,750 AFY. This supply amount provides a basis for the design of facilities for the Recycled Water Facilities Plan.

2.4 Proposed Recycled Water Backbone System

A Recycled Water Backbone System has been proposed for the Antelope Valley that would connect the LWRP and PWRP, allowing recycled water from both plants to be used throughout the region. Portions of the Recycled Water Backbone System have already been constructed by the City of Lancaster, City of Palmdale, and Waterworks No. 40. Additionally the City of Palmdale has partnered with Waterworks No. 40 to design and construct a portion of the Recycled Water Backbone System that will complete the connection of the LWRP and PWRP and serve the proposed Palmdale Hybrid Power Plant, and the Antelope Valley Country Club. The portions of the Recycled Water Backbone System that have been designed or constructed are all located outside of the service area of the PRWA. The primary benefit to the PRWA of these portions is the potential ability to move recycled water between the LWRP and PWRP. However, the majority of the tertiary treated water that will be used in the PRWA service area will originate at PWRP.

2.5 Existing Recycled Water Distribution System

Prior to the agreement to create PRWA, the City constructed a recycled water transmission line to deliver recycled water from PWRP to McAdam Park for irrigation. The City has an existing agreement with the LACSD for 2,000 acre feet per year (AFY) of recycled water to provide to customers throughout the City's service area. This existing pipeline is included as Phase 1 of the Recycled Water Facilities Plan.

3. Project Location

The proposed project would be located within the PRWA service area, which encompasses 46 square miles and includes a portion of the City of Palmdale and unincorporated Los Angeles County within the boundaries of PWD (Figure 1). The project location is approximately 60 miles north of Los Angeles and 95 miles southeast of the City of Bakersfield, at an elevation approximately 2,600 feet above mean sea level.

The PRWA service area is located along the southwestern perimeter of the Antelope Valley. The Antelope Valley is a 2,400-square mile triangular basin bounded on the northwest by the Tehachapi Mountains, on the southwest by the San Gabriel Mountains, and on the east by a series of buttes and hills that roughly parallel the Los Angeles/San Bernardino County Line. The PRWA is located in a high desert climate, characterized by hot dry summers and cool wet winters. Within the PRWA's service area, land use is primarily residential. However, downtown Palmdale includes commercial, industrial, and public services uses and a small amount of agriculture is located east of the LA-Palmdale Regional Airport.

4. Project Objectives

The PRWA desires to use recycled water to offset potable water demand and diversify the region's water supply options. The PRWA's service area receives approximately 45 percent of its potable supply from imported surface water, 40 percent from groundwater, and 15 percent from

Littlerock Reservoir. Given Palmdale's high desert location and anticipate future growth, water supply reliability is a significant concern. In addition, the Antelope Valley Groundwater Basin is currently in the process of adjudication, which will limit pumping of available groundwater. Furthermore, the reliability of the State Water Project (SWP) is also in question due to many ongoing issues with the Bay-Delta.

Developing recycled water use in the PRWA's service area would accomplish a number of benefits. These include:

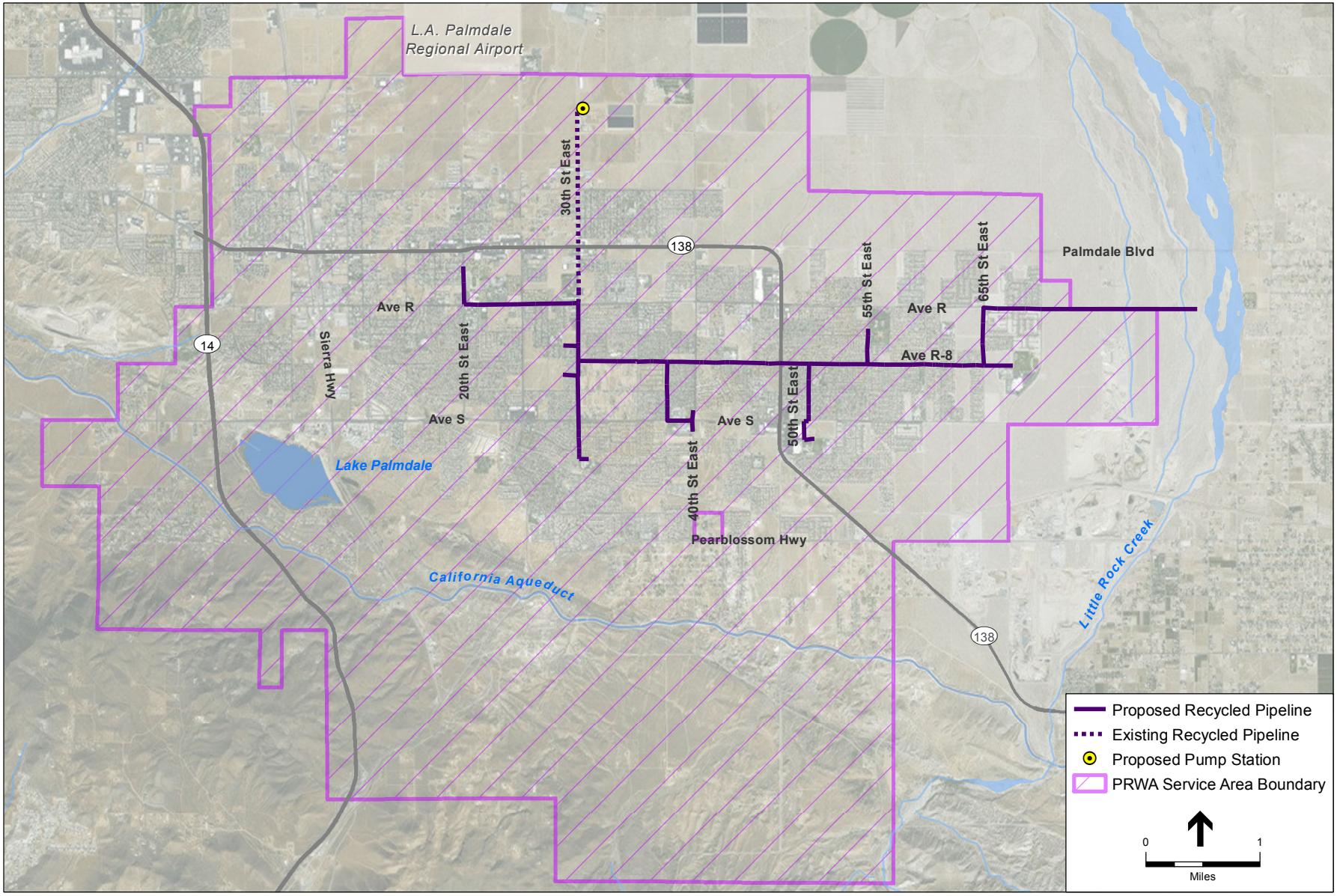
- Reduce dependence on the SWP and groundwater supplies
- Improve water supply reliability
- Preserve potable water supplies
- Provide a potential source of supply for groundwater recharge

5. Project Description

The PRWA is proposing to implement their 2014 Recycled Water Facilities Plan, which includes construction and operation of distribution pipelines and laterals and pumping facilities as described below and shown in **Figure 2**. The proposed project would provide approximately 1,325 AFY of tertiary-treated recycled water to PRWA customers, primarily for landscape irrigation at parks, schools, and golf courses. The proposed project also would potentially provide up to 9,450 AFY of recycled water for groundwater recharge in Littlerock Creek, the feasibility of which is currently being studied by PWD.

5.1 Pump Station

The proposed project would install one new pump station at the PWRP (see **Figure 3**). The PWRP is owned and operated by LACSD No. 20. The plant, which occupies 286 acres east of Highway 14, provides tertiary treatment for 12 million gallons per day (mgd) of wastewater. The proposed pump station would have a firm pumping capacity of about 800 brake horsepower (bhp), which is based on a maximum supply capacity of about 6,675 gallons per minute (gpm) and 70 percent pump efficiency. The proposed pump station would be housed within a masonry building and would have a footprint of approximately 15 feet by 35 feet, which would accommodate up to four installed vertical turbine pumps at build-out, mounted at grade above a concrete slab. There would either be a buried concrete wet well below the pump motors, or vertical pump cans extending through the concrete slab and into the ground below. The pump station building would include an electrical control room to house new electrical panels for the pumps. Other major pump station components would include a generator, for standby power, a surge tank, and a small amount of piping.



SOURCE: ESRI

PRWA Recycled Water Facilities Plan IS/MND . 130096

Figure 2

PRWA Recycled Water Facilities Plan Components



SOURCE: ESRI

PRWA Recycled Water Facilities Plan IS/MND . 130096

Figure 3

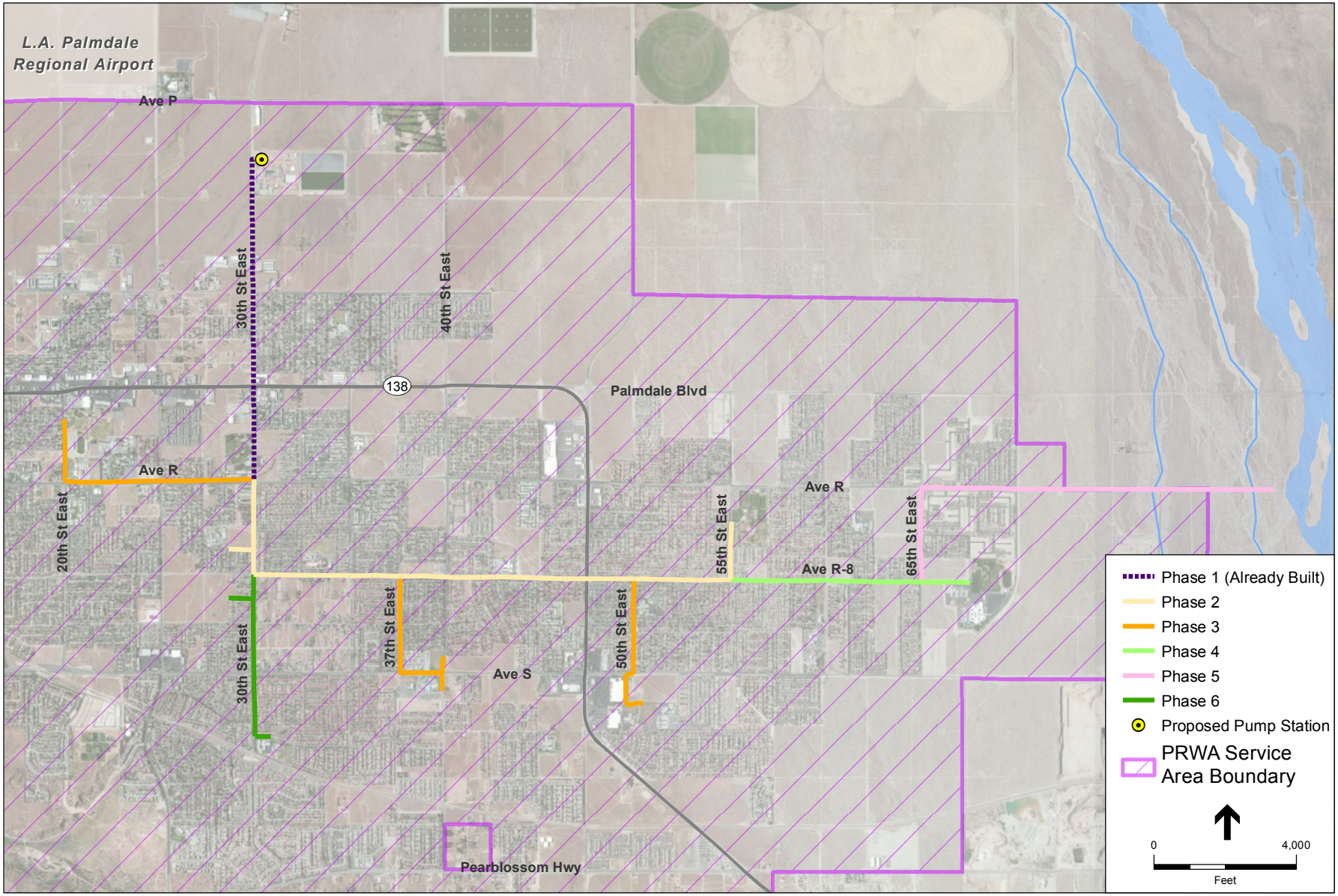
Proposed Pump Station

5.2 Pipelines

The proposed project includes approximately 70,000 linear feet of new recycled water pipe, with pipeline diameters ranging from six inches (for laterals) to 24 inches (for distribution pipes). The majority of the pipeline alignment would be within developed and paved portions of roadway rights-of-way, with the exception of approximately 7,400 linear feet of pipe extending east along Avenue R toward Littlerock Creek, beyond the intersection with 70th Street East. East of 70th Street East, Avenue R is a dirt road that is bordered by open space. Proposed recycled water pipeline segments and phases are listed in **Table 1** and shown in **Figure 4**. Phase 1 of the proposed project has already been built, with a pipeline leading from the PWRP down 30th Street East to Avenue R.

TABLE 1
ROADWAYS WITH PROPOSED RECYCLED WATER PIPELINES

Distribution Pipelines (24-inch diameter)	Laterals (6-inch to 12-inch diameter)
Phase 2	
• PRWA pump station at PWRP • 30th Street East between Avenue R and Avenue R-8 • Avenue R-8 between 30th St East and 55th St East	• East Avenue R-6 to Desert Rose Elementary School • 55 Street East to Dominic Massari Park
Phase 3	
	• Avenue R and 20th Street East to Palmdale High School • 37th Street East, Avenue S, 40th Street East to Dry Town Water Park • 55th Street East to Buena Vista Elementary School
Phase 4	
• Avenue R-8 between 55th St East and 65th St East	• Avenue R-8 to Los Amigos School and Pete Knight High School
Phase 5	
• 65th Street East between Avenue R-8 and Avenue R • Avenue R between 65th Street East and Littlerock Creek	
Phase 6	
	• 30th Street East between Avenue R-8 and Joshua Hills Elementary School and Park • East Avenue R-12 to Palmdale Park



SOURCE: ESRI

PRWA Recycled Water Facilities Plan IS/MND . 130096

Figure 4

Proposed Construction Phases

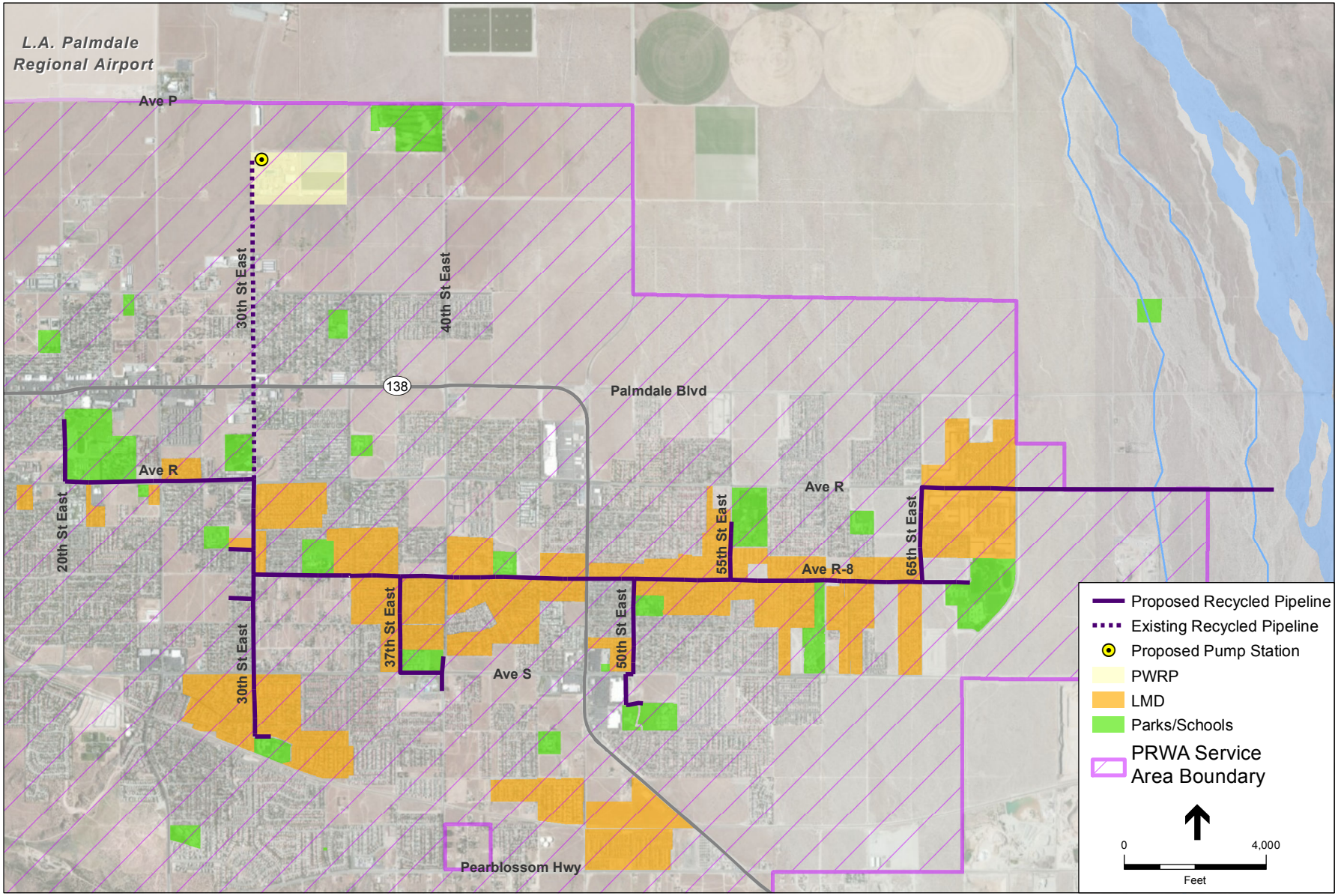
5.3 End Uses

The proposed project would deliver tertiary-treated recycled water to three categories of end uses: irrigation for Schools, Parks, and Others (SPO); irrigation for Landscape Maintenance Districts (LMDs) that are common landscaped areas irrigated from a single connection in residential areas; and groundwater recharge. The project may potentially serve commercial/industrial users in the future as well, for cooling systems.

The PRWA Recycled Water Facilities Plan (2014) provides a market assessment for the use of recycled water within the PRWA service area. The SPO customers are the largest direct use market in the service area. The proposed project would serve 21 SPO customers with an estimated average annual demand of 1,235 AFY. The proposed project would serve 45 LMDs with a combined estimated average annual demand of 90 AFY. The total recycled water provided to direct use customers would be 1,325 AFY at build-out. The potential SPO and LMD customers are shown in **Figure 5**.

The proposed project would be designed to deliver 9,450 AFY of tertiary-treated recycled water to Littlerock Creek for groundwater recharge via Phase 5 of the recycled water pipeline, contingent upon the results of the ongoing Feasibility study by PWD (see Section 2.3 above). Recharge of the Antelope Valley Groundwater Basin would help alleviate the overdraft condition of the basin and offer a valuable opportunity to temporarily store available water supplies for future use. Significantly more recycled water could be put to beneficial use through indirect potable reuse than could be directly used in the PRWA's service area by SPO and LMD customers. Recycled water would need, at least initially, to be blended with available imported water or storm water, based on current draft regulations for groundwater recharge with recycled water (see Section 2.2 above).

Any future implementation of groundwater recharge in Littlerock Creek would be subject to evaluation pursuant to CEQA, including public circulation of a future CEQA document that provides details of the groundwater project design and operation and assesses the location-specific environmental impacts. The potential effects of groundwater recharge in Littlerock Creek have been previously evaluated pursuant to CEQA at a program level as part of the North Los Angeles/Kern County Regional Recycled Water Project (Final PEIR certified in November 2008; Waterworks No. 40, 2008), for which PWD and the City were project sponsors, and PWD's Strategic Water Resources Plan (Final PEIR certified in July 2012; PWD, 2012).



SOURCE: ESRI; Los Angeles County GIS

PRWA Recycled Water Facilities Plan IS/MND . 130096

Figure 5

Proposed Direct Recycled Water End Users

5.4 Project Construction

Project construction would occur in sequential phases, as shown in Figure 4. As mentioned previously, Phase 1 of the pipeline has already been constructed. The proposed pump station would be built as part of Phase 2. Facility construction would take place primarily on previously developed areas, including paved public roadways and immediately adjacent vacant lands. Construction of the pipelines would be located within City of Palmdale and Los Angeles County owned public zones and roadway rights-of-way.

One exception is Phase 5 of the pipeline, which would be installed along a segment of Avenue R, east of 70th Street East, along an unimproved dirt road immediately surrounded by open space. This phase would only be constructed if the results of the ongoing feasibility study recommend implementing groundwater recharge in the area of Littlerock Creek adjacent to the terminus of the Phase 5 pipeline alignment.

Construction Equipment and Staging. Pipeline installation for the majority of sections would use standard open-cut trenching techniques, except where surface features such as high-volume roadways, State Routes (e.g., State Route 138), or storm drains may require special techniques to avoid disturbance, such as jack-and-bore or directional drilling. Standard installation of the pipelines using trenching techniques would proceed at the rate of approximately 100 feet per day in more difficult conditions, and 200 to 300 feet per day in easier conditions, with an average estimate of 200 feet per day. The work zone (maximum construction area at any given time) would be between 300 to 400 feet long. For work within the roadways, trench width would be approximately 4 feet, with active work areas of about 8 feet on one side of the trench and 10 to 12 feet on the other side for access by trucks and loaders. This would result in a total construction zone approximately 20 to 30 feet wide. For the purpose of this IS/MND, a construction zone width of 30 feet is assumed and will be used as the area of potential effect. Pipeline excavation depths would probably range from 5 to 20 feet, with an average of about 6 to 7 feet to the bottom of the pipe. Excavated trench materials would be redistributed over the completed pipeline area and/or transported off-site.

Construction of the pump station would require grading, site preparation, and facility installation. Maximum excavation depth of 8 feet is anticipated for the proposed above-grade pump stations. Installation of the proposed facilities would require, but not be limited to, the equipment listed below. Equipment and vehicle staging would be accommodated either at each construction site or at a centralized staging area.

- track-mounted excavator
- backhoe
- front-end loader
- dump truck
- crane
- compactor
- water truck
- flat-bed delivery truck
- forklift
- pavement cutter
- compressor/jack hammer
- asphalt paver
- concrete trucks

Hydrostatic Testing. Hydrostatic testing would be conducted for each pipeline segment and would consist of filling the pipeline with water, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. After hydrostatic testing, the test water would be disposed of back into the sanitary sewer system. Temporary approvals for test water use and discharge would be obtained by the construction contractor, as required.

Surface Restoration. Damage to roadways and non-paved areas would be repaired in accordance with the requirements of jurisdictional agencies, including the Los Angeles County Department of Public Works, the City of Palmdale, and/or Caltrans. Where the pipelines are installed in a paved roadway, new asphalt or concrete pavement would be placed to match the surrounding road type. Temporary asphalt material may be installed to allow traffic to use the roadway immediately after construction. Final repaving would be done after pipeline installations and testing are complete. For unpaved surfaces, restoration would generally involve replanting with annual grasses or native vegetation.

5.5 Construction Schedule

Construction Phases 2 through 6 would take approximately 16 months, assuming sequential but continuous construction. Construction would occur Monday through Friday, primarily between the hours of 7:00 a.m. and 4:00 p.m. or otherwise in accordance with local noise ordinances. Construction of Phase 2 is expected to commence in fall 2015.

5.6 Operation and Maintenance Activities

Once facilities are installed, ongoing project activities would include maintenance of distribution system facilities, customer service, and inspection/backflow prevention testing. PRWA would operate the non-potable system; operation and maintenance (O&M) activities and engineering support would be jointly coordinated and staffed by PWD and the City of Palmdale. Existing staff would be used initially. Staff could be added as-needed, most likely in association with implementation of each phase and system expansion.

Large equipment would be made available to recycled water program staff from either the City or PWD, including a dump truck, a backhoe, a pick-up/utility vehicle, and spare mechanical parts for critical facilities such as the pump station.

Operation of the pump station at the PWRP would require 1,776,090 kWh per year, assuming the pump station is operated eight hours per day, 365 days per year.

6. Environmental Commitments

The following standard construction specifications include safety and environmental requirements that would be implemented during construction to minimize short-term environmental effects. PWD is currently developing a new section of its standard construction specifications that addresses recycled water facilities and will include the following requirements.

6.1 Traffic Control (ref. 1-09)

The Contractor shall so conduct his operations to offer the least possible obstruction and inconvenience to traffic, and he shall have under construction no greater amount of work than he can handle properly with due regard for the rights of the public. All traffic shall be permitted to pass through the work with as little delay and inconvenience as possible unless otherwise authorized by the County of Los Angeles, the City of Palmdale, or Caltrans.

Convenience of abutting property owners shall be provided for as far as practicable. Convenient access to mailboxes, driveways, houses, and buildings adjoining the work, as well as fire hydrants, shall be maintained and temporary approaches to intersections shall be provided and kept in good condition. When a section of surfacing, pavement, or a structure has been completed, it shall be opened for use by traffic at the request of the District. In order that unnecessary delay to the traveling public may be avoided, the Contractor, when so ordered, shall provide competent flagmen whose sole duty shall consist of directing traffic either through or around the work.

Care shall be taken to preserve and protect all public and private property and facilities in and around the work site. The Contractor shall be liable for the complete cost of repairing or replacing all such property and facilities damaged or destroyed during the progress of the work.

6.2 Project Clean-Up (ref. 1-12)

An orderly job shall be maintained at all times. Tools, rubbish, and materials shall be picked up and stored in a workmanlike manner at all times. There shall be removed from the vicinity of the completed work all material, etc., used during construction. Surfaces shall be returned to a condition acceptable to the PRWA. All excess material shall be disposed of as directed by the District or removed from the work site.

6.3 Dust Control (ref. 1-18)

The work shall be conducted to provide control as follows:

a) No fuel shall be used nor shall any work be conducted which shall emit into the atmosphere any smoke, which is defined as equal to Ringelmann No. 2 or darker.

b) No work shall be conducted which will emit into the atmosphere any flying dust or dirt which is hazardous to humans or which might constitute a nuisance. Any dirt, dust, or mud that accumulates on streets is to be removed by the end of each work day.

6.4 Control of Water (ref. 4-03)

The Contractor shall furnish, install, and operate all necessary machinery, appliances, and equipment to keep excavation sufficiently free from water during construction of the work to

permit proper laying and jointing and shall dispose of water so as not to cause injury to public or private property or to cause a nuisance or a menace to the public.

6.5 Excavation (ref. 4-04)

The Contractor shall perform all excavations for pipelines and appurtances of whatever substances encountered to the depths indicated or otherwise required. Excavated material suitable for backfilling shall be piled in an orderly manner a minimum of two (2) feet from the excavated banks to avoid overloading and to prevent slides or cave-ins. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches. Any water accumulative therein shall be removed by pumping or other approved means. Such sheeting and shoring shall be installed as may be necessary for protection of the work and safety of personnel in accordance with OSHA requirements.

6.6 Foundation Rock (ref. 4-10)

Where groundwater is encountered or the native material does not afford a solid foundation for pipe subgrade as specified herein, the Contractor shall excavate to such depths below the subgrade as the PRWA decides is necessary and shall construct a stable base by placing foundation rock upon which pipe bedding can be prepared. Foundation rock shall be three-quarter (3/4) inch aggregate base material.

6.7 Pipeline Trench (ref. 4-17(c))

Backfill in pipe trenches above the pipe zone shall be a structural fill accomplished by filing and compacting the trench in lifts of depths that will permit obtaining a minimum compaction of 90% of the maximum density of the material at optimum moisture content. All backfill materials shall be placed in such a manner as to not disturb the pipe or damage its coating. Impact, free fall, hydro hammer, or similar compaction equipment shall not be used for compaction in water system trenches.

7. Required Permits and Approvals

PRWA intends to use this IS/MND to consider implementation of the Recycled Water Facilities Plan. As CEQA Lead Agency, PRWA may use this IS/MND to approve the proposed project. PRWA would use the analysis contained within this IS/MND/EA to support the acquisition of regulatory permits or approvals, such as those listed in **Table 2**:

TABLE 2
REGULATORY REQUIREMENTS AND AUTHORIZATIONS

Agency	Type of Approval
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement
Antelope Valley Air Quality Management District	Permit to Construct
California Department of Transportation (Caltrans)	Encroachment Permit
State Water Resources Control Board	Notice of Intent to comply with Landscape Irrigation General Permit
Los Angeles County Department of Public Works	Roadway Encroachment Permit
City of Palmdale	Roadway Encroachment Permit
Los Angeles County Sanitation District	Easements at PWRP

8. Purpose of this Document

PRWA has prepared this IS/MND to provide the public and responsible agencies with information about the potential environmental impacts associated with implementation of the Recycled Water Facilities Plan. This IS/MND includes project-level analysis of the proposed recycled water facilities, including distribution pipelines and laterals and pump stations.

This IS/MND was prepared in compliance with Sections 15070 to 15075 of the California Environmental Quality Act (CEQA) Guidelines of 1970 (as amended) and California Code of Regulations, Title 14, Division, Chapter 3. In accordance with Section 15070, an MND shall be prepared if the Initial Study identifies potentially significant effects, but revisions in the project plans would avoid or mitigate the effects to a point where clearly no significant effects would occur. As the CEQA lead agency, the PRWA has determined that an IS/MND shall be prepared for the proposed project.

In accordance with Section 15073 of the CEQA Guidelines, this document will be circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on it. Copies of the Draft IS/MND are available as follows:

- **Palmdale Water District website**: http://palmdalewater.wpengine.com/about/reportsstudies/planning-reports/
- **City of Palmdale website**: http://www.cityofpalmdale.org/Businesses/Development-Services/Planning-and-Zoning/Environmental-Documents
- **Palmdale City Library**: 700 East Palmdale Blvd, Palmdale, CA 93550

PRWA will consider all public comments received on the draft IS/MND. If there is no substantial evidence that the project will have a significant effect on the environment, PRWA will adopt the MND in compliance with CEQA.

The 30-day public review period for this Draft IS/MND is from **October 30, 2014** to **December 1, 2014**. Written comments may be forwarded to:

Mr. Matthew Knudson, Asst. General Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550
E-mail: mknudson@palmdalewater.org
Fax: (661) 947-8604

8.1 Impact Terminology

The environmental impact analysis for each resource defines the criteria used to judge whether an impact is significant based on the CEQA Initial Study Checklist and regulatory agency standards. Impacts that exceed identified threshold levels are considered significant. In describing the significance of impacts, the following categories of significance are used and are based on the best professional judgment of the preparers of the IS/MND:

No Impact: There would be no impact to the specific resource or there would be a positive impact on the environment, such as reducing an existing environmental problem.

Less than Significant Impact: An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures.

Less than Significant with Mitigation: An impact is potentially significant, but can be reduced to below the threshold level (to less than significant) given reasonable and available mitigation measures.

Potentially Significant: An impact that would cause substantial, or potentially substantial, impacts above the threshold level. Such an impact requires further evaluation and would trigger the preparation of an Environmental Impact Report (EIR) for the project.

9. Environmental Checklist

1. Project Title: Recycled Water Facilities Plan

2. Lead Agency Name and Address: Palmdale Recycled Water Authority (PRWA)
2029 East Avenue Q
Palmdale, CA 93550

3. Contact Person and Phone Number: Matthew Knudson
(661) 947-8604

4. Project Location: See Section 3 and Figures 1 and 2

5. Project Sponsor's Name and Address: Same as Lead Agency

6. General Plan Designation(s): Various within City of Palmdale and County of Los Angeles.

7. Zoning Designation(s): Various within City of Palmdale and County of Los Angeles.

8. Description of Project:

See Section1 through Section 6.

9. Surrounding Land Uses and Setting.

Varied urban and suburban development, including residential, commercial, industrial, public (schools and parks), transportation corridors, and vacant/undeveloped lands, including Joshua Tree woodland.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement. Indicate whether another agency is a responsible or trustee agency.)

See Section 7.

Environmental Factors Potentially Affected

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

☒ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology, Soils and Seismicity
☐ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☒ Hydrology and Water Quality
☒ Land Use and Land Use Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☒ Transportation and Traffic	☐ Utilities and Service Systems	☒ Mandatory Findings of Significance

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

Dennis D. LaMoreaux — Signature

10/29/14 — Date

DENNIS D. LAMOREAUX — Printed Name

For

9.1 Aesthetics

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
1.	**AESTHETICS — Would the project:**				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☒	☐	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☒	☐	☐

Setting

The City of Palmdale lies at the entrance to the Antelope Valley, a location with visually prominent hillsides that define the western, southern, and eastern edges of town. These foothills of the San Gabriel and Sierra Pelona Mountains form an impressive backdrop for the community. Frequent wide vistas along the flat valley floor offer a sense of space and openness.

The area of influence for aesthetic effects includes the portions of proposed facilities that can be observed from public view corridors. Proposed facility sites include previously developed areas throughout the PRWA's service area, including paved public roadways and immediately adjacent vacant lands. However, none of the project roadways are State-designated scenic highways. Scenic roadways identified in the City's General Plan include Antelope Valley Freeway (south of Avenue R), Barrel Springs Road, Tierra Subida Avenue, Sierra Highway (south of Avenue S), Elizabeth Lake Road, Pearblossom Highway, Bouquet Canyon Road, and Godde Hill Road (City of Palmdale, 1993). All of these scenic roadways are located to the south and west of proposed facilities.

Views are defined as the visibility of natural or built landscape features from an observer viewpoint. Land uses along the proposed pipeline alignments include varied urban and suburban development, including residential, commercial, industrial, and vacant/undeveloped lands. The PWRP pump station site is on disturbed soil surrounded by vacant and agricultural lots.

Views are characterized by their distance from the viewer: foreground, middle-ground, or background. Due to the flat topography of the service area, both foreground and middle-ground views include the structures and landscaping along the project roadways. Background views include the distant foothills and ridgelines that form the horizon.

Discussion

a) **Less than Significant.** The proposed project would include facilities located along the floor of the Antelope Valley. Although construction activities associated with the

proposed facilities would create temporary disturbances in views due to the presence of construction machinery, open pipeline trenches, and materials staging, these impacts are considered less than significant. The PRWA is committed to implementing project clean-up measures per its standard construction specifications (see Section 6 above) to reduce adverse visual effects of construction sites. Further, because the proposed project would involve the installation of underground recycled water pipelines, it is reasonable to conclude that there would be no substantial long-term impact on a scenic vista from pipeline construction.

The proposed project also includes one new pump station at the PWRP, which is already largely built out with industrial water treatment facilities and buildings. Construction of the pump station would involve equipment contained within and staged at the PWRP. As a result, the presence of construction equipment would not impact scenic vistas from surrounding lands. The pump station would be contained within a single-story masonry building, similar to other aboveground facilities at the PWRP. The pump station would not block background views of the foothills. Impacts would be less than significant. No mitigation is required.

b) **Less than Significant with Mitigation.** Construction and operation of the proposed project facilities involves no new development that could damage scenic resources visible from a scenic highway. The project area does not include any eligible or officially designated Scenic Highways as designated by the California Department of Transportation (Caltrans) (Caltrans, 2013). All of the scenic roadways identified in the City's General Plan are located to the south and west of the proposed facilities. Construction of Phase 5 of the recycled water pipeline would disturb open space areas characterized by Joshua Tree woodland. Such a native landscape could be considered scenic. However, views of the Phase 5 pipeline alignment are limited to pipeline crossings of 70th Street East and 85th Street East. Phase 5 is not visible from Avenue S or Palmdale Boulevard. In addition, the project description includes commitments to surface restoration after installation of pipelines (see Section 5.4), and **Mitigation Measure BIO-7** requires restoration of any special-status plant species or Joshua tree woodland along the Phase 5 alignment (see Section 9.4 below). Impacts to scenic resources would be less than significant with mitigation.

c) **Less than Significant with Mitigation.** As described above, construction of the proposed project facilities would be visible to local residents and would involve temporary negative aesthetic effects, including open pipeline trenches as well as the presence of construction equipment and materials staging. Construction impacts would be temporary and are considered to be less than significant. Once built and operational, however, the recycled water pipeline facilities would be buried underground, and no substantial change would occur in relation to existing conditions including visual character. The project description includes commitments to surface restoration after installation of pipelines (see Section 5.4), and **Mitigation Measure BIO-7** requires restoration of any special-status plant species or Joshua tree woodland along the Phase 5

alignment (see Section 9.4 below). Impacts related to visual character would be less than significant with mitigation.

Construction of the PWRP pump station would also result in a minor change in the existing character of the PWRP visible from 30th Street East; however, the change would not be substantial given the existence of other surrounding industrial facilities at the treatment plant. Impacts would be less than significant.

d) **Less than Significant with Mitigation.** The proposed project generally would not involve nighttime construction. Construction would occur Monday through Friday, primarily between the hours of 7:00 a.m. and 4:00 p.m. in accordance with local noise ordinances. In some instances, nighttime construction may be required to minimize impacts on traffic and circulation during installation of the recycled water pipelines. In the event that lighting is required to support nighttime construction activities, Mitigation Measure AES-1 would be implemented to ensure light and glare do not affect neighboring land uses, such as residential properties. The impact would be less than significant with mitigation.

Once constructed, security lighting may be required at the new pump station if existing security lighting at the PWRP is not sufficient. Lights could be free standing (pole-mounted) or exterior lights attached to the outside of a building. This lighting may serve as a source of light and/or glare. Implementation of **Mitigation Measure AES-2**, however, would ensure that the materials used for the pump station would not result in an increase in glare. The impact would be less than significant with mitigation.

Mitigation Measures

AES-1. Prevent Light and Glare Associated with Nighttime Construction. The PRWA shall ensure the construction contractor uses construction lighting that is shielded and directed downward to illuminate only the necessary work space and avoid light spill onto neighboring residential properties.

AES-2. Prevent Light and Glare Associated with Proposed Facilities. The PRWA shall require the construction contractor to apply to the pump stations and other aboveground appurtenances non-glare exterior coatings that are colored an earth tone to blend in with the surrounding landscape. The PRWA shall also require that all lights be shielded and faced downward so as not to create glare on adjacent roadways or private properties.

9.2 Agricultural and Forest Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
2. AGRICULTURAL AND FOREST RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Setting

The State's Important Farmland Map of Los Angeles County (California Department of Conservation, 2012) identifies some lands between the LA-Palmdale Regional Airport and Little Rock Wash as a mix of 'Prime Farmland' and 'Farmland of Local Importance.' The City of Palmdale's General Plan (1993) reports that local crops consist of pistachio orchards, pine and ornamental trees, alfalfa, sod, onion, carrots, and tomatoes. However, these agricultural lands are outside of the project area. A review of the 2012 Important Farmland Map of Los Angeles County indicates that the project area contains only lands classified as 'Urban and Built-Up Land' and 'Other Land.'

The California Public Resources Code defines "forest land" under section 12220(g) as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The California Public Resources Code defines "timberland" as land, other than land owned by the federal government and land designated by the board as experimental forest land, which is

available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. The California Government Code defines "timberland production zone" under section 51104(g) as an area which has been zoned pursuant to Sections 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h) of the Government Code 51104. The City of Palmdale Zoning Ordinance has no zoning categories related to forest land or timberland.

Discussion

a) **No Impact.** As described above, a review of the 2012 Important Farmland Map of Los Angeles County indicates that the project area contains lands classified as 'Urban and Built-Up Land' and 'Other Land.' Implementation of the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. No impact would occur, and no mitigation is necessary.

b) **No Impact.** As described above, a review of the 2012 Important Farmland Map of Los Angeles County indicates that the project area contains lands classified as 'Urban and Built-Up Land' and 'Other Land.' There is no farmland in the project area, and as such, no lands under Williamson Act contract. The proposed project would not conflict with any zoning for agricultural use or a Williamson Act contract. No impact would occur, and no mitigation is necessary.

c/d) **No Impact.** The project area is located within the rights-of-way (ROWs) of city streets and open space areas along Avenue R leading to Littlerock Creek. There is no forest land or timberland, or areas zoned as such, in the project area. There would be no conflict with zoning codes, no loss of forest land, and no conversion of forest land to non-forest use. No impact would occur, and no mitigation is necessary.

e) **No Impact.** As mentioned above, no active farming or agriculture takes place within the proposed project area. There also is no forest land within the project area. As a result, the project would not involve changes in the existing environment, which, due to their location or nature, would result in the conversion of farmland or forest land to non-agricultural use or non-forest use. No mitigation is required.

Mitigation Measures

None required or recommended.

9.3 Air Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
3. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Setting

The project area is located in the southern region of the Antelope Valley, within the larger Mojave Desert Air Basin (MDAB). The MDAB encompasses about 21,480 square miles and includes the desert portions of San Bernardino County, Riverside County, Palo Verde Valley, and the cities of Palmdale and Lancaster in the Antelope Valley. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that contain dry lakes. The project site is located in the westernmost portion of the MDAB within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD).

The California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The pollutants are referred to as "criteria air pollutants" since they are the most prevalent air pollutants known to be harmful to human health and extensive health-effects criteria documents are available about their effects on human health and welfare. Standards have been established for each criteria pollutant to meet specific public health and welfare criteria set forth in the federal Clean Air Act (CAA). California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard, such as sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Both CARB and USEPA use monitored air quality data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment. Both CARB and USEPA have designated portions of the AVAQMD as being nonattainment for a variety of pollutants. **Table 3** shows the attainment designations and classifications for the AVAQMD.

TABLE 3
AVAQMD DESIGNATIONS AND CLASSIFICATIONS

Ambient Air Quality Standard	AVAQMD
One-hour Ozone (Federal) – standard has been revoked, this is historical information only	Nonattainment; classified Severe-17
Eight-hour Ozone (Federal 84 ppb)	Nonattainment; classified Severe-17
Eight-hour Ozone (Federal 75 ppb)	Non-attainment (expected)
Ozone (State)	Nonattainment; classified Extreme
PM_{10} (Federal)	Unclassified
$PM_{2.5}$ (Federal)	Unclassified/attainment
$PM_{2.5}$ (State)	Unclassified
PM_{10} (State)	Nonattainment
CO (State and Federal)	Attainment
NO_2 (State and Federal)	Attainment/unclassified
SO_2 (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Attainment
Particulate Sulfate (State)	Unclassified
Hydrogen Sulfide (State)	Unclassified
Visibility Reducing Particles (State)	Unclassified

NOTES: ppb = parts per billion

SOURCE: AVAQMD, 2014.

Through the attainment planning process, AVAQMD has developed AVAQMD Rules and Regulations to regulate sources of air pollution in the Antelope Valley. The most pertinent AVAQMD rules to the proposed project include Rule 402 (Nuisance) and Rule 403 (Fugitive Dust). A majority of the emission sources associated with the proposed project are considered mobile sources. Therefore, they are not subject to the AVAQMD rules that apply to stationary sources, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels).

Discussion

a) **Less than Significant.** The *AVAQMD 2004 Ozone Attainment Plan* and the *AVAQMD Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area)* are the applicable air quality plans for the AVAQMD. The purpose of the plans is to bring the Antelope Valley into attainment for ozone. Both plans are based on approved regional air emission modeling, which takes into account future development consistent with adopted plans and policies. Implementation of the proposed project would involve the installation of a new pump station at the PWRP and approximately 70,000 linear feet of new recycled water pipeline within the PRWA service area. The proposed project would reduce the area's existing and future demand for imported water through recycling. The imported water conserved through implementation of the proposed project would be available to serve potable water demands of planned growth. Implementation of the project would not result in any additional population or housing growth in the project area that has not been accounted for the region and would not result in any changes to existing land uses in the PRWA service area. Consequently, as no growth-inducing development or land use would occur under the project, implementation of the project would not conflict with or obstruct the implementation of AVAQMD's air quality plans. In addition, as discussed in Item 9.3(b) below, the proposed project's construction and operational emissions would also not exceed the AVAQMD's significance thresholds. Consequently, the proposed project would have a less than significant impact.

b) **Less than Significant.** A project may have a significant impact where project-related emissions would exceed federal, state, or regional standards or thresholds, or where project-related emissions would substantially contribute to an existing or projected air quality violation.

Construction Emissions

Construction of the proposed project's recycled water pipeline would occur in six separate and sequential phases. The majority of the pipeline alignment would be within developed and paved portions of roadway rights-of-way, with the exception of approximately 7,400 linear feet of pipeline extending east along Avenue R toward Littlerock Creek, beyond the intersection with 70th Street East. East of 70th Street East, Avenue R is a dirt road that is bordered by open space. As Phase 1 of the pipeline has already been constructed, the analysis of potential air quality impacts is conducted for the remaining five construction phases. The proposed pump station would be built as part of the Phase 2 construction of the pipeline. Project construction is anticipated to commence in fall of 2015 and would last approximately 16 months.

Construction of the pipeline would involve the open-trench method, and would generate pollutant emissions from the following construction activities: (1) site preparation, excavation, and pipe installation; (2) construction workers traveling to and from the construction site; (3) delivery and hauling of construction supplies and debris to and from the construction site; (4) the fuel combustion by onsite construction equipment; and (5) restoration of the work site. Pollutants of concern include CO, nitrous oxides (NOx), PM_{10}, $PM_{2.5}$), sulfur oxides (SOx), and volatile organic compounds (VOC). Construction

activities associated with the project involving site preparation and excavation would primarily generate PM_{10} emissions, while mobile source emissions (use of diesel-fueled equipment onsite, and traveling to and from the construction site) would primarily generate NOx emissions. The amount of emissions generated on a daily basis would vary, depending on the amount and types of construction activities occurring at the same time.

It is mandatory for all construction projects in the MDAB to comply with AVAQMD Rule 403 (Fugitive Dust) for controlling fugitive dust emissions. Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust emissions, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, maintaining effective cover over exposed areas, and restricting vehicle speeds to 15 miles per hour on unpaved roads. Site watering and application of soil binders would reduce the particulate matter from becoming airborne, while washing of transport vehicle tires and undercarriages would reduce re-entrainment of construction dust onto the local roadway network.

The analysis of daily construction emissions has been prepared utilizing the California Emissions Estimator Model (CalEEMod). CalEEMod was used to determine whether short-term construction-related emissions of criteria air pollutants associated with the proposed project would exceed AVAQMD's applicable regional thresholds and where mitigation would be required. Modeling was based on project-specific data, when available. Where project-specific information was not available, reasonable assumptions based on similar project types and default model settings were used to estimate criteria air pollutant and ozone precursor emissions. For the purpose of this analysis, the construction emissions occurring on a peak (worst-case) day during each construction phase were estimated and evaluated against the applicable AVAQMD significance thresholds.

The estimated daily emissions that are estimated to occur on peak construction days for each phase of the proposed project are shown in **Table 4**. (See **Appendix B** for supporting calculations.) These calculations take into account that appropriate dust control measures under AVAQMD Rule 403 would be implemented by the project during each phase of construction.

As shown in Table 4, the peak daily regional emissions generated during project construction would not exceed the AVAQMD daily significance thresholds for VOC, NO_X, CO, SOx, $PM_{2.5}$ and PM_{10}. Since construction emissions would not exceed the AVAQMD thresholds, the regional impacts related to air quality during project construction activities would be less than significant.

In addition, the proposed project construction would not emit two criteria pollutants for which the AVAQMD has also established emissions thresholds for, hydrogen sulfide and lead. Hydrogen sulfide is a colorless, flammable gas that is often produced by the breakdown of waste material, while lead is a metal that is generated predominantly today

TABLE 4
PROJECT PEAK DAY CONSTRUCTION EMISSIONS

	Estimated Maximum Daily Emissions (lbs/day)					
Construction Activities	**VOC**	**NO_X**	**CO**	**SOx**	**PM_{10}[a]**	**$PM_{2.5}$[a]**
Phase 2 – Pipeline (2015)	7.47	61.33	49.16	0.09	4.58	3.52
Phase 2 – Pump Station (2015)	3.63	32.76	20.22	0.03	2.26	1.92
Total Phase 2 Emissions	**11.10**	**94.09**	**69.38**	**0.12**	**6.84**	**5.44**
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No
Phase 3 – Pipeline (2015)	7.50	61.69	49.60	0.09	5.50	3.75
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No
Phase 3 – Pipeline (2016)	6.96	56.83	48.37	0.09	4.58	3.32
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No
Phase 4 – Pipeline (2016)	6.97	56.88	48.43	0.09	4.34	3.27
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No
Phase 5 – Pipeline (2016)	6.92	56.42	47.79	0.08	4.29	3.25
Phase 5 – Fugitive Emissions from Travel on Unpaved Roads (2016)[b]	--	--	--	--	72.61	7.26
Total Phase 5 Emissions	**6.92**	**56.42**	**47.79**	**0.08**	**76.90**	**10.51**
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No
Phase 6 – Pipeline (2016)	6.97	56.86	48.41	0.09	4.34	3.27
AVAQMD Significance Threshold	*137*	*137*	*548*	*137*	*82*	*82*
Significant Impact?	No	No	No	No	No	No

Note: -- = non-applicable

[a] The PM_{10} and $PM_{2.5}$ emissions presented have taken into account the mandatory dust control measures required under AVAQMD Rule 403 – Fugitive Dust.
[b] The fugitive dust emissions associated with vehicle travel on unpaved roads by worker and truck trips were calculated outside of CalEEMod using USEPA's AP-42 calculation equations.

by industrial processes that are primarily associated with metals processing, such as smelters. The construction equipment used for construction of the proposed project would not result in the release of these pollutants into the atmosphere. Overall, air quality impacts during construction would be less than significant.

Operational Emissions

As the proposed project consists of the installation of a new pump station at the PWRP and approximately 70,000 linear feet of new recycled water pipeline within the PRWA service area, potential air quality impacts associated with the project would occur primarily during the construction phase. Once construction activities have been completed, operation of the proposed project would not involve any direct pollutant emissions sources. The operation of the new pump station would be powered through electricity obtained from the regional grid, and would not result in any direct pollutant

emissions locally. Although emissions at a power plant within or outside of the MDAB supplying electricity to the new pump station would occur, these power plant emissions, if located in California, are subject to the rules and regulations of the air district in which the plant is located and would be subject to their own regulatory review. Emissions from power generation to supply the new pump station could occur anywhere in the western U.S. power grid and emissions from motors to service the station would be regional. Energy would be supplied by permitted power sources, such as sources permitted by the California Energy Commission's Application for Certification (CEQA equivalent) process.

In addition, while vehicle emissions would be generated by worker trips to and from the project area for routine maintenance of the pipeline and pump station, these trips are anticipated to occur only periodically within a given month. As such, the mobile emissions generated during project operations, when compared with the project's peak daily construction emissions (refer to Table 4), would be negligible and would not exceed AVAQMD's applicable regional thresholds. Therefore, air quality impacts during project operation would be less than significant.

c) **Less than Significant.** As shown in Table 3, the AVAQMD is designated as being in nonattainment for federal and state ozone standards and state PM_{10} standards. The AVAQMD is active in establishing and enforcing air pollution control rules and regulations in order to attain all state and federal ambient air quality standards and to minimize public exposure to airborne toxins and nuisance odors. While pollutant emissions would be generated during construction of the proposed project, these emissions (refer to Table 4) would not exceed the significance thresholds developed by the AVAQMD. In addition, these construction-related emissions would only occur on a temporary, short-term basis and would cease once project construction has been completed. As such, the project's construction-related emissions are not expected to be cumulatively considerable. Furthermore, once construction activities have been completed, emission sources resulting from project operations would be associated with worker vehicle trips for periodic maintenance and inspection work. Given the limited number of vehicle trips that would be required, the pollutant emissions generated during project operation would be minimal and are also not expected to contribute to cumulatively considerable air quality impacts. Thus, development of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant, and this impact would be less than significant.

d) **Less than Significant.** Some population groups, such as children and the elderly, are considered more sensitive to air pollution than others. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions source, or duration of exposure to air pollutants. Land uses such as schools, children's day care 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 are more susceptible to respiratory distress and other air quality-related health problems.

Within the PRWA service area, sensitive receptors consist of low to high-density residential areas, parks, and bike trails, and schools. These types of receptors are situated throughout the City of Palmdale and concentrated in neighborhood areas along 35th Street East, Avenue R, and Avenue S within the City of Palmdale. During project construction, some of these residential areas and schools may be situated in close proximity, some as close as 50 feet, from the active construction areas for the proposed pipeline. Construction of the proposed project would result in short-term diesel exhaust emissions from off-road heavy-duty equipment. Diesel exhaust is considered as a toxic air contaminant (TAC), and would be generated during project construction from the use of off-road diesel equipment required for site preparation and excavation, and other construction activities. The dose of a substance to which sensitive receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project. The construction of the project is only anticipated to occur over a 16-month period, and the project's construction activities during that time would progress in a linear fashion along the proposed pipeline alignment. As such, the project's construction activities would not be permanently stationed at any one location during the 16-month period. Thus, the duration of the proposed construction activities at any one open-trench site would only constitute a small percentage of the total 70-year exposure period. Thus, diesel particulates from construction activities would not be anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards, and impacts would be less than significant.

Based on the proximity of the project's construction areas to numerous schools and residential communities, the impact of construction-related fugitive dust emissions could result in a nuisance on these sensitive receptors. However, implementation of best management practices (BMPs) and compliance with dust control measures under AVAQMD Rule 403 during project construction would minimize emissions of localized fugitive dust emissions generated along the proposed pipeline alignment. Thus, compliance with the dust control measures under AVAQMD Rule 403 would reduce this impact to a less-than-significant level.

Additionally, project operations would only require periodic worker vehicle trips for maintenance and inspection work, and would not result in any substantial operational emissions from stationary sources. As discussed previously, because the routine inspection and maintenance visits for the proposed project would be minimal, operational emissions would be minimal. Furthermore, over the longer term, operation of the

proposed pump station would be powered by electricity with an emergency, backup diesel generator. The pump station would operate year-round (24-hours a day, seven days a week) and the backup generator would operate only under limited circumstances, including during emergencies. The standby generator would also be subject to operating requirements and emission standards for new and in-use stationary diesel-fueled engines that have a rated brake horsepower of greater than 50 (>50 bhp) per the requirements of Section 93115, Title 17, of the California Code of Regulations. Compliance with these applicable regulatory requirements would ensure a less than significant air quality impact from the standby generator over the long-term operation of the pumping facilities.

Therefore, construction and operation of the proposed project would not expose sensitive receptors in the project area to substantial pollutant concentrations. This impact would be less than significant.

e) **Less than Significant.** Objectionable odors may be associated with a variety of pollutants. Odors rarely directly affect health, but they can be very unpleasant and lead to distress and concern over possible health effects among the public, generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Sources of odors within the project area include the PWRP, local industrial processes, and agricultural areas.

The proposed project would not involve the placement of sensitive receptors in proximity to any existing odor-generating uses. Unlike traditional sewer collection facilities, recycled water undergoes substantial treatment prior to delivery. For this reason, the distribution of recycled water would not result in the introduction of a new source of odor. Further, pumping operations would be within fully enclosed structures and due to their nature would not result in odor generation. For these reasons, this impact is considered less than significant.

Mitigation Measures

None required or recommended.

9.4 Biological Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
4. BIOLOGICAL RESOURCES — Would the project:				
a) 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?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) 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?	☐	☒	☐	☐
d) 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?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Setting

The discussion below presents the findings of a technical biological resources assessment conducted by Environmental Science Associates (ESA). This assessment includes the documentation of existing biological resources within the project site, a discussion of potential impacts to protected biological resources associated with implementation of the proposed project, and recommendations regarding measures to mitigate potential impacts to a less than significant level. The methodologies utilized to collect baseline data, describe biological resources, and analyze potential impacts are provided in the Biological Resources Technical Report prepared by ESA (see **Appendix B**).

The project site is located in the Antelope Valley, a 2,400-square mile triangular basin, and is situated within the western tip of the Mojave Desert, with Victor Valley and the Great Basin to the east, the San Gabriel Mountains to the south, and the Tehachapi Mountains to the northwest. The climate of the region can be characterized as arid desert, with average annual temperatures ranging from a high of 77.2˚ F to a low of 47.2˚ F (WRCC, 2014). The Palmdale area averages

7.6 inches of annual precipitation, with the majority of this amount accumulating as rain between the months of December to March (WRCC, 2014).

A majority of the proposed recycled water pipeline would be constructed within the public right-of-way of City of Palmdale and Los Angeles County streets and a small portion (Phase 5) may be constructed in Little Rock Wash. Land uses in the vicinity of the project site vary in degree of development and disturbance, including residential, commercial, industrial, institutional, agricultural, and open space. For purposes of the biological assessment, the project site is defined as the areas of direct impacts and up to 15 feet on either side of the proposed pipeline.

Phase 5 of the proposed pipeline would cross into Little Rock Wash, which is an adopted Significant Ecological Area (SEA) No. 49. SEA No. 49 was adopted by the Los Angeles County General Plan in 1980 to protect Little Rock Wash. Nesting birds and small mammals are found in high abundance and great variety in the SEA because of the sandy soils, dense shrub layer, and large undisturbed landscape. Little Rock Wash facilitates wildlife movement and plant seed dispersal, which is why the SEA is considered an area of great ecological importance to the region.

Plant Communities and Habitats

Ruderal Vegetation

A total of 42.4 acres of the 47.4 acre project site is developed, with various scattered commercial and residential developments adjacent to the proposed pipeline alignment. Undeveloped areas adjacent to the project site mainly consist of native and nonnative ruderal vegetation, including black mustard (*Brassica nigra*), Russian thistle (*Salsola kali*), vinegarweed (*Trichostema lanceolatum*), and common nightshade (*Circaea alpine*). Native vegetation observed along and adjacent to portions of the project site include (but not limited to) rubber rabbitbrush (*Chrysothamnus nauseosus*), creosote bush (*Larrea tridentate*), fourwing saltbush (*Atriplex canescens*), California buckwheat (*Eriogonum fasciculatum*), and bursage (*Ambrosia dumosa*). Several clusters of mature Joshua trees (*Yucca brevifolia*) occur with other associated native plant species adjacent to the project site in undeveloped areas.

Joshua Tree Woodland

The project site east of 70th Street East includes five acres of undisturbed Joshua tree woodland within the proposed alignment for Phase 5 of the recycled water pipeline. The community is an open canopy woodland with scattered Joshua trees and a diverse shrub layer largely consisting of a mixture of fourwing saltbush, rubber rabbitbrush, Mormon tea (*Ephedra nevadensis*), cheesebush (*Ambrosia salsola*), and bursage. An infrequently traveled dirt road approximately 15 feet wide runs through this section of the project site. In some areas the road is lined with trash and debris such as furniture, small appliances, tires, and other materials from illegal dumping. However, the majority of this portion of the project site functions as an undisturbed, intact plant community.

Wildlife

Disturbed, non-native habitats such as those which occur within the majority of the project site generally provide low quality wildlife habitat; however, neighboring agricultural areas can

provide high quality habitat for certain wildlife species (i.e., raptor foraging habitat). The desert scrub habitats adjacent to the project area provide potential habitat for a wide variety of lizards and snakes. Lizards that may occur in the project area include banded gecko (*Coleonyx variegatus*), desert iguana (*Dipsosaurus dorsalis*), common chuckwalla (*Sauromalus obesus*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), zebra-tailed lizard (*Callisaurus craconoides*), desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), yucca night lizard (*Xantusia vigilis*), and western whiptail (*Cnemidophorus tigris*). Snake species that may occur include western blind snake (*Leptotyphlops humilis*), spotted leafnosed snake (*Phyllorhynchus decurtatus*), coachwhip (*Masticophis flagellum*), western patchnosed snake (*Salvadora hexalepis*), glossy snake (*Arizona elegans*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), long-nosed snake (*Rhinocheilus lecontei*), western shovel-nosed snake (*Chionactis occipitalis*), night snake (*Hypsiglena torquata*), speckled rattlesnake (*Crotalus mitchelli*), Mojave green rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*).

Some common bird species expected include California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), ladder-backed woodpecker (*Picoides scalaris*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*) (a CDFW Species of Special Concern), rock wren (*Salpinctes obsoletus*), and bewick's wren (*Thryomanes bewickii*). Raptor species expected to utilize agricultural areas for foraging include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), prairie falcon (*Falco mexicanus*), and northern harrier (*Circus cyaneus*). Additionally, burrowing owl (*Athene cunicularia*) is known to inhabit abandoned agricultural fields in the proposed project vicinity.

The area of the project site within SEA No. 49 has a higher diversity of both plant and animal species due to the undisturbed, dense habitats and the importance of the wash for seed dispersal and regional wildlife movement, discussed in more detail in the Biological Resources Technical Report (**Appendix B**). Mammals are abundant in this area of the project site, and some common species include black-tailed jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canus latrans*), desert cottontail (*Sylvilagus audubonii*), desert woodrat (*Neotoma lepida*), white-tailed antelope squirrel (*Ammospermophilus leucurus*). Little Rock Wash is dry for a majority of the year, but the wash may support riparian or aquatic species when water flows through the wash. Common species in the region include northern Pacific treefrog (*Pseudacris regilla*) and Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*). However, these species would only occur when water is present and it is unlikely that the climate and infrequent water flow would support breeding of amphibian species.

Special-Status Species

As a result of literature review and field investigation conducted for the project site, a total of 18 special-status wildlife species were identified as having the potential to occur within the project site or adjacent areas. Of these 18 species, 14 were determined to have a high potential to occur at the project site and thus have potential to be impacted by the project. Included in this list is Mohave ground squirrel (*Xerospermophilus mohavensis*) and Swainson's hawk (*Buteo swainsoni*), both state threatened species; and Townsend's big-eared bat (*Corynorhinus*

townsendii), which is a candidate for state threatened listing. Other special-status species with high potential to occur within the project site are as follows: silvery legless lizard (*Anniella pulchra pulchra*), coast horned lizard (*Phrynosoma blainvillii*), Cooper's hawk (*Accipiter cooperii*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), Le Conte's thrasher (*Toxostoma lecontei*), pallid bat (*Antrozous pallidus*), southern grasshopper mouse (*Onychomys torridus ramona*), and American badger (*Taxidea taxus*). These species are described further in the discussion below.

A total of seven special-status plant species were identified as having the potential to occur within the project site and adjacent areas. None of these species are federally or state listed species. Included in the list is Lancaster milk-vetch (*Astragalus preussii* var. *laxiflorus*), alkali mariposa-lily (*Calochortus striatus*), white pygmy-poppy (*Canbya candida*), sagebrush loeflingia (*Loeflingia sqarrosa* var. *artemisiarum*), Peirson's lupine (*Lupinus peirsonii*), short-joint beavertail (*Opuntia basilaris* var. *brachyclada*), and Parish's popcornflower (*Plagiobothrys parishii*).

Discussion

a) **Less than Significant with Mitigation.** Construction of the proposed project could impact plants and wildlife in a variety of ways. Construction activities could directly harm sensitive species, displace wildlife from home range or migratory routes, or result in the loss of habitat for plant and wildlife species. However, loss of habitat would be temporary and project construction would not result in permanent development of native habitat.

Special Status Wildlife

Fourteen special-status wildlife species have a high potential to occur within the project site and thus have potential to be impacted by the project. They are described in detail below, along with a determination of the potential project impacts and mitigation requirements.

Silvery legless lizard is a very small, slender lizard with smooth scales and no legs. Although sometimes found on the surface at dawn and dusk, this lizard spends most of its time underground in loose, sandy soil or under leaf litter, where it forages for insects and spiders. The preferred habitat for this species is moist, sparsely vegetated areas of scrub, washes and stream terraces with loose soil and leaf litter.

Silvery legless lizard is a California Species of Special Concern. Native habitats at the base of the San Gabriel Mountains provide potentially suitable habitat within the known range of this species. This species also may occur within Little Rock Wash. Potential impacts to silvery legless lizard would be reduced to a less than significant level with implementation of **Mitigation Measures BIO-1, BIO-2, and BIO-3.**.

Coast horned lizard is distributed throughout the coast of southern California and into northern Baja, Mexico. This species prefers open areas of sandy soil with low vegetation in valleys, foothills and semiarid mountains. Its primary food source is harvester ants,

native to the southern California region; this specialty diet is intimately related to its subsequent decline in southern California. The rapid urbanization of the southern California region has facilitated the invasion of the Argentine ant which is associated with residential areas. These ants displace the native harvester ants and thus, there is less food available for the coast horned lizard.

Coast horned lizard is a California Species of Special Concern. Although this species was not observed during the biological resources reconnaissance survey, CNDDB occurrences have been recorded in the vicinity of the project site and suitable habitat occurs in the undisturbed habitat on the project site and surrounding areas. This species thus has a high potential to occur within the project site. Potential impacts to coast horned lizard, however, would be reduced to a less than significant level with implementation of **Mitigation Measures BIO-1, BIO-2, and BIO-3**.

Cooper's hawk is a breeding resident throughout most of the wooded portions California. This species breeds in the southern Sierra Nevada foothills, New York Mts., Owens Valley, and other local areas in southern California. It prefers dense stands of live oak, riparian deciduous or other forest habitats. It also frequents landscapes where wooded areas occur in patches and groves, including patchy woodlands and edges with snags for perching. Cooper's hawks nest in dense stands with moderate crown-depths. This species catches small birds, especially young during the nesting season. They will also take small mammals, reptiles, and amphibians. This species often hunts in broken woodland and habitat edges.

Cooper's hawk is on the CDFW Watch List. This species may occur within the vicinity of the project site during migration and winter, and rarely in the summer. It may also nest in the vicinity of the project site where groves of trees exist. Potential impacts to Cooper's hawk would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Ferruginous hawk is an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. This species is a fairly common winter resident of grasslands and agricultural areas in southwestern California, and a casual resident in the northeast during the summer. Ferruginous hawks frequent open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. This species roosts in open areas, usually in a lone tree or utility pole. It searches for prey from low flights over open, treeless areas, and glides to intercept prey on the ground. Ferruginous hawks prey on lagomorphs, ground squirrels, mice, and small birds, reptiles, and amphibians.

Ferruginous hawk is on the CDFW's Watch List. Urban development may contribute to a loss of suitable wintering habitat in southern California. Although this species was not observed during the biological resources reconnaissance survey and no known CNDDB occurrences have been recorded in the immediate area, this species is known to compete with other locally-occurring raptor species and may forage in suitable habitat in the

vicinity of the project site. Potential impacts to ferruginous hawk would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Swainson's hawk is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley (Bloom 1980, Garrett and Dunn 1981). This species breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley and forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. In southern California, this species is mostly limited to spring and fall transients. Typical habitat for this species is open desert, grassland, or cropland containing scattered, large trees or small groves. It roosts in large trees, but will roost on the ground if none available. Swainson's hawks nest on a platform of sticks, bark, and fresh leaves in a tree, bush, or utility pole often in riparian habitat in scattered trees or small groves in sparsely vegetated flatlands. This species eats mice, gophers, ground squirrels, rabbits, large arthropods, amphibians, reptiles, birds, and, rarely, fish. It soars at low and high levels in search of prey, and may also walk on the ground to catch invertebrates and other prey. It also is known to catch insects and bats in flight.

Swainson's hawk is a State Threatened and Federal Threatened species. Migrating individuals move south through the southern and central interior of California in September and October, and north March through May. Some individuals migrate as far south as South America, passing in large flocks through Central America (Brown and Amadon, 1968). Swainson's hawk nesting habitat in southern California has sharply declined in recent decades, mostly due to urbanization and other human developments. This species may occur in the project vicinity as a rare migrant. Suitable nesting habitat occurs in Little Rock Wash. Potential impacts to Swainson's hawk would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Prairie falcon is on the CDFW Watch List. The prairie falcon is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. This species uses open terrain for foraging. It usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area, and sometimes uses old raven or golden eagle stick nests on cliffs, bluffs, or rock outcrops. It eats mostly small mammals, some birds, and reptiles. The prairie falcon catches prey in the air or on the ground in open areas. This species is vulnerable to Dichlorodiphenyldichloroethylene (DDE) poisoning. Egg and nestling predation can occur at sites accessible to mammal predators, great horned owls, and golden eagles.

Although this species was not observed during the biological resources reconnaissance survey and no known CNDDB occurrences have been recorded on the site, this species is known to compete with other locally-occurring raptor species and may forage on the project site and in the vicinity. Potential impacts to prairie falcon would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Loggerhead shrike is a common resident and winter visitor in lowlands and foothills throughout California. This species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. Occurs only rarely in heavily urbanized areas, but often found in open cropland. Sometimes uses edges of denser habitats. Loggerhead shrikes frequent open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low or sparse herbaceous cover. This species often uses shrubs or small trees for cover. Shrikes build nests on stable branches in densely-foliated shrubs or trees, usually well-concealed. Eats mostly large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. Shrikes frequently skewer prey on thorns, sharp twigs, wire barbs, or forces it into a crotch to feed or cache for later.

Loggerhead shrike is a California Species of Special Concern and a federal Bird of Conservation Concern. Although this species was not observed during the biological resources reconnaissance survey, CNDDB occurrences have been recorded in the vicinity and suitable habitat occurs in the Joshua tree woodlands on the project site. Thus, this species has a high potential to occur and/or nest on the project site and surrounding areas. Potential impacts to loggerhead shrike would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Le Conte's thrasher is an uncommon to rare, local resident in southern California deserts from southern Mono County south to the Mexican border, and in western and southern San Joaquin Valley. This species occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs. It frequents desert washes and flats with scattered shrubs and large areas of open, sandy, or alkaline terrain in desert wash, desert shrub, alkali desert scrub, and desert succulent shrub habitats. It uses scattered desert shrubs and cactus for cover; frequently saltbush and cholla cactus. Le Conte's thrasher feed primarily on a variety of insects and other terrestrial arthropods, and occasionally on seeds, small lizards, and other small vertebrates.

Le Conte's thrasher is a California Species of Concern and a federal Bird of Conservation Concern. This species is often exceptionally wary of humans and is vulnerable to off-road vehicle activity, other disturbances, and removal of shrubs for agricultural and other development. Le Conte's thrasher may occur in relatively undisturbed areas of Little Rock Wash or other undisturbed washes in the project vicinity. Potential impacts to Le

Conte's thrasher would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-4**.

Burrowing owl is a yearlong resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. In southern California this species is most common in open grasslands and shrublands, particularly agricultural areas, with available perches and burrows. This species was formerly common in appropriate habitats throughout the California, excluding the humid northwest coastal forests and high mountains. Burrowing owls eat mostly insects, but also prey upon small mammals, reptiles, birds, and carrion. Burrowing owls use rodent or other burrows for roosting and nesting cover, and can be found in disturbed areas with sparse or low vegetation. This species can use debris piles and buildings as cover sites well.

Burrowing owl is a California Species of Special Concern. Conversion of grassland to agriculture, other habitat destruction, and poisoning of ground squirrels have contributed to the reduction in numbers in recent decades, which was noted in the 1940s, and earlier (Grinnell and Miller 1944, Zarn 1974a, Remsen 1978). Predators include prairie falcons, red-tailed hawks, Swainson's hawks, ferruginous hawks, northern harriers, golden eagles, foxes, coyotes, and domestic dogs and cats. Fleas, lice, and feather mites are common ectoparasites. Collisions with autos may be a significant cause of mortality. The potential for burrowing owls to be present on the project site is considered to be moderate to high, and any impacts to burrowing owls would be considered significant. Potential impacts to burrowing owl would be avoided and/or reduced to a less than significant level with implementation of **Mitigation Measure BIO-5**.

Pallid bat occurs throughout western North America. According to the Western Bat Working Group (WBWG 2005a), the species inhabitats low elevation rocky arid deserts and Canyonlands, shrub-steppe grasslands, karst formations, and higher elevations coniferous forests. It is most abundant in the Great Basin, Mojave, and Sonoran Deserts due to the xeric ecosystems. Pallid bats roost alone, in small groups, or gregariously in rocky outcrops and cliffs, caves, mines, trees, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings. As a generalist it's diet consists of antlions, beetles, centipedes, cicadas, crickets, grasshoppers, Jerusalem crickets, keydids, moths, praying mantids, scorpions, solpugids, termites, and rarely take geckos, lizards, skinks, small rodents, and plant material.

Pallid bat is a state Species of Special Concern. It is vulnerable to mass displacement from roosting sites because of the gregarious nature and their relative sensitivity to disturbance. Maternal roosting sites are particularly susceptible to disturbance. However, it is unlikely that maternal roosting sites occur on or adjacent to the project site because of the lack of suitable rock outcrops, caves, abandoned structures or bridges typically used as roosting and maternity sites. However, small roosting sites may occur in the buildings and trees in the vicinity of the project site and there is a high potential for the species to use the project site for foraging. Potential impacts to pallid bat foraging habitat

would be temporary and would not affect the species' ability to forage and persist in nearby undisturbed areas. Therefore, no mitigation is necessary because the impacts would be less than significant.

Townsend's big-eared bat occurs throughout the west along the central coast to central Mexico, and east into the Great Plains. According to the Western Bat Working Group (WBWG 2005b), the species uses a wide variety of habitats including coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. This species is nocturnal and almost exclusively eats moths. Maternity colonies are formed by the females and are highly correlated with the presence of cave-like roosting habitats. This species has a very large home range and can travel over 150 kilometers in one night.

Townsend's big-eared bat is a state Species of Special Concern. Loss of caves or mines used for roosting is the major threat to this species. No caves or mines were observed on the project site during the reconnaissance survey and it is unlikely that a maternity colony occurs on the project site. However, the species has a high potential to forage on the project site and vicinity. Potential impacts to Townsend's big-eared bat foraging habitat would be temporary and would not affect the species' ability to forage and persist in nearby undisturbed areas. Therefore, no mitigation is necessary because the impacts would be less than significant.

Southern grasshopper mouse is common in arid desert habitats of the Mojave Desert and Central Valley of California. According to CDFW California Wildlife Habitat Relationship System (CDFW, 2014) it prefers alkali desert scrub and desert scrub habitats, and a lower density is found in other desert habitat such as succulent scrub, wash, and riparian areas. The species feeds on mostly arthropods such as scorpions, and also eats grasshoppers, crickets, caterpillars, moths, salamanders, lizards, frogs, and small mammals. Southern grasshopper mouse prefers friable souls for excavating nests, but also constructs nests in burrows abandoned by other rodents.

Southern grasshopper mouse is a state Species of Special Concern. It is nocturnal and active year round. Threats to the species include habitat loss, and this species may occur in the undisturbed habitat on the project site, particularly in Little Rock Wash. Potential impacts to southern grasshopper mouse would be reduced to a less than significant level with implementation of **Mitigation Measures BIO-1, BIO-2, and BIO-3**.

American Badger occurs throughout California, and is most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. It is carnivorous with a seasonally shifting diet of reptiles, insects, earthworms, eggs, birds, and carrion. Badgers build burrows in friable soils that they frequently return to and use for breeding and winter cover. This species is generally tolerant of humans, but control of prey items such as small mammals and loss of habitat threaten the species. American badger is a state Species of Special Concern and has a high potential to occur on the project site in the undisturbed habitats with friable soils. Potential impacts to American badger would

be reduced to a less than significant level with implementation of **Mitigation Measures BIO-1, BIO-2, and BIO-3**.

Mohave ground squirrel is endemic to the Mojave Desert and prefers sandy-to-gravelly soils in open desert scrub, alkali scrub, and Joshua tree woodland. The species finds cover and nests in burrows at the base of shrubs, and eats a wide variety of green vegetation, seeds, and fruits.

Mohave ground squirrel is a state Threatened species. This species is diurnal, and is active above ground in spring and early summer. Emergence dates vary from March to June, depending on elevation, and aestivation begins in July or August. This species has potential to occur in native, undisturbed habitats in Little Rock Wash and in the vicinity of the project site, and CNDDB occurrences have recorded this species within a 3-mile radius of the project site. Potential impacts to Mohave ground squirrel would be reduced to a less than significant level with implementation of **Mitigation Measure BIO-6.**

Special-Status Plants

A total of seven special-status plant species were identified as having the potential to occur within the project site and adjacent undisturbed areas. None of these species are federally or state listed species. Included in the list is Lancaster milk-vetch, alkali mariposa-lily, white pygmy-poppy, sagebrush loeflingia, Peirson's lupine, short-joint beavertail, and Parish's popcornflower. Focused rare and special-status plant surveys were not conducted for the project area and thus the special-status plants listed above could potentially occur on the project site. Pre-construction surveys for rare and special-status plants, detailed below in **Mitigation Measure BIO-7** would reduce potential impacts to a less than significant level.

b) **No Impact.** Based on the field assessment, Little Rock Wash does not support riparian vegetation or habitat because it is too dry. Only upland desert scrub species were observed within the portion of the wash that is within and adjacent to the project site. In addition, the project site does not support any natural communities considered sensitive by CDFW or USFWS. Therefore, the project will not result in adverse effects to any sensitive or riparian natural community.

c) **Less than Significant with Mitigation.** A jurisdictional delineation was not conducted for the project but it is likely that Little Rock Wash is not subject to the jurisdiction of the USACE under Section 404 of the Federal Clean Water Act (CWA), because it lacks a nexus with a traditional navigable waterway. In the past the USACE has determined that surface water features within the Antelope Valley are not considered waters of the US due to their isolation from navigable waters. Therefore, projects affecting surface waters and wetlands are not subject to Section 404 permitting.

Little Rock Wash would, however, be under the jurisdiction of the RWQCB and subject to Section 401 of the CWA. As such, a Water Quality Certification for dredging, filling or excavation of Little Rock Wash may be required for the project. The terms and

conditions of the Section 401 Water Quality Certification would include mitigation measures if necessary to ensure impacts to water quality within Little Rock Wash would be reduced to less than significant levels.

Little Rock Wash is also an ephemeral wash that is subject to regulation by the CDFW under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy. Although areas of the wash where improvements are to be made do not support riparian or wetland vegetation, a Streambed Alteration Agreement (SAA) with the CDFW would need to be established as described in **Mitigation Measure BIO-8**.

d) **Less than Significant with Mitigation.** The project site has the potential to support nesting songbirds and raptors in trees and native vegetation found throughout. Nesting bird activities typically occur from February 1 through August 31. Destruction or disturbance of active nests would be a violation of the Migratory Bird Treaty Act (MBTA) and Sections 3505, 3503.5, and 3800 of the Fish and Game Code; and would be considered a potentially significant impact. Potential impacts to nesting birds would be reduced to a less than significant level with implementation of **Mitigation Measures BIO-4 and BIO-5**.

Little Rock Wash is expected to convey wildlife movement. The wash and surrounding area on the project site was adopted as an SEA for the value as a migration corridor for wildlife and as a plant seed dispersal vector that gives the region high habitat diversity. The wash is also within a Linkage Planning Area for Science and Collaboration for Connected Wildlands' (SC Wildlands) California Desert Connectivity Project. When designated, the Linkage Planning Areas will be used to guide conservation efforts based on the habitat suitability and movement needs of over 40 focal species. The Linkage Planning Area that includes Little Rock Wash would connect the San Gabriel Mountains to the south of the project site, with Edwards Air Force Base in the interior of the Mojave Desert to the north of the project site. This area is used for movement of large mammals such as coyotes and bobcats, as well as provides habitat and dispersal areas for small mammals such as white-tailed antelope squirrel.

Impacts on wildlife movement are expected to be minimal based on the type of impacts that would occur. New pipeline constructed for the project is unlikely to affect regional movement because construction would be temporary and would occur in short segments, and wildlife would be expected to easily travel around construction. Nevertheless, any impacts to wildlife movement such as deterrents from corridors due to night lightning or supplemental resources for predators from ponding water and trash on the project site would be considered a significant impact under CEQA. Impacts on wildlife movement

would be considered less than significant with implementation of **Mitigation Measure BIO-9**.

e) **Less than Significant with Mitigation.** Some areas where pipelines are to be constructed are within or directly adjacent to Joshua tree woodland and Joshua trees occur within the construction zone in some cases. Joshua trees are protected under the City of Palmdale's Joshua Tree and Native Desert Vegetation Preservation Ordinance (Chapter 14.04 of Title 14 of the Palmdale Municipal Code). If Joshua trees are to be disturbed or removed as a consequence of construction activities, the PRWA must fulfill one of the requirements outlined in **Mitigation Measure BIO-10,** to reduce potential impacts to Joshua trees to a less than significant level.

f) **Less than Significant with Mitigation.** As part of the Los Angeles County General Plan Open Space and Land Use elements, the County of Los Angeles had identified and adopted policies for SEAs. The purpose of establishing an SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. The project site is within SEA No. 49, which was established to conserve the ecological processes associated with Little Rock Wash. The project has the potential to impact or alter the SEA during construction or maintenance of the project. Preparation of a Biota Report detailed below in **Mitigation Measure BIO-11** would reduce potential impacts to a level less than significant.

Mitigation Measures

BIO-1: Prior to ground disturbing activities, a qualified biologist shall conduct pre-construction clearance surveys in areas where potential habitat exists for silvery legless lizard, coast horned lizard, southern grasshopper mouse, and American badger. Appropriate survey methods shall be implemented to determine the presence or absence of these species, such as raking surveys for silvery legless lizard, pedestrian transect surveys for coast horned lizard and American badger dens, and trapping surveys for southern grasshopper mouse. If surveys determine that a special-status species is present, the species shall be relocated by a qualified biologist to suitable habitat located outside of the project area, but in the immediate vicinity. The recipient area(s) shall be identified prior to relocating any animals and shall be approved by the CDFW. The qualified biologist shall have a valid CDFW Scientific Collection Permit.

BIO-2: All steep-walled trenches or excavation pits used during construction shall be covered at all times except when being actively utilized. Covers shall be strong enough to prevent wildlife from falling through and shall be designed to exclude small animals, including coast horned lizard and southern grasshopper mouse. If the trenches or excavations cannot be covered, exclusion fencing constructed of materials that would exclude both large and small wildlife species shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife shall be inspected daily and immediately before backfilling. If present, construction shall not occur until the animal has left the trench or been removed by a qualified biologist as feasible. Employees and contractors shall look under

vehicles and equipment for the presence of wildlife before movement. If wildlife is observed, no vehicles or equipment shall be moved until the animal has left voluntarily or is removed by the biological monitor. No listed species shall be handled.

BIO-3: A Worker Environmental Awareness Program (WEAP) shall be implemented to educate construction crews and contractors on sensitive biological resources that could occur on the project site. As part of the WEAP, special-status species with potential to occur on the project site would be reviewed along with relevant protection plans and avoidance measures to be implemented. The WEAP shall be required for all associated personnel prior to the commencement of construction activities and a record of participation shall be maintained.

BIO-4: If construction and vegetation removal is proposed during the typical bird nesting period (February 1 through August 31), preconstruction surveys for nesting/roosting bird species shall be conducted by a qualified biologist within 30 days prior to construction, with at least one survey conducted no more than five days prior to the onset of construction (or vegetation removal). The surveys shall include habitats within 500 feet of the construction limits. This survey shall include species protected under the MBTA including the Cooper's hawk, ferruginous hawk, Swainson's hawk, prairie falcon, loggerhead shrike, and Le Conte's thrasher. The survey shall cover all reasonably potential nesting locations for the relevant species on or closely adjacent to the project site.

Active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone established dependent on the species as determined by a qualified biologist. Buffer distances are typically 300 feet for common birds and passerine species and 500 feet for raptors and special-status species. The buffer zone shall be delineated in the field with flagging, stakes or construction fencing. Nest sites shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-5: A pre-construction survey shall be conducted within areas containing suitable habitat for burrowing owls 14 to 30 days prior to clearing of the site by a qualified biologist in accordance with the most recent CDFW protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). Surveys shall cover areas disturbed by construction including a 150 meter (500 feet) buffer. The survey would identify adult and juvenile burrowing owls and signs of burrowing owl occupation. If potential presence is determined through an initial survey, three additional surveys shall be conducted between April 15 and July 15 when detection is most likely. Surveys shall be conducted at least three weeks apart to ensure that all individuals or owl pairs have been located.

- If occupied burrowing owl habitat is detected on or adjacent (i.e., within 500 feet) to the proposed project site, measures to avoid, minimize, or mitigate impacts shall be incorporated into the project and shall include the following:
  - Construction exclusion areas shall be established around the occupied burrows in which no disturbance shall be allowed to occur while the burrows are occupied. During the non-breeding season (October 16 through March 15), the exclusion zone

shall extend 50 meters (165 feet) around the occupied burrows. During the breeding season (April 1 through October 15), exclusion areas shall extend 200 meters (650 feet) around occupied burrows.

- Passive relocation of on-site owls may be implemented during the non-breeding season after coordinating with CDFW. Passive relocation shall be accomplished by installing one-way doors on the entrances of burrows located within 50 meters of the project site. The one-way doors shall be left in place for 48 hours to ensure that the owls have left the burrow.
- For each burrow affected by project construction, two alternate unoccupied natural or artificial burrows shall be provided outside of the 50-meter buffer zone (CDFW, 2012). The alternate burrows shall be monitored daily for one week to confirm that owls have moved and acclimated. When the project is completed the habitat shall be restored and the exclusionary devices shall be removed from the natural burrows.

BIO-6: Prior to project implementation, a habitat assessment shall be conducted by a qualified biologist to determine the potential for the Mohave ground squirrel to occur within and adjacent to the project site. If the habitat assessment determines that there is potential for occurrence within 300 feet of the construction zone, then the PRWA has two options:

1) Assume the Mohave ground squirrel is present and mitigate for the loss of suitable habitat at a 2:1 ratio, or a ratio approved by the CDFW. Mitigation may be achieved by purchasing suitable habitat off site or through payment of fees to a mitigation bank or other established and approved program (e.g., in-lieu fee program). The location or payment structure shall be determined and approved by CDFW prior to implementation of the project.
2) Conduct surveys to determine presence or absence. Surveys that include trapping shall be authorized by a Memorandum of Understanding (MOU) with the CDFW or by other permit as determined by the CDFW, and be undertaken only by a qualified biologist. Surveys shall be conducted in accordance with the latest CDFW *Mohave Ground Squirrel Survey Guidelines* (currently January 2003; minor process and contact changes in July 2010). If no Mohave ground squirrels are trapped during the protocol surveys, no more actions are required. However, if presence is determined, mitigation will include compensation of habitat loss as specified in Number 1 above.

BIO-7: The PRWA shall have a qualified biologist conduct a pre-construction plant survey to determine and map the location and extent of special-status plant species populations within the construction right-of-way. The project shall minimize impacts on special-status plant species by reducing the construction right-of-way through areas with documented occurrences of special-status plant species if any are found.

- If special-status plant populations are identified within the construction right-of-way, the construction contractor shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum

necessary to implement the project that also would minimize impacts on special-status plants.

- If special-status plant populations are identified within the construction right-of-way, the construction contractor shall salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff for use in the restoration efforts.
- If special-status plant populations are identified within the construction right-of-way, the PRWA shall prepare and implement a special-status species salvage and replanting plan, for unavoidable temporary impacts on special-status plants. The salvage and replanting plan shall include measures to salvage, replant, and monitor the construction zone until native vegetation is re-established under the direction of CDFW and USFWS, as appropriate.

BIO-8: Construction crews shall avoid permanently altering streambeds and banks of Little Rock Wash and all features of the wash shall be restored to previous conditions once construction is complete. The PRWA shall consult with CDFW to determine if a Streambed Alteration Agreement is required. Impacts to the streambed of Little Rock Wash shall be mitigated based on measures adopted in the Streambed Alteration Agreement, if required.

BIO-9: The PRWA shall implement the following measures to protect wildlife movement corridors:

- All night lighting shall be directed downward to reduce the effects of light pollution on adjacent areas that may be used by wildlife.
- To reduce the attractiveness of the project site for wildlife, water shall not be allowed to pond on the project site; and trash shall be stored in a sealable, wildlife-proof container and removed from the project site each week.
- Speed limits on the project site shall be 25 mph.

BIO-10: Efforts shall be made to prevent permanent native vegetation loss to the greatest extent feasible. If removal of Joshua trees is deemed unavoidable, then the operating agencies must take one of the following actions to fulfill obligations under provisions of the City of Palmdale's Joshua Tree and Native Desert Vegetation Preservation Ordinance (Chapter 14.04 of Title 14 of the Palmdale Municipal Code):

1. Obtain a desert vegetation removal permit from the City of Palmdale's landscape architect or his or her designee. The City currently maintains a minimum preservation standard of two (2) Joshua trees per gross acre, averaged for the gross site area covered by the development application. This standard can also be modified, as determined by the City, to reflect an appropriate preservation ratio as site conditions warrant. The terms, conditions, implementation, and location of these mitigation measures shall be determined through consultation with relevant resource agencies, including the CDFW.
2. Secure an exemption from the provisions of Chapter 14.04 of the Code, under Subsection (F) of 14.04.090, which identifies an exemption as "Removal of street trees from within

the public right-of-way, which in the opinion of the director of public works or his or her designee, will or may cause damage to public improvements."

BIO-11: To comply with Los Angeles County General Plan Open Space and Land Use elements, a Biota report shall be prepared for Phase 5 of the project that is located within SEA No. 49. The report must be prepared by a qualified biologist and submitted to the Los Angeles County Planning Department for review and approval by the Significant Ecological Area Technical Advisory Committee (SEATAC) prior to the initiation of Phase 5 of the project. The Biota report would include an analysis of the project's consistency with SEA Conditional Use Permit compatibility criteria and a mitigation and monitoring plan must be included in the report that identified measures to reduce the project's impacts on SEA No. 49.

9.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
5. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Setting

ESA cultural resources staff conducted a Phase I Cultural Resources Assessment in order to identify and evaluate the potential for any historical or archaeological resources that could be impacted as a result of the proposed project (Gonzalez and Ehringer, 2014). The study included: (1) archival research; (2) a California Native American Heritage Commission Sacred Lands File search; and (3) a pedestrian survey. In addition, previous studies that included the project area were consulted to inform this analysis (Bray, 2012; Wetherbee and Garcia, 2009). As a result, three historic-era archaeological resources (CA-LAN-1558H, CA-LAN-1609H, and CA-LAN-1613H) were identified immediately adjacent to (within 150 feet of) the project area.

Known Archaeological Resources

Resource CA-LAN-1588H is a historic-era archaeological site recorded in 1989 as a former homestead with a cement building foundation, a well, windmill mounts, and associated refuse scatters, and is located approximately 80 feet from the pipeline route. Observed artifacts appeared to date to between ca. 1890 and 1915. The site record also mentioned a historic-era refuse scatter that was located about 0.15 miles southeast from the documented site boundary, but could be related to the former homestead. The location of resource CA-LAN-1588H was relocated and the location of the site appears to have been completely developed with single family homes. The historic-era refuse scatter previously located 0.15 miles southeast of the site boundary could not be relocated; this area appears to have been heavily disturbed by recent grading and modern dumping activities and no historic-era artifacts were observed on the surface. This resource has not been evaluated for listing in the National Register of Historic Places (National Register) or California Register of Historical Resources (California Register).

Resource CA-LAN-1609H is a historic-era archaeological site recorded in 1989 as a former home-site with a well, pump-stand, tree-line, and cement irrigation pipes, and is located approximately 130 feet from the pipeline route. The site record noted that the home was no longer present, but the well was still in use at the time of recordation. Resource CA-LAN-1609H was relocated and although the area around the site has been developed, the condition of the site

appears to be consistent with previous recordations. This resource has not been evaluated for listing in the National Register or California Register.

Resource CA-LAN-1613H is a historic-era archaeological site recorded in 1989 as a former home-site with a cement slab, a well and pump-mount, fence-lines, a locust tree, and an associated refuse scatter, and is located approximately 74 feet from the pipeline route. Observed artifacts appeared to date to between ca. 1920 and 1950. The site record noted that the home-site was located within the Littlerock Wash area and appeared to have been destroyed by a flood. Resource CA-LAN-1613H was relocated and the condition of the site appears to be generally consistent with previous recordations; however, a few historic-era cans appear to have been transported into the project area due to fluvial processes related to Littlerock Wash. The site boundary was not updated, however, since these artifacts are not in their original locations and are out of context. This resource has not been evaluated for listing in the National Register or California Register.

A Sacred Lands File Search for the project performed by the Native American Heritage Commission (NAHC) on June 30, 2014, indicated that no documented sites of Native American traditional/cultural significance are located within or immediately adjacent to the project area.

Unknown Archaeological Resources

The results of archival research and pedestrian survey suggest that the project area could be sensitive for cultural resources. Numerous historic-era archaeological sites are immediately adjacent to and within the vicinity of project area, including three within 150 feet of the pipeline route. In addition, a review of historic maps and aerial photographs revealed that there has been human development and activity within and around the Project area since at least the 1930s. The project consists of trenching, which has the potential to unearth, expose, or disturb subsurface archaeological, historical, or Native American resources. Should archaeological resources be discovered, they may qualify as historical or unique archaeological resources under CEQA.

Paleontological Resources

Results of a paleontological resources records search through the Natural History Museum of Los Angeles County (LACM) indicates that no vertebrate fossil localities are known to be directly within the project area (Wetherbee and Garcia, 2009). The southwestern portion of the project area contains exposures of older Quaternary deposits and Plio-Pleistocene of the Anaverde Formation. The Anaverde Formation has yielded several localities in the area, including fossil specimens of elephants and horse. Older Quaternary deposits in the area have yielded fossil specimens of mastodont, horse, birds, carnivores, rabbits, and rodents. The remainder of the project contains surficial deposits of younger Quaternary Alluvium with older Quaternary deposits occurring at varying depths. These younger alluvial deposits typically do not contain significant fossil localities. Surface grading or shallow excavations in the younger Quaternary alluvium is unlikely to encounter significant vertebrate fossils. However, deeper excavations that extend into the older Quaternary alluvium or the Anaverde Formation in the southwestern portion project area may uncover significant fossil vertebrate remains.

Discussion

a) **Less than Significant with Mitigation.** A significant effect would occur if the project results in a substantial adverse change in the significance of a historical resource. Three historic-era archaeological resources were identified immediately adjacent to (within 150 feet of) the project area (CA-LAN-1558H, CA-LAN-1609H, and CA-LAN-1613H). While these resources have not been formally evaluated, they could potentially qualify as historical resources. However, the project would be limited to trenching within existing roadways and these three resources would not be directly impacted by the project.

However, there remains the possibility that as yet unidentified archaeological resources that may qualify as historical resources could be encountered as a result of project-related ground-disturbing activities. Impacts to unidentified archaeological resources that qualify as historical resources could constitute a substantial adverse change in the significance of a historical resource. With the incorporation of **Mitigation Measures CUL-1** and **CUL-2**, potential impacts to archaeological resources that qualify as historical resources would be reduced to less than significant.

b) **Less than Significant with Mitigation.** No archaeological resources were identified within the project site as a result of the cultural resources study; therefore no impacts to unique archaeological resources are anticipated. However, as mentioned above, the project involves ground-disturbing activities that could uncover resources qualifying as unique archaeological resources. With the incorporation of **Mitigation Measures CUL-1** and **CUL-2**, potential impacts to archaeological resources that qualify as unique archaeological resources would be reduced to less than significant.

c) **Less than Significant with Mitigation.** No sensitive fossil bearing formations are anticipated at or near the surface within the project site, although deeper ground disturbing activities could potentially intrude upon sensitive rock units and could cause impacts to unique paleontological resources. With the incorporation of **Mitigation Measure CUL-3**, potential impacts to paleontological resources would be reduced to less than significant.

d) **Less than Significant with Mitigation.** No known cemeteries or other burial places are known to exist within the project area and the proposed project is unlikely to disturb human remains. However, because the proposed project would involve earthmoving activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. With the incorporation of **Mitigation Measure CUL-4**, potential impacts to human remains would be less than significant.

Mitigation Measures

CUL-1: Pre-Construction Training. Prior to earthmoving activities, a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (U.S. Department of the Interior, 2008) shall conduct cultural resources sensitivity training for all construction personnel. Construction personnel shall be informed of the types of cultural

resources that may be encountered, and of the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains (see Mitigation Measure CUL-4). PRWA shall ensure that construction personnel are made available for and attend the training and shall retain documentation demonstrating attendance.

CUL-2: Inadvertent Archaeological Discoveries. In the event of the discovery of archaeological materials, the construction foreman shall immediately halt all work activities in the vicinity (within approximately 100 feet) of the discovery until it can be evaluated by a qualified archaeologist. After cessation of earthmoving activities, the construction foreman shall immediately contact PRWA. Work shall not resume until authorized by PRWA and the qualified archaeologist.

If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA, preservation in place is the preferred manner of mitigation. In the event preservation in place is demonstrated to be infeasible, and data recovery is determined to be the only feasible mitigation option, a detailed Cultural Resources Treatment Plan shall be prepared and implemented by a qualified archaeologist in consultation with PRWA. PRWA shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in origin. Archaeological materials recovered during any investigation shall be curated at an accredited facility. The report(s) documenting implementation of the Cultural Resources Treatment Plan shall be submitted to PRWA and SCCIC.

CUL-3: Inadvertent Paleontological Discoveries. In the event fossil materials are exposed during ground disturbing activities, work (within 100 feet of the discovery) shall be halted until a qualified paleontologist meeting the criteria established by the Society for Vertebrate Paleontology is retained to assess the find. If the find is identified as significant, appropriate treatment as determined by the paleontologist shall be implemented prior to the re-commencement of ground disturbance in the area. A report documenting the methods and results of the treatment shall be prepared and submitted to PRWA and filed with the local repository.

CUL-4: Inadvertent Human Remains Discoveries. If human remains are encountered, PRWA shall halt work in the vicinity (within 100 feet) of the find and contact the Los Angeles County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission shall be notified, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code Section 5097.98 (as amended by AB 2641). The Native American Heritage Commission shall designate a Most Likely Descendant for the remains per Public Resources Code Section 5097.98. Until the landowner has conferred with the Most Likely Descendant, PRWA shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.

9.6 Geology, Soils, and Seismicity

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
6. GEOLOGY, SOILS, AND SEISMICITY — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) 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? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Setting

Antelope Valley is a 2,400-square mile triangular basin bounded on the northwest by the Tehachapi Mountains, on the southwest by the San Gabriel Mountains, and on the east by a series of buttes and hills that roughly parallel the Los Angeles/San Bernardino County Line. The Antelope Valley is a large sediment-filled structural depression that is a down-faulted block, located between the Garlock and San Andreas faults (City of Palmdale, 2009b). In general, soils within the Valley are derived from downslope migration of loess and alluvial materials, mainly from granitic rock sources originating along the eastern slopes of the Tehachapi and San Gabriel Mountains (Regional Water Management Group, 2007).

Foothills of the San Gabriel and Sierra Pelona Mountains line the southern and western boundaries of the Recycled Water Facilities Plan study area. The study area is located within the flat basin area, which is filled with unconsolidated alluvium and lacustrine deposits. The alluvial deposits consist of unconsolidated to moderately indurated (hardened) poorly sorted gravel, sand, silt, and clay. The lacustrine deposits are primarily thick layers of blue-green silty clay and brown

clay with interbedded sand and silty layers. These deposits accumulated in a lake or marsh which covered large parts of the Antelope Valley at the end of the Pleistocene Epoch. Due to the dry climate, soils do not contain significant amounts of organic matter and have a low intrinsic fertility. These soils have a low to moderate shrink-swell potential and low to moderate subsidence potential (City of Palmdale, 1993).

A review of the California Geological Survey (CGS) Seismic Hazard Zones Map (California Department of Conservation, 2003a, 2003b, 2008) shows the San Andreas Fault Zone traversing in a southeast-trending alignment to the southwest of the study area (see **Figure 6**). The San Andreas Fault Zone is designated as an Alquist-Priolo special study area requiring development setbacks. None of the proposed project facilities would be within the Alquist-Priolo Fault Zone (CDOC, 1979).

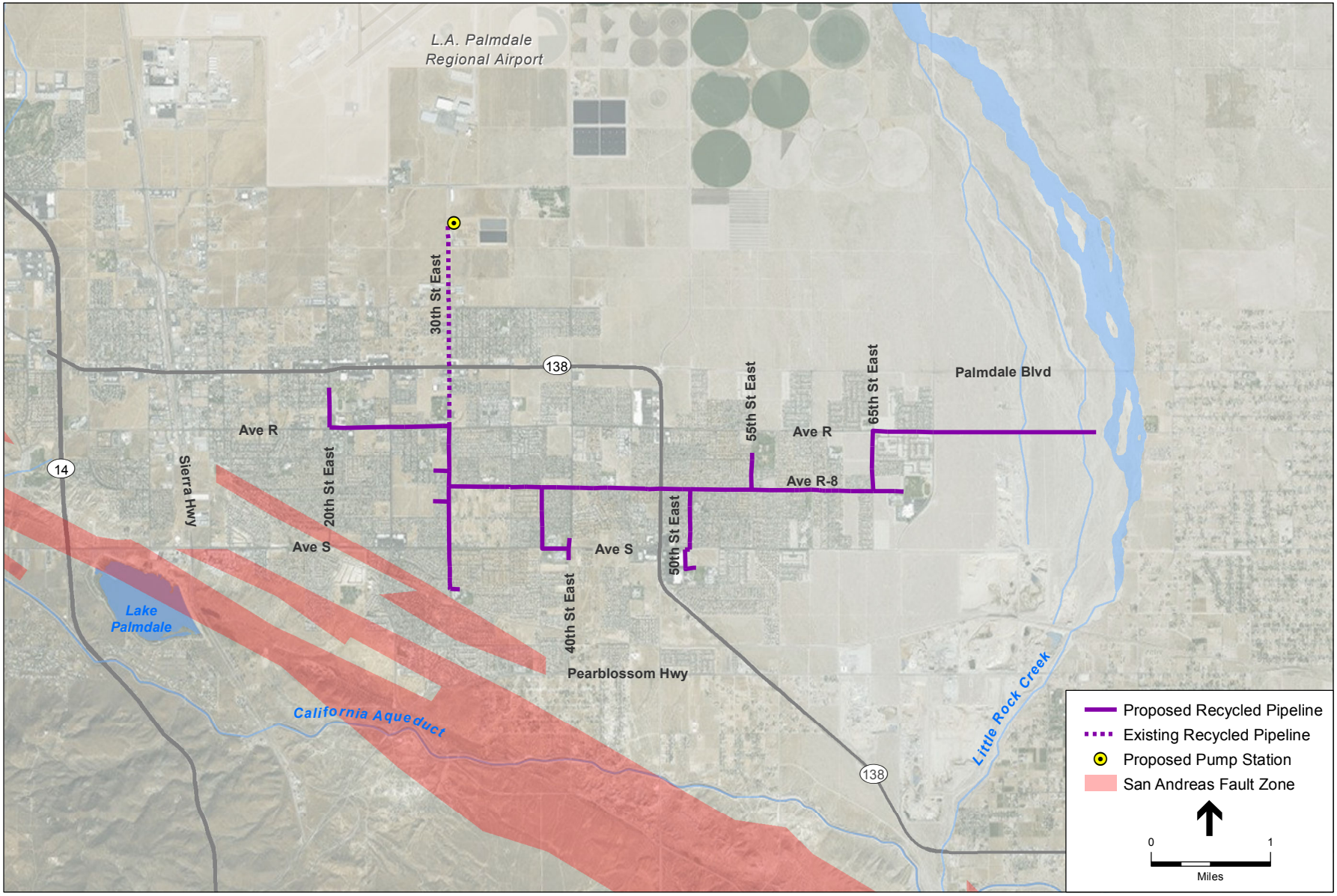
The State's Seismic Hazard Zones Map also identifies liquefaction potential along Little Rock Wash and several areas south and west of the study area as having potential for earthquake induced landslides.

Discussion

a.i) **Less Than Significant.** The Alquist-Priolo Earthquake Fault Zoning Act requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development and prohibit construction on or near active fault traces to reduce hazards associated with fault rupture. The Alquist-Priolo Earthquake Fault Zones are the regulatory zones that include surface traces of active faults. According to the Safety Element of the City of Palmdale's General Plan (City of Palmdale, 1993), the project site does not lie within a currently delineated Alquist-Priolo Earthquake Fault Zone (refer to Figure 6). Therefore, the proposed project would not adversely affect people or structures due to rupture of a known fault. Impacts would be less than significant.

a.ii) **Less Than Significant.** The proposed project is located in a seismically active area, as is all of southern California, and has the potential to experience strong ground shaking. The nearest known active fault to the project site is the San Andreas Fault Zone, a "Type A" fault, located approximately xx miles southwest of the project site (see Figure 6). A major earthquake associated with this fault could result in moderate to severe ground shaking in the project area and would be a potential hazard to the proposed project. Damage to water pipelines and aboveground structures associated with the proposed project could be expected as a result of ground shaking during a seismic event.

The California Building Code (CBC) (California Code of Regulations (CCR) Title 24) provides engineering design criteria for grading, foundations, retaining walls, and structures within zones of seismic activity. The procedures and design limitations for the design of infrastructure are based on site characteristics, configuration, structural system height, and seismic zoning. Seismic zones are mapped areas that are based on proximity to known active faults, the potential for future earthquakes, and intensity of seismic



SOURCE: ESRI, California Department of Conservation Alquist-Priol

Figure 6

Project Proximity to San Andreas Fault Zone

shaking. Seismic zones range from 0 to 4, with areas mapped as Zone 4 being potentially subject to the highest accelerations due to seismic shaking and the shortest recurrence levels. According to the CBC, all of Palmdale is within Seismic Zone 4. The proposed project would be designed to include all applicable CAL/OSHA standards and technical specifications required by the seismic safety codes of the CBC for Seismic Zone 4, in compliance with CCR Title 24, to minimize impacts due to seismic ground shaking. Impacts would be less than significant.

a.iii) **Less Than Significant with Mitigation.** Liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and behave as a fluid as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, buildings with shallow foundations, and levees. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 40 feet. Saturated unconsolidated alluvium with earthquake intensities greater than Modified Mercalli Intensity (MMI) VII may be susceptible to liquefaction. This would include areas with shallow perched groundwater.

A review of the CGS Seismic Hazard Zones Maps (CGS, 2003) indicates Phase 5 of the proposed recycled water pipeline would be located within zones of potential liquefaction in Littlerock Creek. Adherence to the CBC code, as well as implementation of **Mitigation Measure GEO-1** would reduce any impacts regarding liquefaction to less than significant levels.

a.iv) **No Impact**. A landslide is a mass of rock, soil, and debris displaced down-slope by sliding, flowing, or falling. The susceptibility of land (slope) failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. Factors that decrease resistance to movement in a slope include pore water pressure, material changes, and structure. Removing the lower portion (the toe) of a slope decreases or eliminates the support that opposes lateral motion in a slope. Shaking during an earthquake may lead materials in a slope to lose cohesion and collapse.

A review of the CGS Seismic Hazard Zones Maps (CGS, 2003a, 2003b, 2008) indicates that the project is not located in an area that is considered susceptible to an earthquake-induced landslide. Therefore, there would be no impact to project components due to landslides.

b) **Less than Significant with Mitigation**. Project construction would result in land disturbance greater than one acre. During construction, excavation and grading activities would expose and disturb surface soils. Soils in the region are highly susceptible to water or wind erosion or both. Therefore, during project construction, short-term losses of topsoil and subsoil due to wind and water erosion could be substantial. Implementation of **Mitigation Measure GEO-2** would ensure water and wind erosion of soils would be minimized to less than significant levels.

c) **No Impact.** The topography in the vicinity of the project components is generally flat; there are no potential non-seismic impacts related to landslides or liquefaction. Land subsidence and surface fissures can occur as a result of groundwater extraction. Underlying soils can compact when water is removed. Fissures can form when groundwater levels are lowered. The extraction of mineral or oil resources can also result in subsidence. Operation of the proposed project would not increase groundwater extraction and would not lower groundwater levels. The use of recycled water in the Antelope Valley would provide an offset to potable water demand that could reduce demand for groundwater extraction. In addition, the potential use of recycled water for groundwater recharge would prevent declines in groundwater levels. The proposed project would not cause soils to become unstable or result in land subsidence or surface fissures. There would be no impact.

d) **Less Than Significant with Mitigation.** None of the soils in the project area are classified as expansive according to Table 18-1B of the Uniform Building Code. However, local areas with expansive soils could be encountered. **Mitigation Measure GEO-1** requires geologic investigations to be conducted for the specific locations for the proposed pipeline alignments prior to construction. The geologic investigation would include an assessment of the potential for site specific expansive soils. If expansive soils are found, recommendations made as part of the geological investigation would be incorporated into the project design. Implementation of **Mitigation Measure GEO-1** would reduce impacts to project facilities due to expansive soils to less than significant levels.

e) **No Impact.** The proposed project would facilitate the delivery of recycled water for non-potable uses and would not necessitate use of septic tanks or alternative wastewater disposal systems. In this context, no impacts would occur and no mitigation is required.

Mitigation Measures

GEO-1: Prepare Geologic Report. Prior to approval of construction plans for the project, a design-level geotechnical investigation, including collection of site specific subsurface data shall be completed. The geotechnical investigation shall identify density profiles, approximate maximum shallow groundwater levels, a characterization of the vertical and lateral extent of the saturated sand/silt layers that could undergo liquefaction during strong ground shaking, and development of site-specific design criteria to mitigate potential risks. The investigation also shall identify appropriate engineering considerations, as recommended by a certified engineering geologist or registered geotechnical engineer for planned facilities, including engineering considerations to mitigate the effects of expansive soils if found. Recommendations made as a result of the investigation shall become part of the proposed project

GEO-2: Implement a Stormwater Pollution Prevention Plan to Control Erosion. To control water and wind erosion during construction of the project, PRWA shall prepare a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall prescribe temporary Best Management Practices (BMPs) to control wind and water erosion during and shortly after construction of the project and permanent BMPs to control erosion and sedimentation once construction is complete.

The SWPPP would include soil erosion and sediment control measures that could include, but not be limited to, sediment barriers and traps, silt basins, and silt fences.

9.7 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
7. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Setting

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities, which alter the composition of the global atmosphere.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" (CO_2e) measures. There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of GHG would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which

requires 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.

On March 18, 2010, the California Office of Planning and Research (OPR) submitted amendments to the *CEQA Guidelines* for GHG emissions, as required by Public Resources Code section 21083.05 (Senate Bill 97) became effective. These *CEQA Guideline* amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments are relatively modest changes to various portions of the existing *CEQA Guidelines*.

Discussion

a) **Less than Significant.** The proposed project would primarily contribute to global climate change as a result of emissions of GHGs, primarily CO_2, emitted during construction activities associated with the installation of the recycled water pipeline and pump station. Once construction activities have been completed, operation of the proposed project would only generate minimal GHG emissions sources from vehicle emissions associated with worker trips to and from the project area for routine maintenance and inspection work. However, because these trips would only occur periodically every month, these GHG emissions would be negligible. However, operation of the newly installed pump station would be powered through electricity obtained from the regional grid distributed by Southern California Edison (SCE). The consumption of electricity for operation of the pump station would represent an indirect source of GHG emissions that would be generated offsite.

GHG impacts are considered to be exclusively cumulative impacts (CAPCOA, 2008); there are no non-cumulative GHG emission impacts from a climate change perspective. Thus, the purpose of this GHG analysis is to determine whether the contribution of GHG emissions by the proposed project would be cumulatively considerable.

As was conducted for the proposed project's air quality analysis in Section 9.3 (Air Quality), the project's construction-related GHG emissions were estimated for equipment exhaust, truck trips, and worker commute trips using CalEEMod. The construction of the entire project would occur in six separate and sequential phases, with Phase 1 having been already constructed. The construction of Phases 2 through 6 is anticipated to occur over a 16-month period, beginning in fall of 2015. For the purpose of this analysis, both the project's peak daily GHG emissions (during each construction phase) and annual construction GHG emissions (between 2015 and 2016) were estimated and evaluated against the AVAQMD's 548,000 pounds per day and 100,000 tons per year CO_2e thresholds, respectively. The annual operational GHG emissions generated from electricity consumption by the pump station were also estimated and compared to the AVAQMD's annual CO_2e threshold.

The project's estimated peak daily and annual GHG emissions generated during construction are shown in **Table 5**. As shown, neither the peak daily or annual GHG emissions generated by the project would exceed the applicable AVAQMD thresholds for

CO_2e emissions. As such, impacts associated with the project's construction-related GHG emissions would be less than significant.

TABLE 5
ESTIMATED PROJECT CONSTRUCTION GHG EMISSIONS

Emission Source	Peak Daily Emissions of CO_2e (pounds/day)	Annual Emissions of CO_2e (tons/year)[a]
Construction		
2015		
Phase 2 – Pipeline & Pump Station	11,644	216
Phase 3 – Pipeline	8,504	59
Peak Daily & Total Annual Emissions in 2015	**11,644**	**275**
AVAQMD CO_2e Threshold	*548,000*	*100,000*
Significant Impact?	No	No
2016		
Phase 3 – Pipeline	8,417	93
Phase 4 – Pipeline	8,434	63
Phase 5 – Pipeline	8,278	120
Phase 6 – Pipeline	8,428	53
Peak Daily & Total Annual Emissions in 2016	**8,434**	**329**
AVAQMD CO_2e Threshold	*548,000*	*100,000*
Significant Impact?	No	No

NOTES: CO_2e= carbon dioxide equivalent; see Appendix A for CalEEMod model outputs.

[a] The annual project construction GHG emissions were converted from metric tons per year in the CalEEMod model outputs to tons per year for evaluation against the AVAQMD's annual CO_2e threshold.

With respect to the project's operational emissions, the indirect GHG emissions generated by the proposed project as a result of electricity consumption to power the newly installed pump station were estimated in this analysis by determining the amount of electrical power required to operate the pump station and then applying SCE emissions factors for the GHG components (i.e., CO_2, CH_4, and N_2O) obtained from the CalEEMod model. Based on information provided by PRWA, the proposed project would require a maximum annual electricity use of 1,776.09 megawatt hours (MWh) due to operation of the pump station. The project's estimated operational GHG emissions are shown in **Table 6**.

As shown in Table 6, the proposed project's annual operational GHG emissions would be approximately 563 tons of CO_2e per year. Thus, the project's annual GHG emissions would not exceed the AVAQMD's 100,000 tons of CO_2e per year threshold. While additional GHG emissions would also be generated by mobile sources associated with worker trips for maintenance and inspection work, these trips would only occur

TABLE 6
ESTIMATED PROJECT OPERATIONAL GHG EMISSIONS

Emission Source	Proposed Project Emissions CO_2e (tons/year)
Operation	
Energy Consumption	562.54
AVAQMD CO_2e Threshold	*100,000*
Significant Impact?	No

NOTES: CO_2e= carbon dioxide equivalent.

periodically over the course of a month and thus the annual emissions would be minimal. Furthermore, as the daily operational GHG emissions generated by the proposed project would be less than the project's daily construction GHG emissions, the daily operational GHG emissions would also not exceed the AVAQMD's significance threshold for CO_2e emissions. Therefore, the proposed project would not result in the generation of substantial levels of GHG emissions and would not result in emissions that would adversely affect the statewide attainment of GHG emission reduction goals of AB 32. This impact would be less than significant.

b) **Less than Significant.** The proposed project would generate temporary construction-related GHG emissions and minimal GHG emissions during operations. As the proposed project only involves the installation of a pipeline and a pump station for the collection and transport of recycled water, implementation of the project would not result in, or induce, growth in the project area that has not been accounted for by the City of Palmdale or Los Angeles County (See Section 9.13, Population and Housing). Consequently, no growth-inducing development or land use that would generate GHG emissions would occur under the project. Developing recycled water use in the PRWA's service area would accomplish a number of benefits, including: reducing dependence on the SWP and groundwater supplies; improving water supply reliability; preserving potable water supplies; and providing a potential source of supply for groundwater recharge. Thus, as a recycled water conveyance infrastructure project that serves to use recycled water to offset potable water demand and diversity the region's water supply options, the proposed project would aid in reducing GHG emissions associated with water transport to the PRWA service area.

Overall, implementation of the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, this impact would be less than significant.

Mitigation Measures

None required or recommended.

9.8 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
8. HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) 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?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☒	☐	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) 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?	☐	☒	☐	☐

Setting

The U.S. Air Force Plant 42 and LA-Palmdale Regional Airport properties, which include industrial and aerospace uses, are located to the north of the project area, approximately 0.7 miles from the pump station at the PWRP and approximately 1.75 miles from the nearest proposed recycled water pipeline at 20th Street East and Avenue R. In the project area, dense urban development is also interspersed with large expanses of vacant land. Hazardous materials presently used in the project area include household hazardous materials common to residential areas, including fertilizers, fuels, and household cleaning products.

A limited regulatory agency records search was performed for the study area. The records search included the State Water Resources Control Board (SWRCB) GeoTracker database and the California Department of Toxic Substances Control (DTSC) EnviroStor database. These lists are a compilation of information from various sources listing potential and confirmed hazardous

waste and hazardous substances sites in California (SWRCB, 2014; DTSC, 2007a). The database search revealed multiple listed and active sites within the project area. The U.S. Air Force Plant 42 is listed as an active State response site on the "Cortese List," which lists hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code (DTSC, 2007b). A summary report of the database search is provided in **Appendix C**.

Discussion

a) **Less than Significant.** Construction of the proposed project would temporarily increase the transport of hazardous materials that are used in construction activities. Limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials, would be brought onto the project site, used, and stored during the construction period. The types and quantities of materials to be used would not be significantly different than those used by local residents. Operation of the proposed project would involve the operation of recycled water pipelines and a pump station. Operation of these facilities would entail the routine transportation, use, storage, and/or disposal of minor amount of hazardous materials. Limited quantities of diesel fuel and hydraulic fluids may be used for operation of the pump station standby generator.

Once constructed, the proposed project would supply high quality recycled water for landscape irrigation and potentially groundwater recharge. The California Department of Public Health (CDPH) finds that the use of recycled water in accordance with Title 22 (California Code of Regulations §60001 et seq) is presumed to have a less than significant impact on public health and safety. Further, the PRWA will ensure that all hazardous materials and hazardous wastes used in construction and operation are stored, handled, and used in a manner consistent with relevant and applicable federal, state, and local laws. In this context, potential impacts to the public or the environment through the routine transport, use, or disposal of hazardous materials would be less than significant.

b) **Less than Significant with Mitigation.** Construction and operation of the proposed project could create an additional significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. The potential exists for accidents to occur during construction activities and routine operations and maintenance, which could result in the release of hazardous materials into the environment. Construction of the proposed project could also result in the exposure of construction workers and residents to potentially contaminated soils or groundwater due to improper removal of existing hazardous materials on site and/or leakage from existing septic disposal systems in the area. With the incorporation of **Mitigation Measure HAZ-1** and **HAZ-2**, potential impacts would be considered less than significant.

c) **Less than Significant with Mitigation.** Due to the project goal of providing tertiary recycled water for irrigation of existing and planned school yards, construction of the proposed project facilities would occur within one-quarter mile (1,320 feet) of the following schools:

- Cactus Elementary
- Wildflower Elementary
- Desert Rose Elementary
- Mesquite Elementary
- Chaparral Elementary
- Buena Vista Elementary
- Mesa Intermediate
- Shadow Hills Intermediate
- Knight High School
- Palmdale High School
- Los Amigos School
- Joshua Hills Elementary School

Although the proposed project would have the potential to emit hazardous emissions or handle hazardous materials, substances, or waste within a quarter mile of an existing or proposed school, the anticipated level of hazard is considered low. Further, the PRWA would ensure that all hazardous materials and hazardous wastes used in construction and operation are stored, handled, and used in a manner consistent with relevant and applicable federal, state, and local laws. With the incorporation of **Mitigation Measure HAZ-1** and **HAZ-2**, potential impacts would be considered less than significant.

d) **Less than Significant with Mitigation.** The records search on the SWRCB GeoTracker database and the DTSC EnviroStor database revealed multiple listed and active sites in the project vicinity (see Appendix C). There are no sites identified on the California Department of Toxic Substance Control website that depicts potential sources of soil contamination that could be encountered during excavation. However, U.S. Air Force Plant 42 is on the "Cortese List" – which lists hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code – as an active State response site. Due to the project proximity to Air Force Plant 42, as project construction commences, it is possible that contaminated soil and/or groundwater could be encountered during excavation thereby posing a health threat to construction workers, the public, and the environment. Therefore, **Mitigation Measure HAZ-1** would be implemented to reduce the impact to a less than significant level.

e) **Less than Significant with Mitigation.** Los Angeles County Airport Land Use Commission (ALUC) has prepared the Los Angeles County Airport Land Use Plan (ALUP), which identifies the Airport Influence Area (AIA) for each public use airport in the County, including Palmdale Regional Airport (ALUC, 2004). The proposed recycled water pipelines would not be located within the AIA for Palmdale Regional Airport; however the PWRP is within the AIA, and thus so would be the proposed pump station. The proposed project would not construct any wildlife hazard attractants that would jeopardize the safety of aircraft operations. However, construction of the proposed pump station could introduce safety hazards for both workers at the construction sites and at the airports. In accordance with **Mitigation Measure HAZ-3**, coordination with airport agencies and staff would be required to ensure proper protections measures are integrated into a construction safety program and implemented by the construction contractor. Additional discussion regarding project compatibility with airport operations and pre-construction coordination with airport agencies, such as Los Angeles World Airports (LAWA), Caltrans, and the FAA, is presented in Section 9.10, Land Use and Planning.

f) **No Impact.** The proposed project is not located within the vicinity of a private airstrip. As a result, no impacts would occur and no mitigation is required.

g) **Less than Significant with Mitigation.** During installation of the new recycled water pipelines within roadway ROWs, construction equipment would temporarily block access to roadways and driveways for emergency vehicles. Once construction is completed, operation of the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With the incorporation of **Mitigation Measure HAZ-4**, potential impacts associated with interference with emergency response protocols would be minimized to a less than significant level.

h) **Less than Significant with Mitigation**. The proposed project facilities are located primarily within paved and unpaved roadway ROWs and immediately adjacent vacant lands, including Phase 5 of the recycled water pipeline that runs through open space characterized by Joshua tree woodland. Lands along the pipeline alignments alternate between urbanized parcels (residential, commercial, and industrial) and undeveloped desert lands. These areas may be susceptible to wildland fires as construction of the proposed project requires equipment and activities that use petroleum fuels and oil and could result in accidental spills leading to fire-related hazards. According to the California Department of Forestry and Fire Protection (CAL FIRE), the proposed project is not located within a Very High Fire Hazard Severity Zone (CAL FIRE, 2011). Nonetheless, use of spark-producing construction machinery within areas of Moderate Fire Hazard could create hazardous fire conditions and expose people to wildfire risks. As such, **Mitigation Measure HAZ-5** would be implemented to reduce potential impacts to less than significant.

Mitigation Measures

HAZ-1: Contingency Plan for Contaminated Soil and/or Groundwater. If contaminated soil and/or groundwater are encountered or suspected during project construction, work shall be halted in the area, and the type and extent of the contamination shall be identified. A contingency plan to dispose of any contaminated soil or groundwater will be developed through consultation with appropriate regulatory agencies. If dewatering or hydrostatic testing of the pipeline is to occur during project construction, the water will be discharged to the local wastewater treatment plant rather than released into any drainage system that would require prior approval from the Lahontan Regional Water Quality Control Board.

HAZ-2: Hazardous Materials Management and Spill Prevention and Control Plan. Before commencement of construction the PRWA shall require its construction contractor to prepare a Hazardous Materials Management and Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities, and shall establish policies and procedures according to federal and California Occupational Safety and Health Administration (OSHA) regulations for hazardous materials. Elements of the Plan shall include, but not be limited to, the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

HAZ-3: Coordination with Airport Agencies. PRWA shall coordinate with appropriate agencies (such as LAWA and FAA) and staff to ensure a safety program is developed and implemented during construction of the proposed project.

HAZ-4: Develop and Maintain Emergency Access Strategies. In conjunction with Mitigation Measure TRA-1: Prepare and Implement Traffic Control Plan (see *Section 3.15, Transportation*), PRWA shall require its construction contractor to develop comprehensive strategies for maintaining emergency access. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches and identification of alternate routing around construction zones. Also, police, fire, and other emergency service providers shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures.

HAZ-5: Prevention of Fire Hazards. During construction, the PRWA shall require that all staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the proposed project, contractors shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

9.9 Hydrology and Water Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
9. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) 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)?	☐	☒	☐	☐
c) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
e) 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?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) 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?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i) 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?	☐	☐	☒	☐
j) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

a/f) **Less Than Significant with Mitigation.** Operation of the proposed recycled water pipelines could result in cross contamination of potable water pipelines, which could result in reduced water quality and potential public health concerns. Currently all areas considered for irrigation with recycled water are being irrigated with potable water and thus have potable water pipes tied into their irrigation systems. To avoid cross-contamination of potable water with recycled water, backflow prevention devices would be required in accordance with CCR Title 17, Group 4, Article 2, Protection of Water

System. Additionally, the Health and Safety Code, Division 104. Environmental Health Services, Part 12. Drinking Water, Chapter 5. Water Equipment and Control, Article 2. Cross Connection Control by Water Users, Section 116815 states: "All pipes installed above or below ground, on or after June 1, 1993, that are designed to carry recycled water, shall be colored purple or distinctively wrapped with purple tape."

In addition, minimum separation standards for potable and non-potable water pipelines are included in CCR Title 22, Division 4, Chapter 16, California Waterworks Standards, Article 4, Materials and Installations of Water Mains and Appurtenances. In accordance with Section 64572, Water Main Separation, all proposed recycled water pipelines would have at least a 10 foot horizontal separation and one (1) foot vertical separation from any parallel potable water mains. Incorporation of **Mitigation Measures HYDRO-1** through **HYDRO-5** would reduce any potential risks of water quality contamination to less than significant levels.

In addition, operation of the proposed project would be subject to conditions imposed by the Lahontan Regional Water Quality Control Board (RWQCB) pursuant to Water Recycling Requirements (WRRs) and Waste Discharge Requirements (WDRs). Recycled water use associated with the proposed project would comply with the California Department of Public Health (CDPH) recycled water regulations contained in Title 22 of the CCR. Recycled water provided by the PWRP would be treated to disinfected tertiary levels. As such, the product recycled water may be used for end use categories, including but not limited to the following M&I applications: landscape irrigation of parks, schools, golf courses, freeways, greenbelts, cemeteries, and landfills; landscape impoundments; fire suppression; city maintenance and street cleaning operations; culvert jetting; and construction applications, such as dust control. The recycled water end uses identified for the proposed project are included in the Title 22 regulations (see Section 2.2). To be used as a source supply for these designations, the reclaimed effluent would at all times be adequately oxidized, clarified, filtered, and disinfected effluent.

However, there is the concern for water quality impacts at the recycled water end user sites. Of particular concern is the impact to surface water and groundwater quality that could result due to the higher levels of TDS, nitrogen, and other nutrients in the recycled water relative to potable water. The over-application of recycled water would have the potential to affect surface water quality if this resulted in surface ponding or direct runoff to local creeks or other water bodies.

To address these water quality concerns SWRCB adopted a statewide General Permit for landscape irrigation uses of recycled water, pursuant to AB 1481 in July 2009 (SWRCB Water Quality Order No. 2009-0006-DWQ, General Waste Discharge Requirements For Landscape Irrigation Uses Of Municipal Recycled Water (General Permit)). The Landscape Irrigation General Permit states that landscape irrigation with recycled water is a viable strategy to reduce potable water demand. Specified uses of recycled water considered "landscape irrigation" projects include any of the following:

i. Parks, greenbelts, and playgrounds;
ii. School yards;
iii. Athletic fields;
iv. Golf courses;
v. Cemeteries;
vi. Residential landscaping, common areas;
vii. Commercial landscaping, except eating areas;
viii. Industrial landscaping, except eating areas; and
ix. Freeway, highway, and street landscaping.

To obtain coverage under this Landscape Irrigation General Permit, PRWA would need to submit a Notice of Intent (NOI) form and Operations & Maintenance Plan. The Landscape Irrigation General Permit includes requirements for recycled water treatment standards and requires producers and distributors of the recycled water to satisfy applicable requirements of the State Recycled Water Policy. Use of recycled water in accordance with this General Permit would ensure protection of public health and the environment, including water quality.

The SWRCB has stated in its adopted Recycled Water Policy (January 22, 2013) that the discharge of salts and nutrients to groundwater can be reasonably controlled by applying water at agronomic rates for recycled water landscape irrigation projects (SWRCB, 2013). Irrigation of landscapes at agronomic rates also reduces impacts to surface waters by reducing the potential for ponding and recycled water runoff. This nutrient management practice would be sufficient to protect beneficial uses and water quality as prescribed in applicable basin plans, water quality control plans, and water quality control policies.

The SWRCB has acknowledged that use of recycled water for irrigation or other water supply augmentation can affect concentrations of salts and nutrients in groundwater basins, in excess of the water quality objectives established in Basin Plans. The regulation of recycled water itself is not adequate to address this issue; rather, SWRCB is encouraging every region in California to develop a salt/nutrient management plan by 2015. Because each groundwater basin or watershed is unique, the plan detail and complexity will depend on the extent of local salt and nutrient problems. The Antelope Region has drafted a Salt and Nutrient Management Plant (SNMP). The SNMP for the Antelope Valley details groundwater quality in the region, the salt and nutrient loading throughout the region, and methods for monitoring and managing salt and nutrient levels. The recommended groundwater monitoring program was developed based on the anticipated use of recycled water in the Antelope Valley.

The SNMP is currently in draft form and pending approval by the Antelope Valley Regional Water Management Group (RWMP). The RWMP will seek adoption of the SNMP by the Lahontan RWQCB. The RWMP stakeholders, including PWD and the City

of Palmdale, will collaborate as necessary with the RWQCB staff to prepare the SNMP for adoption into the Water Quality Control Plan for the Lahontan Region (Basin Plan). The process may include a public hearing, an environmental analysis, presentation of the SNMP to the Lahontan RWQCB, and other related activities.

The proposed use of recycled water for landscape irrigation for SPOs and LMDs would be in accordance with the Landscape Irrigation General Permit, State Recycled Water Policy, and Antelope Valley SNMP, which would ensure that water quality standards are met and that water quality would not be degraded. The potential use of recycled water for groundwater recharge in Littlerock Creek would be contingent upon the results of PWD's Feasibility Study. The potential water quality effects associated with recharging recycled water in Littlerock Creek have been previously evaluated pursuant to CEQA at a program level as part of the North Los Angeles/Kern County Regional Recycled Water Project (Final PEIR certified in November 2008; Waterworks No. 40, 2008) and PWD's Strategic Water Resources Plan (Final PEIR certified in July 2012; PWD, 2012). Any future implementation of groundwater recharge in Littlerock Creek would be subject to additional assessment pursuant to CEQA, including public circulation of a CEQA document that provides details of the project design and operation and assesses the location-specific environmental impacts.

b) **Less Than Significant with Mitigation.** The proposed project would replace potable water with recycled water for certain end uses, thereby reducing existing and future demand for potable water. Operation of the proposed project may result in a direct net increase in aquifer volume due to the proposed groundwater recharge end use. The potential effects of groundwater recharge in Littlerock Creek have been previously evaluated pursuant to CEQA at a program level as part of the North Los Angeles/Kern County Regional Recycled Water Project (Final PEIR certified in November 2008; Waterworks No. 40, 2008) and PWD's Strategic Water Resources Plan (Final PEIR certified in July 2012; PWD, 2012). Implementation of Phase 5 of the proposed recycled water pipeline would be contingent upon the results of PWD's Feasibility Study. Any future implementation of groundwater recharge in Littlerock Creek would be subject to additional assessment pursuant to CEQA, including public circulation of a CEQA document that details of the project design and operation and assesses the location-specific environmental impacts.

Construction of the recycled water pipelines could potentially meet shallow or perched groundwater. Groundwater levels and the depth of excavation vary throughout the proposed project area. If shallow groundwater is met, dewatering would be required. Dewatering operations would include pumping the groundwater and discharging to the local storm drain system. Discharge water could potentially degrade surface water quality with materials used during typical construction activities, such as silt, fuel, grease or other chemicals. This could be a potentially significant impact; however, impacts would be temporary. Implementation of **Mitigation Measure HYDRO-6** would reduce the impact of construction dewatering to surface water quality to less than significant levels.

c) **Less Than Significant with Mitigation.** During construction of the proposed project, excavated soils would have the potential to erode and be transported to down gradient areas, potentially resulting in water quality standard violations. Construction of pipelines would require excavation of trenches and temporary stockpiling of soils. In the event of heavy rain, erosion of the stockpiles may occur resulting in scouring and sedimentation of local drainages, particularly during construction of Phase 5 of the recycled water pipeline near Littlerock Creek. Additionally, the storm water passing through the construction sites has the potential to pick up any chemicals from the staging site itself (such as fuels or oil from construction equipment), which may pass into the local storm water collection system, impacting water quality.

The U.S. Army Corp of Engineers has determined that Littlerock Creek is not defined as a water of the United States because it flows to a closed internal dry lake basin (Rosamond Dry Lake), which is wholly within the State of California (Lahontan RWQCB, 2004). Therefore, discharges resulting from the proposed project would not be subject to regulation under the NPDES program and would not be required to file a Notice of Intent to comply with the State's General Construction Stormwater NPDES permit or prepare a Storm Water Pollution Prevention Plan (SWPPP). However, the Lahontan RWQCB encourages implementation of best management practices (BMPs) similar to those required for NPDES storm water permits to protect waters of the state (Lahontan RWQCB, 2004) and to protect the water quality objectives and beneficial uses of local surface waters as provided in the Lahontan Region Water Quality Control Plan (Basin Plan) (RWQCB, 1995). Applicable BMPs are identified in the California Stormwater Quality Association's *California Storm Water Best Management Practices Handbook for Construction* (CASQA, 2011). **Mitigation Measure HYDRO-7** below would require that PRWA prepare BMPs to be implemented to ensure pipeline construction activities would not degrade surface or groundwater quality.

Erosion control is necessary to prevent sediment transport to the storm drain system. Erosion control BMPs bind soil particles to protect the soil surface and may include, but would not be limited to scheduling or limiting activities to certain times of the year and preservation of existing vegetation and ground cover.

Sediment controls complement the erosion control measures to further reduce sediment transport to the storm drain system through physical interception or settlement of the sediment being transported by storm water runoff. Typical BMPs include, but would not be limited to, installation of silt fence or fiber in areas subject to substantial erosion.

Tracking control is necessary to reduce sediment from being transported off the site from construction equipment itself, and onto private/public roads. BMPs for tracking control may include stabilizing entrances to the construction sites and adjacent roadways.

To prevent soil and dust from being transported off site by wind, additional erosion control measures include application of potable water to disturbed soil areas to control

dust and maintain optimum moisture levels for compaction, and use of silt fences and plastic covers to prevent wind dispersal from soil stockpiles.

d) **Less than Significant.** The proposed recycled water pipelines would be located within existing roadway ROWs, which currently consists of impervious surfaces. Construction of the pump station would disturb existing developed lands (i.e., at the PWRP). Restoration of the ground surface following construction would include returning the surface to its paved, pre-project condition. In locations where the alignment deviates from developed surfaces, suitable groundcover would be applied following construction. Further, given that the proposed facilities have a relatively small footprint that is distributed across the PRWA service area, a very minor net increase in runoff is expected. For this reason, it is reasonable to conclude that minor alteration of existing drainage patterns would not likely result in flooding on or off site. This impact is considered less than significant.

e) **Less than Significant.** As discussed above, the proposed project would result in a very minor net increase in runoff. Following construction, the surface would be returned to pre-project conditions and/or planted with appropriate land cover. Surface runoff generated from the pump station would be minor and would be diverted appropriately to the County's curb-and-gutter storm drainage system. With this understanding, it is reasonable to conclude that runoff from the proposed project facilities would not exceed the capacity of existing or planned storm water drainage systems. This impact is considered less than significant.

The proposed project also would provide recycled water to M&I end users instead of potable water. As such, recycled water would be applied as a beneficial use for irrigation instead of potable water. This potable offset would not result in an increase in runoff and would not affect storm drain capacity. There would be no impact.

g) **No Impact**. The proposed project does not involve housing. Therefore, no housing would be placed within a 100-year flood hazard area. No impacts would occur.

h/i) **Less than Significant.** The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM No. 06037C0700F) covering the project area indicates the proposed pipeline would pass through areas prone to 500-year flood hazards. (FEMA, 2008). However, the pipeline would be underground and would not be a structure that could redirect flood flows. In addition, the pipeline would not be considered a structure that would result in potential risk of loss, injury, or death due to flooding. As a result impacts are considered less than significant.

j) **No Impact.** The proposed project is not located in an area susceptible to seiche, tsunami, or mudflow. No impact would occur and no mitigation is necessary.

Mitigation Measures

HYDRO-1: Applicable backflow prevention devices, as outlined in Title 17 shall be incorporated into pipeline design to avoid potential for cross contamination.

HYDRO-2: Applicable minimum pipeline separation standards for potable and non-potable water pipelines, as outlined in Title 22, California Code of Regulations, shall be incorporated into pipeline design to avoid potential for cross contamination.

HYDRO-3: All recycled water pipelines shall be painted purple or marked distinctly with purple tape.

HYDRO-4: Los Angeles County Department of Public Health (DPH), Cross Connection Control Program for Los Angeles County, shall be advised of each new site where recycled water is to be used prior to placing the site into service.

HYDRO-5: All recycled water sites shall be inspected and tested for possible cross connections with the potable water system, in accordance with Sections 60314(3) and 60316(a), Title 22, California Code of Regulations.

HYDRO-6: PRWA shall obtain and comply with the requirements of dewatering permits issued by the Lahontan RWQCB for dewatering activities. Provisions of the permit may include treatment of flows prior to discharge.

HYDRO-7: PRWA shall develop and implement a SWPPP using BMPs to minimize erosion and sedimentation. PRWA shall include in contractor specifications that the contractor is responsible for developing the SWPPP. The SWPPP shall be maintained at the site for the entire duration of construction.

The objectives of the SWPPP are to identify pollutant sources that may affect the quality of storm water discharge and to implement BMPs to reduce pollutants in storm water discharges. The SWPPP for the proposed project shall include, but not be limited to, the implementation of the following elements:

- Identification of all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity from the construction site;
- Identification of non-storm water discharges;
- Estimate of the construction area and impervious surface area;
- Preparation of a site map and maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs);
- Identification of all applicable erosion and sedimentation control measures, waste management practices, and spill prevention and control measures;
- Maintenance and training practices; and
- A sampling and analysis strategy and sampling schedule for discharges from construction activities.

9.10 Land Use and Land Use Planning

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
10.	**LAND USE AND LAND USE PLANNING — Would the project:**				
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☒	☐	☐

Discussion

a) **No Impact.** The proposed recycled water pipelines are linear features that would run through many urbanized communities within the City of Palmdale. However the pipelines would be entirely underground and would not create a barrier or physically divide an established community. The pump station is not a linear feature and would be located within an existing industrial facility (the PWRP). As a result, the project would not divide an established community. There would be no impact.

b) **Less than Significant with Mitigation.** The proposed recycled water pipelines would generally be constructed within existing ROWs (paved and unpaved) and adjacent vacant lands. General Plans for both the City of Palmdale and Los Angeles County recognize and value the need for infrastructure, such as water distribution pipelines, to serve community demands. Public ROWs are defined as "a strip of land... intended to be or is presently occupied by a road, sidewalk, railroad, electric transmission lines, oil or gas pipeline, *water line*, sanitary storm sewer, bikeway, pedestrian walkway, or other public use" (City of Palmdale Zoning Ordinance, Chapter 1 Article 16 [1994]). Installation of the recycled water pipelines would not conflict with any land use policies, plans, or regulations.

The proposed pump station site to be located at the PWRP is zoned Airport Industrial (M-3) by the City of Palmdale (City of Palmdale, 2013). Permitted uses in Zone M-3 include sewage treatment, subject to approval of a conditional use permit (CUP) (City of Palmdale Zoning Ordinance, Chapter 6, Article 63, Section 63.06). The PWRP is owned by LACSD No. 20. PRWA would be required to acquire an easement from LACSD No. 20 for encroachment on their site prior to implementing the pump station. Construction of the proposed pump station would not conflict with the applicable Los Angeles County Code.

In addition, the proposed pump station would be located within the AIA for the Palmdale Regional Airport (PMD). The Los Angeles County ALUC has identified the AIA for each public use airport in Los Angeles County. The AIA is the geographic area that could be affected by present or forecasted aircraft operations and the area in which new land uses or changes in land uses could cause adverse effects to flight operations and safety.

To prevent potential intrusions to navigable airspace, the PRWA would notify the airport of proposed construction activities in advance and work with the airport to complete project review through the FAA's 7460 airspace review process, which would ensure that construction equipment, such as cranes and flashing lights, would not pose hazards to aviation. In addition to FAA airspace review, ongoing coordination with the airport would be required to ensure that proposed construction activities do not disrupt airport operations and to ensure that appropriate notice is provided to aviators using the airport. Construction activities can pose threats to aviation through the inadvertent creation of habitat, open water, or food sources for potentially hazardous wildlife. For example, the use of temporary or permanent sediment traps, the use of soil-stabilization mixtures that include grains or other food sources, or the use of landscaping materials that provide opportunities for nesting or loafing can attract birds and other wildlife that pose hazards to aircraft.

Implementation of the following **Mitigation Measures LU-1** through **LU-4** would minimize these potential effects associated with construction of the proposed pump station.

c) **Less than Significant with Mitigation**. Phase 5 of the proposed recycled water pipeline is within the Significant Ecological Area (SEA) No. 49, as designated by Los Angeles County. Coordination and consultation with the Los Angeles County SEA Technical Advisory Committee (SEATAC) is required prior to construction within an SEA. For additional discussion refer to Section 9.4(f) Biological Resources. Implementation of **Mitigation Measure BIO-11** would ensure there would be no conflicts with implementation of Phase 5 of the proposed pipeline. Impacts would be less than significant with mitigation.

Mitigation Measures

LU-1: For the proposed pump station occurring within an Airport Influence Area (AIA), PRWA shall submit their proposed project plans to the Los Angeles County ALUC for review and comment prior to final design.

LU-2: Prior to conducting construction activities within an AIA, PRWA shall prepare an airport construction safety plan that would identify best management practices. The plan would include, at a minimum, construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, and personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan would be reviewed and approved by airport staff and implemented by both the airport and project construction staff.

LU-3: Prior to final design of the pump station within an AIA, PRWA shall identify the ground elevation and submit their project plans to airport staff for review and comment. Working with airport staff, PRWA shall submit their design plans for airspace analysis (FAA Part 7460 review) to determine whether any of the proposed project components or proposed construction equipment would protrude into protected airspace. If such objects are identified, PRWA, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460.

LU-4: To prevent the creation of wildlife attractants, PRWA shall coordinate with construction contractors to ensure that neither project design nor construction plans create temporary or permanent sources of open water, inappropriate seed mixtures, or inappropriate landscaping designs. Notes shall be incorporated on construction plans to warn against the creation of potential wildlife hazards

9.11 Mineral Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
11. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Setting

Mineral resources include nonrenewable deposits of ore, stone, and earth materials. Gold, copper, lead, silver, zinc, manganese, and titanium deposits are believed to be scattered throughout the San Gabriel Mountains. The majority of these mines, however, have long been inactive.

The City of Palmdale's General Plan (1993) reports that nonmetallic minerals – including anorthosite, apatite, asbestos, barite, borates, feldspar, fluorspar, graphite, and mica – are located in widely segregated areas near Palmdale. Known and potential major deposits of sand and gravel, crushed rock, clay, limestone, and dolomite have also been identified in the Palmdale area by the State Division of Mines and Geology. Sand and gravel deposits are found extensively in flood plains and stream channels located north of the San Gabriel Mountains in the Little Rock and Big Rock Washes. A large area designated as containing aggregate resources spans from Little Rock Wash west to approximately 40th Street East.

Discussion

a/b) **Less than Significant.** Phase 5 of the recycled water pipeline may extend into an area designated as a mineral resource extraction district for sand and gravel (City of Palmdale 1993). This area is associated with Littlerock Creek. However, the proposed pipeline would be underground and would not prevent access to known mineral resources on the surrounding properties. The impact is considered less than significant. No mitigation is required.

Mitigation Measures

None required or recommended.

9.12 Noise

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
12. NOISE — Would the project:				
a) 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?	☐	☒	☐	☐
b) Result in Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) Result in A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) Result in A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) 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, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☒	☐
f) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting

Noise is generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of

A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency deemphasis and is typically applied to community noise measurements.

An individual's noise exposure is a measure of noise over a period of time. While a noise level is a measure of noise at a given instant in time, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{min}: The minimum, instantaneous noise level experienced during a given period of time.

L_{dn}: Also termed the DNL, the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 P.M. to 7:00 A.M. to account nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dBA to measured noise levels between the hours of 7:00 P.M. to 10:00 P.M. and after an addition of 10 dBA to noise levels between the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively.

An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;

- Outside of the laboratory, a 3 dBA change in noise levels is considered to be a barely perceivable difference;
- A change in noise levels of 5 dBA is considered to be a readily perceivable difference; and
- A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise levels from a particular source generally decline as distance to the receptor increases. Other factors, such as the weather and reflecting or barriers, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures – generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA.

For locations within the City of Palmdale, the City's Noise Element provides specific noise standards to judge the relative significance of project-related noise impacts. Policy N1.1.3 limits new stationary (i.e., permanent) noise sources to no more than 65 dBA CNEL exterior with mitigation incorporated. Policy N1.2.2 restricts construction hours during the evening, early morning, and Sundays. To implement the General Plan, the City's Noise Ordinance (Municipal Code, Chapter 8.28 Building Construction Hours and Operation and Noise Control) prohibits construction activities in residential zoning districts between 8:00 PM and 6:30 AM and all day on Sunday. Exemptions to these working hours would require the approval of the City engineer.

Los Angeles County General Plan Policy N1.2 requires the implementation of noise abatement measures to achieve daytime exterior noise standards. Chapter 12.08, Noise Control, of the County of Los Angeles Municipal Code serves as the Noise Ordinance for the County and establishes noise standards to control unnecessary, excessive, and annoying noise and vibration in the County. Los Angeles County Code (Section 12.08.390) includes daytime exterior noise standards ranging from 50 dBA in residential zones to 70 dBA in industrial zones. However, these daytime exterior noise standards do not apply to construction activities (Section 12.08.570). Rather, noise associated with construction activities is regulated by Section 12.08.440 of the County Noise Ordinance. Section 12.08.440 of the Noise Ordinance prohibits the operation of

any tools or equipment used between weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays, that will create a noise disturbance across a residential or commercial real-property line. The only exceptions would be emergency work of public service utilities or by variance issued by the health officer. Additionally, both the working hours and maximum levels of equipment and activity noise that are allowable from both mobile and stationary equipment in the County are defined by land use and shown in **Table 7**.

TABLE 7
COUNTY OF LOS ANGELES CONSTRUCTION NOISE STANDARDS

Allowable Work Dates & Hours	Residential Structures					
	Single-Family		Multi-Family		Semi-Residential/Commercial	
	Mobile Equipment [a]	Stationary Equipment [b]	Mobile Equipment [a]	Stationary Equipment [b]	Mobile Equipment [a]	Stationary Equipment [b]
Daily 7:00 am to 8:00 pm[c]	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily 8:00 pm to 7:00 am[d]	60 dBA	50 dBA	64 dBA	55 dBA	70 dBA	60 dBA
	Business Structures					
Daily[d]	85 dBA					

[a] Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).
[b] Represent maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more).
[c] Exception for Sundays and legal holidays.
[d] Includes all day Sunday and legal holidays.

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.440.

Discussion

a) **Less than Significant With Mitigation.** Construction of the proposed recycled water pipeline would be located within City of Palmdale and Los Angeles County owned public zones and roadway rights-of-way. As such, a significant impact may occur if, depending on where within the PRWA service area noise levels are generated, the proposed project would generate excessive noise that exceeds the noise level standards set forth in the respective General Plan Noise Elements and Noise Ordinances of the City of Palmdale and County of Los Angeles.

As the proposed project consists of the installation of a recycled water pipeline and pump station, potential noise impacts associated with the project on nearby noise-sensitive land uses would primarily occur during the construction phase. Once construction activities have been completed, the newly installed pipeline would operate underground and no audible noise levels affecting noise-sensitive uses located along the proposed pipeline alignment would occur during project operations. The only source of audile operational noise associated with the project would be the new pump station. An analysis of the project's construction and operational noise impacts are provided below.

Construction Noise

The construction of the entire project would occur in six separate and sequential phases, with Phase 1 having been already constructed. The construction of Phases 2 through 6 is anticipated to occur over a 16-month period, beginning in fall of 2015. Construction of the proposed recycled water pipeline would involve the open-trench method, which would generally consist of the following phases: 1) site preparation, 2) excavation and shoring (of the open-trench pits), 3) pipe installation and backfilling, and 4) work site street restoration. Construction activities occurring under each of these phases would require the use of heavy equipment (e.g., excavators, backhoes, loaders, dump trucks, etc.) along with the use of smaller power tools, generators, and other sources of noise. During each construction phase there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of each activity. As such, construction activity noise levels at and near each open-trench site would fluctuate depending on the particular type, number, and duration of use of the various pieces of construction equipment. **Table 8** shows the typical noise levels (L_{eq}) produced by various types of construction equipment based on a distance of 50 feet between the equipment and noise receptor.

TABLE 8
CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS

Construction Equipment	Typical Noise Level at 50 Feet (dBA, L_{eq})
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane (Mobile)	83
Dozer	85
Generator	81
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Roller	74
Saw	76
Truck	88

SOURCE: Federal Transit Administration, 2006.

The exposure of individual sensitive receptors to elevated noise levels would be limited to the duration of the construction task at the particular location. For example, while the proposed project is anticipated to be constructed within a 16-month period, roadway construction along the pipeline alignment would proceed at a rate of 100 to 200 feet per day. As such, construction noise levels would not be present at any one location for a substantial amount of time along the proposed pipeline alignment. The only exception to

this is for the pump station facility location, where construction could last for a couple of months.

Table 9 is a summary of typical noise levels expected from each construction phase associated with installation of a pipeline. Each of the construction phases assumes that construction equipment and machinery will operate intermittently in different combinations over a typical construction day. No impact equipment, such as pile drivers or jack/vibratory hammers, would be used during construction of the proposed project. As shown in Table 12-3, sensitive receptors within 50 feet of an open-trench site would be subjected to construction-related noise levels as high as 89 dBA L_{eq}.

TABLE 9
EXPECTED PIPELINE INSTALLATION CONSTRUCTION NOISE LEVELS

Construction Phase	Maximum 1-Hour L_{eq} (dBA at 50 ft)
Pipeline Installation[a]	
Trench Excavation in Paved Areas	89
Trench Shoring	84
Pipeline Installation	80
Trench Backfilling in Paved Areas	85

[a] Analyses assume that pile drivers would not be used for installation of shoring for open trenches. Analyses assume the use of standard mufflers and similar noise controls on all equipment.

SOURCE: City and County of San Francisco, 2008.

Some land uses are considered more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. People in residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks, and outdoor recreation areas are generally more sensitive to noise than are people at commercial and industrial establishments. Consequently, the noise standards for sensitive land uses are more stringent than for those at less sensitive uses. Potential sensitive receptors located within the PRWA service area that are in proximity to the proposed pipeline alignment include residential parcels, schools, churches, and parks. While the distance of the sensitive receptors to the open-trench construction areas along the proposed pipeline alignment would vary throughout the project area, the property line of some of these receptors could be located as close as 25 feet from the construction areas. The proposed pump station located along 30th Street, between Avenue P and Avenue P 8, is not located in proximity to any noise-sensitive receptors. The nearest sensitive receptors to the new pump station location would be the Just Plane Kids childcare facility and the Desert Aire Golf Course located approximately 3,162 feet to the northwest and 3,510 feet to the northeast, respectively. Given these distances, construction activities at the new pump station location would not result in an adverse noise impact on any sensitive receptors. As such, only the sensitive receptors located in proximity to the proposed pipeline alignment would be exposed to potential adverse noise impacts.

Due to the operation of construction equipment at each open-trench site along the proposed pipeline alignment, the project would expose nearby sensitive receptors to increased exterior noise levels. Over the course of a construction day, the highest noise levels would be generated when multiple pieces of construction equipment are being operated concurrently. With some sensitive receptors located as close as 25 feet from the construction area, these receptors would be exposed to high noise levels that exceed 89 dBA L_{eq}. As mentioned previously, construction would move quickly along the pipeline alignment and would not subject individual receptors to construction noise for long periods of time. For most locations along the open trench corridor, noise levels from trench excavation, shoring, and backfilling would last for only about a day. After that, pipeline construction activities would shift 100 to 200 feet down the corridor. Because much of the construction would occur along existing roadway ROWs, some of the noise from construction equipment operations could be shielded (the line of sight between the receptor and construction activities would be blocked) from off-site receptors by existing structures. In such cases, noise levels could be lower than those shown in Table 9. The construction activities associated with the proposed project would be required to adhere to the applicable permitted hours of operation established under both the City of Palmdale and County of Los Angeles Noise Ordinances.

Construction activities associated with the proposed project would be temporary in nature and related noise impacts would be short-term. Nearly all of the project's construction would occur within the City of Palmdale, where daytime construction noise is regulated based on permitted hours of operation. The portion of the project's construction activities that would occur outside of the City of Palmdale, and within unincorporated Los Angeles County, is located along Avenue R, east of 70th Street. However, because this area is surrounded by undeveloped open space, no sensitive receptors would be adversely affected by project construction within unincorporated Los Angeles County.

Although the proposed project's construction activities would only occur under the permitted hours allowed under the City of Palmdale's Noise Ordinance, the proposed project would still expose the existing sensitive receptors located in proximity to the proposed pipeline alignment to increased exterior noise levels above existing ambient noise levels. It should be noted, however, that any increase in noise levels at the off-site sensitive receptors during project construction would be temporary in nature, and would not generate continuously high noise levels, although occasional single-event disturbances from excavation and pipe installation activities are possible. In addition, once the construction activities at an open-trench site are completed, the construction activities would move to another location along the approximately 13-mile proposed pipeline alignment. Due to the localized nature of noise impacts, the duration of exposure to the project's construction-related noise levels at any existing sensitive receptor would only be limited to the time when an open-trench work site is located on a pipeline segment that is in proximity to that receptor. Nonetheless, because the temporary noise nuisance generated by the project's construction activities would constitute a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, this noise impact is considered to be potentially significant.

Implementation of **Mitigation Measures NOISE-1** and **NOISE-2**, which would require the implementation of noise reduction devices and techniques during construction at the project site and noticing of the community, would reduce the noise levels associated with construction of the proposed project to the maximum extent that is technically feasible. Therefore, with implementation of Mitigation Measures NOISE-1 and NOISE-2, the temporary noise impacts associated with project construction would be reduced to a less-than-significant level.

Operational Noise

As the proposed project would only consist of the installation of a pipeline and new pump station for the collection and transport of recycled water, potential noise impacts associated with the project on nearby noise-sensitive land uses would only occur during the construction phase. Once construction activities have been completed, the newly installed pipeline would operate underground and no audible noise levels affecting noise-sensitive uses located along the proposed pipeline alignment would occur during project operations.

As mentioned previously, the proposed pump station located along 30th Street, between Avenue P and Avenue P 8, is not located in proximity to any noise-sensitive receptors. The nearest sensitive receptors to the new pump station location would be the Just Plane Kids childcare facility and the Desert Aire Golf Course located approximately 3,162 feet to the northwest and 3,510 feet to the northeast, respectively. Given these distances, noise levels associated with operation of the new pump station would not result in an adverse noise impact on any sensitive receptors.

Overall, operational noise impacts associated with the proposed project would be less than significant.

b) **Less than Significant.** Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures. These energy waves generally dissipate with distance from the vibration source. Because energy is lost during the transfer of energy from one particle to another, vibration becomes less perceptible with increasing distance from the source.

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment (FTA, 2006), ground-borne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. Peak particle velocity is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA, 2006). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 inches per second (in/sec) PPV (FTA, 2006).

With regards to the proposed project groundborne vibration would be generated from the operation of heavy construction equipment at the open-trench sites along the proposed pipeline alignment, which could potentially affect the existing sensitive land uses located along the alignment. The proposed project, which consists of the installation of a pipeline and pump station for the collection and transport of recycled water, would not include any operational sources of groundborne vibration.

Construction

The state *CEQA Guidelines* do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of vibration; however, the federal, state, and local governments have yet to establish specific vibration requirements. Additionally, there are no federal, state, or local vibration regulations or guidelines directly applicable to the proposed project. However, publications of the Federal Transit Authority (FTA) and California Department of Transportation (Caltrans) are two of the seminal works for the analysis of vibration relating to transportation and construction-induced vibration. The proposed project is not subject to FTA or Caltrans regulations; nonetheless, these guidelines serve as a useful tool to evaluate vibration impacts.

For the purpose of this analysis, the vibration criteria for structural damage and human annoyance established in the most recent Caltrans' *Transportation and Construction Vibration Guidance Manual* (2013), which are shown in **Table 10** and **Table 11**, respectively, are used to evaluate the potential vibration impacts of the project on nearby sensitive receptors.

TABLE 10
CALTRANS VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

NOTE: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCE: Caltrans, 2013.

TABLE 11
CALTRANS VIBRATION ANNOYANCE POTENTIAL CRITERIA

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

NOTE: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCE: Caltrans, 2013.

The project's construction activities along the proposed pipeline alignment have the potential to generate low levels of groundborne vibration as the operation of heavy construction equipment (i.e., loaders, excavators, haul trucks, etc.) generates vibrations that propagate though the ground and diminishes in intensity with distance from the

source. As such, the existing sensitive uses (i.e., residential, school, church uses) located along the proposed pipeline alignment could be exposed to the generation of excessive groundborne vibration or groundborne noise levels during the project's construction activities. Site ground vibrations from construction activities very rarely reach the levels that can damage structures, but they may be perceived in buildings very close to a construction site. No pile-driving or blasting activities would be required for construction of the proposed project components.

The various PPV vibration velocities for several types of construction equipment, along with their corresponding RMS velocities (in VdB), that can generate perceptible vibration levels are identified in **Table 12**. Based on the information presented in Table 12, vibration velocities could reach as high as approximately 0.089 inch-per-second PPV at 25 feet from the source activity, depending on the type of construction equipment in use. This corresponds to a RMS velocity level of 87 VdB at 25 feet from the source activity.

TABLE 12
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

	Approximate PPV (in/sec)					Approximate RMS (VdB)				
Equipment	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Caisson Drilling	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Loaded Trucks	0.076	0.027	0.020	0.015	0.010	86	77	75	72	68
Jackhammer	0.035	0.012	0.009	0.007	0.004	79	70	68	65	61
Small Bulldozer	0.003	0.001	0.0008	0.0006	0.0004	58	49	47	44	40

SOURCE: FTA, 2006.

Although the off-road construction equipment used for the project would generally consist of loaders, excavators, and backhoes that would be smaller in scale than a large bulldozer, the vibration levels for a large bulldozer (as shown in Table 12) are used to analyze the project's vibration-related impacts during construction for the purpose of conducting a conservative analysis.

The level of potential impact resulting from project construction is generally contingent on the structural composition of the buildings potentially affected. As shown in Table 10, older residential structures have PPV thresholds of 0.5 in/sec and 0.3 in/sec for transient and continuous/frequent intermittent vibration sources, respectively. For the purpose of this analysis, it is anticipated that these types of structures (i.e., older residential structures) would most likely be impacted by project construction activities. Given that project construction activities would be situated at least 35 feet or more from existing physical structures, the estimated vibration velocity that would result at this distance would be 0.05 in/sec PPV. Thus, project construction would not generate vibration levels

in excess of the thresholds identified in Table 10 for building damage for older residential structures. Additionally, with respect to human annoyance, a PPV of 0.05 in/sec is only considered to be distinctly perceptible. Because project construction along the pipeline alignment would proceed at a rate of 100 to 200 feet per day, any distinctly perceptible levels of vibration at a nearby sensitive receptor would only occur for a brief duration.

Furthermore, the proposed pump station located along 30th Street, between Avenue P and Avenue P 8, is not located in proximity to any sensitive receptors. The nearest sensitive receptors to the new pump station location would be the Just Plane Kids childcare facility and the Desert Aire Golf Course located approximately 3,162 feet to the northwest and 3,510 feet to the northeast, respectively. Given these distances, construction activities at the new pump station location would not result in an adverse vibration impacts on any sensitive receptors. As the nearest non-residential building structures to the proposed pump station are all located beyond 200 feet away, no impacts related building damage at these structures would occur during construction of the pump station.

Overall, vibration-related impacts associated with project construction would be less than significant.

Operation

Once construction activities have been completed, the newly installed pipeline would operate underground and no vibration levels would be associated with its operation. Additionally, while operation of the new pump station may generate low levels of vibration, no structures or sensitive receptors are located directly adjacent to the station. Thus, no impact with respect to groundborne vibration during project operations would occur.

c) **Less than Significant.** Noise-generating operations for the proposed project would include operation of the pump station, operation of the emergency backup generators, and vehicle trips and equipment used for routine maintenance and inspection of facility components. Because routine maintenance is anticipated to be sporadic and short term in nature, it is not anticipated that maintenance activities would result in a significant noise impact.

The proposed pump station would operate year-round (24 hours a day, seven days a week) and the backup generator would operate under certain situations, during emergencies. The pump station could eventually consist of up to four 200-horsepower (hp) vertical turbine pumps. The typical noise level for water supply pumping facilities can range from 70 to 76 dBA at 50 feet. Additionally, a standby generator would be installed to operate the entire pump station during a power outage. The typical noise level for a generator is approximately 80 dBA at 50 feet. Since emergency generators would only be tested on a monthly basis for a short duration, they are not expected to contribute substantially to the overall average noise exposure outside of the pump station boundary. Although the operation of the pump and back-up generator would generate audible noise levels around the perimeter of the pump station boundary, no sensitive receptors are

located in proximity to the station. The nearest sensitive receptors to the new pump station location would be the Just Plane Kids childcare facility and the Desert Aire Golf Course located approximately 3,162 feet to the northwest and 3,510 feet to the northeast, respectively. Given these distances, noise levels generated by operation of the new pump and back-up generator would not be audible at these receptors. As such, impacts would be less than significant.

d) **Less than Significant with Mitigation.** As discussed under 12(a) above, construction activities associated with the proposed project would lead to a temporary and/or periodic increase in ambient noise levels in the project vicinity above existing noise levels. This could result in a potentially significant noise impact. However, with the implementation of **Mitigation Measures NOISE-1** and **NOISE-2**, short-term noise impacts would be minimized to a less than significant level.

e) **Less than Significant.** The LA-Palmdale Regional Airport is located approximately 1.2 miles north of the new pump station and 2.5 miles north of the nearest segment of the proposed pipeline. While the proposed pump station would be located within two miles of a public airport, this facility would not be for human occupancy. PRWA workers visiting the pump station would be doing so infrequently and intermittently. Additionally, the runways associated with the LA-Palmdale Regional Airport are positioned in a southwest-northeast alignment and so the new pump station is not located within the airports flight path. As such, the proposed project would not expose workers to excessive noise levels associated within the airport. This impact is considered less than significant and does not require mitigation.

f) **No Impact.** The proposed project is not located within the vicinity of a private airstrip. As a result, no impacts would occur and no mitigation is required.

Mitigation Measures

NOISE-1: The PRWA shall require its construction contractor to identify and employ noise-reducing construction practices. This provision will be reflected in contract documents. Measures that may be used to limit noise include, but are not limited to:

- Require construction contractors to comply with the City of Palmdale and Los Angeles County municipal codes regarding construction hour limitations;
- Locate fixed construction equipment and machinery as far as practical from noise sensitive uses;
- Use mufflers that are in good working order on all standard equipment;
- Select haul routes that affect the fewest number of people;
- Use noise-reducing enclosures and/or mufflers around noise-generating equipment;
- Where feasible, construct barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (terrain, structures) to block sound transmission; and

- Enclose construction equipment, where practicable.

NOISE-2: The PRWA shall require the construction contractor to notify all residents and businesses within 500 feet of construction areas of the construction schedule in writing a minimum of two weeks prior to ground-breaking. The construction contractor will designate a Noise Complaint Coordinator who will be responsible for responding to complaints regarding construction noise. The Coordinator will determine the cause of any complaint and will ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the Noise Complaint Coordinator will be conspicuously posted on construction site fences or barriers, where possible, and will be included in the written notification of the construction schedule sent to nearby residents. This provision will be reflected in contract documents.

9.13 Population and Housing

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
13. POPULATION AND HOUSING — Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) **Less Than Significant.** A project can have direct and/or indirect growth inducement potential. Direct growth would result if a project involved construction of new housing. A project can have indirect growth inducement if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. A project would also have an indirect growth inducement effect if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service.

The proposed project would be limited to the provision of water supply infrastructure. There is no housing or commercial development that would directly affect the number of residents or employees in the project area. The proposed project would not directly contribute to the creation of additional housing or jobs within the Antelope Valley. Therefore, proposed project would not directly induce population growth.

To determine indirect growth inducement potential, the proposed project was reviewed to ascertain whether it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. The proposed project would reduce the area's existing and future demand for imported water through recycling. The imported water conserved through implementation of the proposed project would be available to serve potable water demands of planned growth.

The majority of the PRWA service area overlaps with the PWD service area, and thus project growth of population and water supply/demand within PWD is the best proxy for the same metrics within PRWA boundaries. The 2010 PWD Urban Water Management Plan (UWMP) predicts a population increase of 256 percent from the year 2010 levels by the year 2035, which will lead to a corresponding 253 percent increase in water demand from 19,800 acre-feet per year (AFY) to 60,000 AFY. Although the UWMP expects to

meet future demands with anticipated additional future supplies, it plans to incorporate the Urban Water Management Planning Act's 14 Demand Management Mitigation Measures (DMMs) (PWD, 2011). The PWD Strategic Water Resources Plan describes PWD's planned approaches to meet projected water demands, including acquiring and developing new imported supplies, storing water in the local groundwater basin by developing surface spreading facilities and injection wells, adding groundwater pumping capacity, implementing the proposed Recycled Water Facilities Plan, and pursuing recycled water exchange opportunities. This plan predicts water demand to reach approximately 65,000 AFY by 2035, the majority of demand coming from low density residential uses (PWD, 2010).

The proposed project would not directly or indirectly induce growth or remove an obstacle to growth, since the increased population would occur in any case based on the cities' and counties' approved build-out and growth control policies. The recycled water that would be made available as a result of the proposed project is a necessary part of the water supply portfolio that has been developed by PWD and is required in order to meet future projected demand in 2035. that would otherwise be met with imported water. Maximizing the use of recycled water directly offsets the need for additional imported water supplies in order to meet future demand. The proposed project's potential to induce population growth is considered to be less than significant.

b) **No Impact.** The proposed recycled water pipelines are generally located within City and County roadway ROW and along property lines and, therefore, would not require the demolition of any existing houses. As a result, the project would not displace existing housing and no impacts are anticipated.

c) **No Impact.** As discussed above, the project is not expected to displace people or their homes. Therefore, no impacts replacement housing will be constructed. No impacts will occur and no mitigation in necessary.

Mitigation Measures

None required or recommended.

9.14 Public Services

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
14. PUBLIC SERVICES — Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Setting

The proposed facilities are located within the City of Palmdale and unincorporated Los Angeles County. Fire protection services are provided by the Los Angeles County Fire Department. The Los Angeles County Sherriff's Department provides law enforcement services and the California Highway Patrol provides traffic enforcement services to the study area.

The elementary, high school and college districts serving the Palmdale area include: Palmdale School District, Antelope Valley Union High School District, and Antelope Valley Community College District. Each is an independent agency governed by a Board of Trustees. The City of Palmdale Recreation and Culture Department provides public park services to the area.

Discussion

a) **No Impact.** Implementation of the proposed project in and of itself would not generate population growth that would place new demands on local public service providers. In addition, the operation and maintenance of the proposed project would not be labor intensive, and therefore would not substantially increase the need for new PRWA staff. Thus, the proposed project would not increase the demand for the kinds of public services that would support new residents, such as schools, parks, fire, police, or other public facilities. As a result, no impacts are expected and no mitigation is required.

Mitigation Measures

None required or recommended.

9.15 Recreation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
15. RECREATION — Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

a) **No Impact.** The City of Palmdale Recreation and Culture Department manages 18 parks and recreation facilities in PRWA's service area (City of Palmdale, 2014). The Angeles National Forest borders the project area to the south and is managed by the U.S. Forest Service. Implementation of the proposed project in and of itself would not contribute to population growth that could result in increased use of existing parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. As a result, no impact is expected and no mitigation is required.

b) **No Impact.** The proposed project does not include or require construction or expansion of recreational facilities. Furthermore, as discussed above, the project would not increase the demand for recreational facilities. As a result, no impact is expected and no mitigation is required.

Mitigation Measures

None required or recommended.

9.16 Transportation and Traffic

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
16. TRANSPORTATION AND TRAFFIC — Would the project:				
a) 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?	☐	☒	☐	☐
b) 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?	☐	☒	☐	☐
c) 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?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

Discussion

a,b) **Less Than Significant with Mitigation.** Applicable transportation plans and policies include the Los Angeles County Metropolitan Transportation Authority Congestion Management Program (CMP) (MTA, 2010), the Southern California Association of Government's (SCAG) Regional Transportation Plan (SCAG, 2012), the Antelope Valley Transit Authority Comprehensive Long-Range Transit Plan (AVTA, 2010), and the Circulation Element of the Palmdale General Plan (City of Palmdale, 1993).

The proposed project would not introduce any new facilities to the project area that would generate long-term changes in traffic. There would be no long-term impacts to level of service standards or performance of the circulation system. Potential traffic and transportation effects would be limited to the construction phase of the proposed project, particularly construction of the recycled water pipelines. Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or conflict with the Los Angeles County CMP, Circulation Element of the City of Palmdale's General Plan, or the SCAG's Regional Transportation Plan. The Los Angeles County General Plan and the City of Palmdale General Plan's alternative transportation-related goals and policies pertain to long-term land use and

transportation planning. Standards for roadways that are part of the Los Angeles County CMP network are intended to regulate long-term traffic increases resulting from the operation of new development, and do not apply to temporary construction projects. As project construction activities would last for approximately 16 months, long-term transportation policies and plans would not be affected.

The performance of the circulation system may be affected on a short-term temporary basis during construction of the pump station and recycled water pipelines. The delivery of materials and equipment, hauling of excavated soils, and importing of fill would result in intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. Construction equipment used for the proposed project would include concrete trucks, back-hoes, paving equipment, and periodic delivery of pipes and materials. Construction would include the transportation of oversize loads, such as trucks carrying pipes.

During construction of the proposed pipelines, short-term temporary impacts to local circulation system performance also would be associated with installation of the proposed pipeline within the roadway and right-of-way, which may require lane or roadway closures. This would reduce travel lanes and reduce traffic flow and also could affect alternative transportation routes. The proposed alignment would follow within and/or across several roadway right-of-ways as described in Table 1. Some of the roadways are considered major arterials, such as Avenue R, 30th Street East, and secondary arterials, such as Avenue R-8 and 40th Street East (City of Palmdale 1993). Major arterials as previously designated on the City's General Plan Circulation Map are spaced at approximately one-mile intervals, and represent the major carrying capacity for traffic to and within the City. The City's current policy is to create major arterials at one-mile intervals and secondary arterials at one-half mile intervals between the majors.

According to the Antelope Valley Transit Authority (AVTA) several public transportation routes follow the proposed pipeline construction areas. Routes 1, 2, 3, 6, 10, and 15 could be temporarily affected by construction of the proposed pipeline (AVTA, 2013).

Implementation of **Mitigation Measures TRA-1** would reduce traffic impacts resulting from the construction of the proposed pipelines to less than significant levels, by requiring the construction contractor and PRWA to identify future potential traffic impacts and implement a Traffic Control Plan to reduce those impacts. The Traffic Control Plan would require plans for signage and detours, limitations on lane closures during peak traffic hours, and coordination with transit agencies to facilitate relocation of routes or bus stops. In addition, the proposed project design would include use of construction techniques as necessary to avoid disruptions to certain surface features, such high volume roadways like State Route 138. Phase 2 of the proposed pipeline would cross State Route 138 (47th Street East; see Figure 4) and Caltrans may require the use of jack-and-bore construction methods to avoid direct effects to this roadway. Impacts would be less than significant with implementation of Mitigation Measure TRA-1.

c) **No Impact.** Construction and operation of the proposed project would not affect air traffic patterns, levels, or locations. The proposed pump station is located within the AIA of the PMD. Refer to Section 9.10, Land Use and Land Use Planning, for additional discussion of project impacts associated with airport land use compatibility plans.

d) **Less Than Significant with Mitigation.** The proposed project would not permanently modify any roadway designs or introduce incompatible vehicles. Any disturbance to roadways during pipeline construction would be restored. The presence of construction vehicles and equipment would temporarily introduce potential safety hazards to motorists, cyclists, and pedestrians during pipeline construction. Implementation of **Mitigation Measures TRA-1** would minimize potential hazards to less than significant levels.

e) **Less Than Significant with Mitigation.** Implementation of **Mitigation Measure TRA-1** would require agency coordination with emergency service providers in the area in advance of project construction. Adherence to this mitigation measure would reduce any potential impacts regarding emergency services to less than significant levels.

f) **Less Than Significant with Mitigation.** The proposed project would have no long-term impact on demand for alternative transportation or on alternative transportation facilities (i.e., for transit and bicyclists). However, pipeline construction could slightly disrupt these alternate forms of transportation due to the proposed pipeline construction and partial lane closures. AVTA bus routes 1, 2, 3, 6, 10, and 15 would be affected by pipeline installation. In addition, there are existing and planned bikeways on roadways that coincide with the proposed pipeline alignments. The City of Palmdale has adopted a Bikeway and Multi-Purpose Trail Plan (updated 2012), as documented in the Parks, Recreation, and Trails Element of the City's General Plan (City of Palmdale, 1993; see Exhibit PRT-1). The Adopted Master Plan for Bikeways includes planned bikeways along Avenue R, Avenue R-8, and Avenue S in the project area, as well as 55th Street East and 30th Street East. The southern portion of the Phase 6 pipeline that runs along 30th Street East would cross existing Class I (off-street) and Class III bikeways (on-street). In addition, portions of the Phase 3 pipelines that cross Avenue S would intersect with an existing Los Angeles County bikeway. Implementation of **Mitigation Measure TRA-1** would require the construction contractor to establish methods for minimizing construction effects on transit service and temporary disruptions to bikeways. Impacts would be less than significant with mitigation.

Mitigation Measures

TRA-1: Prepare and Implement a Traffic Control Plan. The PRWA shall require its construction contractor to prepare and implement an effective Traffic Control Plan to show specific methods for maintaining traffic flows. Examples of traffic control measures to be considered include:

1) Develop circulation and detour plans to minimize impacts to local street circulation, including use of signing and flagging to guide vehicles through and/or around the construction zone.

2) Schedule truck trips outside of peak morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) commute hours.

3) Limit lane closures during peak hours to the extent possible.

4) Use haul routes minimizing truck traffic on local roadways to the extent possible.

5) Include accommodations for bicycles and pedestrians in all areas potentially affected by project construction, including detours and signage to maintain connectivity for bikeways and trails.

6) Store construction materials only in designated areas.

7) Coordinate signage for temporarily eliminated on-street parking, with instructions including timing and duration, and nearby areas where parking is currently available.

8) Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary.

9) Develop comprehensive strategies for maintaining emergency flows. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches and identification of alternate routing around construction zones. Police, fire, and other emergency service providers shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures.

9.17 Utilities, Service Systems and Energy

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
17. UTILITIES AND SERVICE SYSTEMS — Would the project:				
a) Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
h) Result in a substantial increase in overall or per capita energy consumption?	☐	☐	☒	☐
i) Result in wasteful or unnecessary consumption of energy?	☐	☐	☒	☐
j) Require or result in the construction of new sources of energy supplies or additional energy infrastructure capacity the construction of which could cause significant environmental effects?	☐	☐	☒	☐
k) Conflict with applicable energy efficiency policies or standards?	☐	☐	☒	☐

Discussion

a) **Less than Significant**. The proposed project would convey and store recycled water produced at existing PWRP. The recycled water used by proposed end users would be disinfected tertiary treated effluent. Recycled water use associated with the proposed project would comply with the California Department of Public Health (formerly the Department of Health Services) recycled water regulations contained in Title 22 of the CCR. In addition, the proposed project would be subject to conditions imposed by the Lahontan RWQCB pursuant to WRRs. The WRRs would cover the proposed end uses. The proposed project would not conflict with any wastewater treatment regulations. The impact would be less than significant.

b) **No Impact**. The proposed project involves construction of recycled water distribution pipelines and a pump station and would not create the need for additional water of wastewater facilities other than those proposed. The proposed project provides for the beneficial use of recycled water, which in turn provides benefits to both wastewater and water resource management. Therefore, no impacts are anticipated, and no mitigation is required.

c) **Less than Significant.** Restoration of the ground surface following construction of proposed facilities would include returning the surface to its paved, pre-project condition. In locations where the alignment deviates from developed surfaces, suitable groundcover would be applied following construction. Construction of the pump station would include necessary storm drainage facilities to direct flows off the structures. Because of the small scale of these facilities, they are not anticipated to generate surface runoff in quantities that would require construction of new off-site storm drains or expansion of existing off-site storm drains. This impact would be considered less than significant, and no mitigation is required.

d) **Less than Significant.** The City has an existing agreement with LACSD for 2,000 AFY of recycled water to provide to customers throughout the PRWA service area. Currently water is delivered via the Phase 1 pipeline that is already built, to McAdam Park for irrigation. The proposed project would be designed to provide approximately 1,325 AFY of tertiary-treated recycled water to PRWA customers, including SPOs and LMD. The existing agreement provides enough recycled water supply to serve this demand. Additional agreements with LACSD would be required in order to supply recycled water for recharge in Littlerock Creek. No other water supplies or entitlements are needed or required as a result of the proposed project. The impact would be considered less than significant, and no mitigation is required.

e) **No Impact.** The proposed project involves construction of recycled water distribution pipelines and a pump station in order to beneficially reuse the recycled water supplies from PRWP. The PWRP currently produces tertiary treated recycled water (LACSD, 2014) and the proposed project will utilize this recycled water supply. No additional wastewater treatment demand will be generated by the beneficial reuse. There would be no impact, and no mitigation is required.

f) **Less than Significant.** Construction of the proposed project would not generate a significant amount of solid wastes. The construction contractor(s) would be required to dispose of excavated soil and solid wastes generated during project-related construction in accordance with local solid waste disposal requirements. The local landfill – the Antelope Valley Recycling and Disposal Facility – accepts construction and demolition waste, concrete and asphalt, dirt, and municipal solid waste. Once constructed, operation and maintenance activities would generate minimal solid waste. For this reason, the proposed project would not exceed permitted capacity at local landfills. The impact would be less than significant, and no mitigation is required.

g) **No Impact**. Solid waste generation would be limited to construction-related activities, and would not affect available solid waste disposal capacity in the region. No long-term solid waste generation would be associated with the proposed project. Therefore, no impacts are anticipated, and no mitigation is required.

h-k) **Less than Significant.** Energy intensity is a measure of the amount of energy required to perform water management activities, such as treating and conveying potable water; collecting, treating, and discharging wastewater; or treating and distributing recycled water. Energy intensity is expressed in terms of the energy requirement for managing a unit of water, such as kilowatt hours (kWh) per million gallons (MG) or acre feet (AF) of water. The proposed project would replace the use of existing and future imported water with recycled water. The potential impact of this action is based on the amount of energy required to convey imported water to end use locations relative to the amount of energy required to treat and convey recycled water to end use locations.

Several organizations, including the California Energy Commission (CEC) and the WateReuse Research Foundation, have calculated energy intensities for water use cycle segments. The CEC has estimated the differential energy intensity for water management activities in northern California and southern California. In southern California, the energy intensity for water supply and conveyance is estimated to be 3,020 kWh/AF (9,272 kWh/MG), which is greater than that for northern California, due to the travel distance and requirements for pumping and lifting water over natural features such as the Tehachapi Mountains as water is conveyed from north to south (CEC, 2006). For purposes of evaluating the effects of the proposed project, we assume the baseline energy intensity for importing water to the PRWA service area is approximately 3,020 kWh/AF.

The proposed project would offset and replace the use of imported water with recycled water. The WateReuse Research Foundation has estimated the energy intensity for various types of recycled water treatment, including disinfected tertiary treatment which could require up to 586 kWh/AF (1,800 kWh/MG) (WRF, 2012). The energy intensity for recycled water distribution also varies. Based on the annual energy consumption for the proposed pump station at the PWRP, the energy intensity for distribution of recycled water for the proposed project is estimated to be 165 kWh/AF. Thus, the total energy intensity for producing disinfected tertiary recycled water and its distribution is estimated to be 751 kWh/AF. Given that the proposed project would offset the use of imported water with recycled water, there would be a net decrease in the energy intensity associated with providing an AF of water, from 3,020 kWh/AF to 751 kWh/AF. As a result, the proposed project would not result in a substantial increase in overall per capita energy consumption, would not result is wasteful or unnecessary consumption of energy, would not require construction of new sources of energy supplies of infrastructures, and would not conflict with energy efficiency policies or stands. Impacts would be considered less than significant, and no mitigation is required.

Mitigation Measures

None required or recommended.

9.18 Mandatory Findings of Significance

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
18. MANDATORY FINDINGS OF SIGNIFICANCE — Would the project:				
a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a) **Less than Significant with Mitigation.** As discussed in Sections 9.4 and 9.5 of this Initial Study, construction of the proposed project has the potential to adversely affect biological and cultural resources, including special-status plant and wildlife species. Implementation of Mitigation Measures BIO-1 through BIO-11 and CUL-1 through CUL-4 would ensure any potential impacts are mitigated to a less than significant level. Once constructed, operation of the proposed project would have no long-term permanent impacts to special-status species or habitat. Phase 5 of the proposed pipeline would be constructed only in conjunction with a groundwater recharge project within Little Rock Wash, based on the outcome of the ongoing Feasibility Study (see Sections 2.3 and 5.3 above). Groundwater recharge would not occur within Little Rock Wash until a subsequent environmental assessment is conducted pursuant to CEQA to evaluate the potential effect of such an action on special-status plants or wildlife or their habitat.

b) **Less than Significant with Mitigation.** In accordance with CEQA Guidelines §15183, the environmental analysis in this IS/MND was conducted to determine if there were any project-specific effects as a result of the proposed project. No direct significant effects were identified that could not be mitigated to a less than significant level. However, when combined with other projects in the region, the proposed project may result in a contribution to a potentially significant cumulative impact. Other past, present, and reasonably foreseeable projects in the Antelope Valley include the following:

- North Los Angeles / Kern County Regional Recycled Water Project, which addresses transmission pipelines, pump stations, storage tanks, and recycled water applications;
- PWD's Water System Master Plan Update (PWD 2001), which includes the near-term construction and operation of groundwater wells 36, 37, and 24A;
- Varied water main replacements as part of PWD's ongoing capital improvement program;
- PWD's Littlerock Dam sediment removal project;
- City of Palmdale's Upper Amargosa Creek recharge project;
- Expansion of the PWRP, LWRP, and RWWTP by LACSD No. 20, LACSD No. 14, and Rosamond Community Services District, respectively;
- Groundwater recharge pilot project by the City of Lancaster;
- Recycled water project by the Rosamond Community Services District;
- Various roadway and/or storm drainage improvement projects by Caltrans, Los Angeles County Department of Public Works, City of Palmdale, and City of Lancaster;
- City of Palmdale's Trade and Commerce Center Specific Plan Area, Palmdale Hybrid Power Plant, and other planned development projects; and
- U.S. Forest Service's Tehachapi Renewable Transmission Project.

As discussed in Sections 9.1 through 9.17 of this Initial Study, many of the potential environmental impacts of the proposed project would occur during construction, with few lasting operational effects. Mitigation measures incorporated herein would mitigate most direct and indirect impacts, as well as potential contributions to cumulative impacts, associated with implementation of the proposed project. Because construction related impacts of the proposed project would be temporary and localized, they would only have the potential to combine with similar impacts or other projects if they occur at the same time and in proximity to each other. To minimize the potential for cumulative impacts to traffic and other construction-related effects, implementation of **Mitigation Measure CUM-1** would require PRWA to consult with local jurisdictions, such as the City of Palmdale and Los Angeles County, as well as other state or regional agencies, such as Caltrans, to coordinate construction schedules and locations of other related projects in the vicinity, to minimize potential conflicts or compounding of effects, such as traffic congestion or circulation delays or increases in ambient noise levels. Impacts would be less than significant with mitigation.

c) **Less than Significant with Mitigation**. With implementation of mitigation measures included in this IS/MND, the proposed project would not result in substantial adverse effects to humans, either directly or indirectly.

Mitigation Measures

CUM-1: The construction contractor shall consult with appropriate agencies and jurisdictions prior to initiating ground-disturbing activities, to determine if other construction projects will occur coincidentally at the same time and in the vicinity of the proposed project, depending on project schedule and pipeline segment installation. Coordination of construction activities for coincident projects shall occur to ensure impacts to traffic, circulation, access, and noise do not compound to be cumulatively significant. Adjustments to construction schedules and plans, such as traffic control plans, shall be made accordingly as necessary.

References

Antelope Valley Air Quality Management District (AVAQMD) 2014. AVAQMD Designations and Classifications. Available: http://www.avaqmd.ca.gov/index.aspx?page=289.

AVAQMD. 2011. California Environmental Quality Act (CEQA) and Federal Conformity Guidelines. August 2011.

Antelope Valley Transit Authority (AVTA). 2010. Antelope Valley Transit Authority Long-Range Transit Plan. Accessed at http://www.avta.com/modules/showdocument.aspx?documentid=298 on July 11, 2014.

AVTA. 2013. Local Transit Service. Fall 2013. Accessed at http://www.avta.com/modules/showdocument.aspx?documentid=8 on July 11, 2014.

Bray, Madeleine. 2012 Los Angeles County Waterworks District No. 40 Regional Recycled Water Project Phase 2: Cultural Resources Assessment. Prepared for Los Angeles County Department of Public Works, Waterworks District No. 40. Prepared by ESA, January 2012). Gonzalez, Matthew and Candace Ehringer

California Department of Conservation, California Geological Survey. 2000. Open-File Report 2000-19A - General Location Guide for Ultramafic Rocks, in California - Areas More Likely to Contain, Naturally Occurring Asbestos, Compiled By Ronald K. Churchill and Robert L. Hill. August 2000.

California Department of Conservation, California Geological Survey. 2003a. State of California Seismic Hazard Zones Map, Littlerock Quadrangle. Released October 17. Available: http://gmw.consrv.ca.gov/shmp/download/quad/LITTLEROCK/maps/ozn_litr.pdf

California Department of Conservation, California Geological Survey. 2003b. State of California Seismic Hazard Zones Map, Palmdale Quadrangle. Released October 17. Available: http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_palmd.pdf

California Department of Conservation, California Geologic Survey, 2008. Seismic Hazards Zones Map. Palmdale, California, Quadrangle, Scale 1:24,000; Ritter Ridge, California, Quadrangle, Scale 1:24,000.

California Department of Conservation (CDOC). 1979. Palmdale Quadrangle. Effective January 1, 1979. Accessed at http://gmw.consrv.ca.gov/shmp/download/quad/PALMDALE/maps/PALMDALE.PDF on July 11, 2014.

California Department of Conservation. 2012. Farmland Mapping and Monitoring Program, Los Angeles County Important Farmland 2012.California Important Farmland Finder, State of California Department of Conservation, accessed June 12, 2014:

CAL FIRE, 2011. Very High Fire Hazard Severity Zones in Local Responsibility Area – Palmdale, September 2011. Available online (accessed June 15, 2014): http://www.fire.ca.gov/fire_prevention/fhsz_maps/FHSZ/los_angeles/Palmdale.pdf

California Department of Public Health, 2014. Regulations Related to Recycled Water. Revisions effective June 18, 2014. Accessed at: http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/RWregulations_20140618.pdf

California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual. September.

California Department of Transportation (Caltrans). 2014. California Scenic Highway Mapping System, Officially Designated State Scenic Highways and Historic Parkways. Last updated December 19, 2013. http://www.caltrans.ca.gov/hq/LandArch/scenic/cahisys.htm, Accessed July 2014

California Energy Commission (CEC), *Refining Estimates of Water-Related Energy Use in California*, Prepared by Navigant Consulting, Inc., December 2006.

California Stormwater Quality Association (CASQA). 2011. California Storm Water Best Management Practices Handbook for Construction. January 2011. Accessed at www.casqa.org on July 11, 2014.

City and County of San Francisco. 2008. Draft Environmental Impact Report, San Andreas Pipeline No. 3 Installation Project. SCH# 2008012114. December.

City of Palmdale. Palmdale Municipal Code. Available: http://www.codepublishing.com/ca/palmdale.html.

City of Palmdale. 1993. Safety Element of the City of Palmdale's General Plan.

City of Palmdale. 1993. City of Palmdale General Plan. Resolution 93-10. January 25.

City of Palmdale. 1994 and 2013. City of Palmdale Zoning Ordinance. Adopted by the City Council 12/14/94. Last amendment May 1, 2013. Ordinance No. U-1060. Available: http://www.cityofpalmdale.org/Your-City-Hall/City-Codes-and-Ordinances/Zoning-Ordinance. Accessed October 14, 2014.

City of Palmdale. 2014. City of Palmdale Parks and Recreation Facilities Locations and Residency Map. May-August 2014. Available: http://www.cityofpalmdale.org/Portals/0/Documents/Residents/Parks/Parks-Map.pdf. Accessed July 10, 2014.

City of Palmdale. 2009a. Website: Parks, Recreation & Special Events Facilities Map. Available: http://www.cityofpalmdale.org/departments/parks/parks.html. Accessed September 21, 2009.

City of Palmdale, 2009b. Upper Amargosa Creek Recharge Project EIR, Public Draft. Prepared by SAIC.

County of Los Angeles. 1975. Los Angeles County General Plan Noise Element. January.

County of Los Angeles. Municipal Code, Chapter 12.08 Noise Control. Available: https://library.municode.com/index.aspx?clientId=16274.

Department of Water Resources (DWR). 2004. California's Groundwater Bulletin 118: South Lahontan Hydrologic Region, Antelope Valley Groundwater Basin. Last update February 27, 2004.

Department of Toxic Substances Control (DTSC). 2007a. Envirostor. Accessed at https://www.envirostor.dtsc.ca.gov/public/ on July 11, 2014.

DTSC. 2007b. Hazardous Waste and Substances Site List (Cortese List). Accessed at http://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST on July 11, 2014.

DWR. 2009. Water Data Library, Water Quality Data: California Aqueduct at Station 41. Available: http://www.water.ca.gov/waterdatalibrary/waterquality/station_county/gst_report.cfm. Accessed: January 21, 2010.

Federal Emergency Management Agency (FEMA). 2008. Firm No. 06037C0700F. Map effective date: September 26, 2008. Accessed at https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=-1&panelIDs=06037C0700F$&Type=pbp&nonprinted=&unmapped= on July 11, 2014.

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: Synthesis Report. Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Available: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

Federal Transit Administration, U.S. Department of Transportation. 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. May.

Los Angeles County Department of Regional Planning. 2009. Zoning Ordinance Summary: Industrial Zones. Accessed at http://planning.lacounty.gov/luz/summary/category/industrial_zones/ on July 11, 2014.

Los Angeles County Airport Land Use Commission. 2004. Los Angeles County Airport Land Use Plan. Prepared by Department of Regional Planning.

Los Angeles County Sanitation District (LACSD). 2005. Final Palmdale Water Reclamation Plant 2025 Facilities Plan and Environmental Impact Report. September.

LACSD. 2014. Palmdale Water Reclamation Plant. Accessed at http://www.lacsd.org/wastewater/wwfacilities/antelope_valley_water_reclamation_plants/palmdale_wrp.asp on July 11, 2014.

Los Angeles County Department of Public Works, Waterworks Division No. 40 (Waterworks No. 40), 2008. North Los Angeles/Kern County Regional Recycled Water Project, Final Program EIR. Prepared by Environmental Science Associates. November 2008.

Los Angeles County Waterworks No. 40, 2013. Draft Salt and Nutrient Management Plan for the Antelope Valley, June 2013. *As cited in Carollo Engineers, PRWA Draft Recycled Water Facilities Plan, January 2014.*

Lahontan Regional Water Quality Control Board (RWQCB). 1995. Water Quality Control Plan for the Lahontan Region: North and South Basins. Effective March 31, 1995; Amendments through December 2005.

Lahontan RWQCB. 2004. Letter from Harold J. Singer, Executive Officer to James F. Stahl, General Manager, County of Los Angeles Sanitation District, regarding: National Pollutant Discharge Elimination System Stormwater Regulation Non-Applicability to the Los Angeles County Sanitation Districts Lancaster and Palmdale Water Reclamation Plants, Los Angeles County. August 6, 2004.

Lahontan RWQCB. 2005. Watershed Management Initiative Chapter. 2005 Revision.

Lahontan RWQCB. 2006. 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs. USEPA Approval: June 28, 2007.

Los Angeles County. 2008. Los Angeles County Draft General Plan: Planning Tomorrow's Great Places.

Los Angeles County. 2009. Los Angeles County Code, Title 22 Planning and Zoning. Available: http://ordlink.com/codes/lacounty/_DATA/TITLE22/index.html

Los Angeles County Metropolitan Transportation Authority (MTA). 2010. 2010 Congestion Management Program. Accessed at http://media.metro.net/docs/cmp_final_2010.pdf on July 10, 2014.

Metropolitan Transportation Authority. 2004. Congestion Management Program for Los Angeles County. Adopted July 22, 2004. Available: http://www.metro.net/projects_studies/cmp/default.htm

Gonzalez and Ehringer. 2014. *Palmdale Recycled Water Authority Recycled Water Facilities Master Plan Project: Phase I Cultural Resources Addendum*. Prepared for Carollo Engineers, Inc. Prepared by ESA, June 2014.

Palmdale Water District (PWD). 1999. Groundwater Assessment and Protection Program. Prepared by Standish-Lee Consultants. January.

PWD. 2010. Strategic Water Resources Plan: Final Report. March 2010. Accessed at http://www.palmdalewater.org/PDF/Reports_Studies/Planning/Strategic_Water_Resources.pdf on July 11, 2014.

PWD. 2011. 2010 Urban Water Management Plan. June 2011.Accessed at http://www.palmdalewater.org/PDF/Reports_Studies/Planning/Final_2010_UWMP.pdf on July 11, 2014. PWD. 2012. Strategic Water Resources Plan Final Environmental Impact Report. Prepared by Environmental Science Associated, July 2012.

RAND Corporation. 2008. Preparing for an Uncertain Future Climate in the Inland Empire Identifying Robust Water Management Strategies. By David G. Groves, Robert J. Lempert, Debra Knopman, Sandra H. Berry; Sponsored by the National Science Foundation.

Regional Water Management Group. 2007. Antelope Valley Integrated Regional Water Management Plan. Prepared with the assistance of Kennedy/Jenks Consultants. November.

Southern California Earthquake Center (SCEC). 2009. Website – Seismic Hazards in Southern California: Probable Earthquakes, 1994 to 2024 (SCEC Phase II report). Available: http://www.scec.org/resources/catalog/seismichazards.html. Accessed: September 15, 2009

Southern California Association of Governments (SCAG). 2012. Regional Transportation Plan 2012-2035. Accessed at http://www.scagrtp.net/toc on July 10, 2014.

South Coast Wildlands Project. 2000. Missing Linkages: Restoring Connectivity to the California Landscape.

State Water Resources Control Board (SWRCB). 2014. GeoTracker. Database search: Palmdale, CA, 7-11-14. Available: https://geotracker.waterboards.ca.gov/

State of California, State Water Resources Control Board (SWRCB). Recycled Water Policy, January 22, 2013. Available on-line (accessed June 16, 2014): http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf.

U.S. Environmental Protection Agency (USEPA). 1972. Noise from Construction Equipment and Operations.

WateReuse Research Foundation (WRF), *Implications of Future Water Supply Sources for Energy Demands*, Project Number WRF 08-16, 2012.

Wetherbee, Matthew and Kyle Garcia. 2009. *Phase I Cultural and Paleontological Resources Assessment of the Proposed Palmdale Water District Recycled Water Master Plan Project, City of Palmdale, County of Los Angeles, California*. Prepared for RMC Water and Environment, State Water Resources Control Board, and Palmdale Water District. Prepared by PCR Services Corporation, October 2009.

APPENDIX A-1
Air Quality Analysis

PWD Recycled Water Facilities Master Plan - Phase 2 Construction Emissions

Antelope Valley APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	13.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 18,900 linear feet x 30 feet wide construction zone = 567,000 sf = 13 acres.

Construction Phase - Anticipated schedule for Phase 2 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 18,900 ft x 4 ft x 13 ft = 982,800 cf = 36,400 cy x 0.25 = 9,100

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	34.00
tblConstructionPhase	NumDays	30.00	34.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	NumDays	10.00	14.00
tblConstructionPhase	PhaseEndDate	12/29/2015	11/11/2015
tblConstructionPhase	PhaseStartDate	11/12/2015	9/25/2015
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	MaterialExported	0.00	9,100.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4254	60.8980	48.0875	0.0850	1.4139	3.4348	4.8486	0.3141	3.2362	3.5502	0.0000	8,371.4659	8,371.4659	1.3812	0.0000	8,400.4709
Total	**7.4254**	**60.8980**	**48.0875**	**0.0850**	**1.4139**	**3.4348**	**4.8486**	**0.3141**	**3.2362**	**3.5502**	**0.0000**	**8,371.4659**	**8,371.4659**	**1.3812**	**0.0000**	**8,400.4709**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4254	60.8980	48.0875	0.0850	1.1481	3.4348	4.5828	0.2846	3.2362	3.5207	0.0000	8,371.4659	8,371.4659	1.3812	0.0000	8,400.4709
Total	**7.4254**	**60.8980**	**48.0875**	**0.0850**	**1.1481**	**3.4348**	**4.5828**	**0.2846**	**3.2362**	**3.5207**	**0.0000**	**8,371.4659**	**8,371.4659**	**1.3812**	**0.0000**	**8,400.4709**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.80**	**0.00**	**5.48**	**9.40**	**0.00**	**0.83**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/7/2015	9/24/2015	5	14	
2	Excavation & Shoring	Grading	9/25/2015	11/11/2015	5	34	
3	Pipe Installation	Building Construction	9/25/2015	11/11/2015	5	34	
4	Work Site Restoration	Paving	11/12/2015	12/1/2015	5	14	

Acres of Grading (Site Preparation Phase): 13

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48

Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,138.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9886	0.0000	0.9886	0.1069	0.0000	0.1069			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767		3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.9886**	**2.0382**	**3.0268**	**0.1069**	**1.9767**	**2.0836**		**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0975	1.0390	1.1549	3.0800e-003	0.0736	0.0184	0.0920	0.0202	0.0169	0.0371		313.4333	313.4333	2.2500e-003		313.4806
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.1921**	**1.1519**	**2.6605**	**5.2600e-003**	**0.2379**	**0.0199**	**0.2578**	**0.0638**	**0.0183**	**0.0821**		**500.6215**	**500.6215**	**0.0140**		**500.9148**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.3856	0.0000	0.3856	0.0417	0.0000	0.0417			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767	0.0000	3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.3856**	**2.0382**	**2.4237**	**0.0417**	**1.9767**	**2.0184**	**0.0000**	**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0975	1.0390	1.1549	3.0800e-003	0.0736	0.0184	0.0920	0.0202	0.0169	0.0371		313.4333	313.4333	2.2500e-003		313.4806
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.1921**	**1.1519**	**2.6605**	**5.2600e-003**	**0.2379**	**0.0199**	**0.2578**	**0.0638**	**0.0183**	**0.0821**		**500.6215**	**500.6215**	**0.0140**		**500.9148**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4358	0.0000	0.4358	0.0484	0.0000	0.0484			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533		2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.4358**	**1.3532**	**1.7890**	**0.0484**	**1.2533**	**1.3016**		**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7742	8.2520	9.1725	0.0245	0.5848	0.1461	0.7309	0.1603	0.1344	0.2947		2,489.3418	2,489.3418	0.0179		2,489.7170
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.8688**	**8.3649**	**10.6781**	**0.0267**	**0.7491**	**0.1476**	**0.8967**	**0.2039**	**0.1358**	**0.3397**		**2,676.5300**	**2,676.5300**	**0.0296**		**2,677.1512**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1699	0.0000	0.1699	0.0189	0.0000	0.0189			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533	0.0000	2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.1699**	**1.3532**	**1.5232**	**0.0189**	**1.2533**	**1.2721**	**0.0000**	**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7742	8.2520	9.1725	0.0245	0.5848	0.1461	0.7309	0.1603	0.1344	0.2947		2,489.3418	2,489.3418	0.0179		2,489.7170
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.8688**	**8.3649**	**10.6781**	**0.0267**	**0.7491**	**0.1476**	**0.8967**	**0.2039**	**0.1358**	**0.3397**		**2,676.5300**	**2,676.5300**	**0.0296**		**2,677.1512**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323		2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**		**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.1271	0.9236	1.5142	2.2100e-003	0.0647	0.0147	0.0794	0.0182	0.0135	0.0317		222.7989	222.7989	1.6300e-003		222.8331
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2217**	**1.0365**	**3.0198**	**4.3900e-003**	**0.2290**	**0.0162**	**0.2452**	**0.0618**	**0.0149**	**0.0767**		**409.9871**	**409.9871**	**0.0133**		**410.2673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323	0.0000	2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**	**0.0000**	**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1271	0.9236	1.5142	2.2100e-003	0.0647	0.0147	0.0794	0.0182	0.0135	0.0317		222.7989	222.7989	1.6300e-003		222.8331
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2217**	**1.0365**	**3.0198**	**4.3900e-003**	**0.2290**	**0.0162**	**0.2452**	**0.0618**	**0.0149**	**0.0767**		**409.9871**	**409.9871**	**0.0133**		**410.2673**

3.5 Work Site Restoration - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7899	35.8265	22.8940	0.0356		2.1714	2.1714		2.0304	2.0304		3,506.2369	3,506.2369	0.9063		3,525.2693
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7899**	**35.8265**	**22.8940**	**0.0356**		**2.1714**	**2.1714**		**2.0304**	**2.0304**		**3,506.2369**	**3,506.2369**	**0.9063**		**3,525.2693**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1863	2.4842	3.6000e-003	0.2711	2.4700e-003	0.2736	0.0719	2.2500e-003	0.0742		308.8605	308.8605	0.0193		309.2664
Total	**0.1561**	**0.1863**	**2.4842**	**3.6000e-003**	**0.2711**	**2.4700e-003**	**0.2736**	**0.0719**	**2.2500e-003**	**0.0742**		**308.8605**	**308.8605**	**0.0193**		**309.2664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7899	35.8265	22.8940	0.0356		2.1714	2.1714		2.0304	2.0304	0.0000	3,506.2369	3,506.2369	0.9063		3,525.2693
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7899**	**35.8265**	**22.8940**	**0.0356**		**2.1714**	**2.1714**		**2.0304**	**2.0304**	**0.0000**	**3,506.2369**	**3,506.2369**	**0.9063**		**3,525.2693**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1863	2.4842	3.6000e-003	0.2711	2.4700e-003	0.2736	0.0719	2.2500e-003	0.0742		308.8605	308.8605	0.0193		309.2664
Total	**0.1561**	**0.1863**	**2.4842**	**3.6000e-003**	**0.2711**	**2.4700e-003**	**0.2736**	**0.0719**	**2.2500e-003**	**0.0742**		**308.8605**	**308.8605**	**0.0193**		**309.2664**

PWD Recycled Water Facilities Master Plan - Phase 2 Construction Emissions

Antelope Valley APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	13.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 18,900 linear feet x 30 feet wide construction zone = 567,000 sf = 13 acres.

Construction Phase - Anticipated schedule for Phase 2 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 18,900 ft x 4 ft x 13 ft = 982,800 cf = 36,400 cy x 0.25 = 9,100

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	34.00
tblConstructionPhase	NumDays	30.00	34.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	NumDays	10.00	14.00
tblConstructionPhase	PhaseEndDate	12/29/2015	11/11/2015
tblConstructionPhase	PhaseStartDate	11/12/2015	9/25/2015
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	MaterialExported	0.00	9,100.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4653	61.3290	49.1583	0.0845	1.4139	3.4353	4.8492	0.3141	3.2367	3.5508	0.0000	8,319.5294	8,319.5294	1.3815	0.0000	8,348.5404
Total	**7.4653**	**61.3290**	**49.1583**	**0.0845**	**1.4139**	**3.4353**	**4.8492**	**0.3141**	**3.2367**	**3.5508**	**0.0000**	**8,319.5294**	**8,319.5294**	**1.3815**	**0.0000**	**8,348.5404**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4653	61.3290	49.1583	0.0845	1.1481	3.4353	4.5834	0.2846	3.2367	3.5213	0.0000	8,319.5294	8,319.5294	1.3815	0.0000	8,348.5404
Total	**7.4653**	**61.3290**	**49.1583**	**0.0845**	**1.1481**	**3.4353**	**4.5834**	**0.2846**	**3.2367**	**3.5213**	**0.0000**	**8,319.5294**	**8,319.5294**	**1.3815**	**0.0000**	**8,348.5404**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.80**	**0.00**	**5.48**	**9.40**	**0.00**	**0.83**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Preparation	Site Preparation	9/7/2015	9/24/2015	5	14	
2	Excavation & Shoring	Grading	9/25/2015	11/11/2015	5	34	
3	Pipe Installation	Building Construction	9/25/2015	11/11/2015	5	34	
4	Work Site Restoration	Paving	11/12/2015	12/1/2015	5	14	

Acres of Grading (Site Preparation Phase): 13

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29

Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,138.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9886	0.0000	0.9886	0.1069	0.0000	0.1069			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767		3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.9886**	**2.0382**	**3.0268**	**0.1069**	**1.9767**	**2.0836**		**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1037	1.0871	1.3228	3.0800e-003	0.0736	0.0185	0.0921	0.0202	0.0170	0.0372		312.6803	312.6803	2.2800e-003		312.7282
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.1883**	**1.2073**	**2.5611**	**5.0000e-003**	**0.2379**	**0.0199**	**0.2579**	**0.0638**	**0.0183**	**0.0821**		**477.8101**	**477.8101**	**0.0140**		**478.1040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3856	0.0000	0.3856	0.0417	0.0000	0.0417			0.0000			0.0000

Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767	0.0000	3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.3856**	**2.0382**	**2.4237**	**0.0417**	**1.9767**	**2.0184**	**0.0000**	**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1037	1.0871	1.3228	3.0800e-003	0.0736	0.0185	0.0921	0.0202	0.0170	0.0372		312.6803	312.6803	2.2800e-003		312.7282
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.1883**	**1.2073**	**2.5611**	**5.0000e-003**	**0.2379**	**0.0199**	**0.2579**	**0.0638**	**0.0183**	**0.0821**		**477.8101**	**477.8101**	**0.0140**		**478.1040**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4358	0.0000	0.4358	0.0484	0.0000	0.0484			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533		2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.4358**	**1.3532**	**1.7890**	**0.0484**	**1.2533**	**1.3016**		**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8235	8.6340	10.5061	0.0245	0.5848	0.1465	0.7313	0.1603	0.1348	0.2951		2,483.3612	2,483.3612	0.0181		2,483.7415
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.9081**	**8.7542**	**11.7444**	**0.0264**	**0.7491**	**0.1480**	**0.8971**	**0.2039**	**0.1362**	**0.3400**		**2,648.4910**	**2,648.4910**	**0.0298**		**2,649.1173**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1699	0.0000	0.1699	0.0189	0.0000	0.0189			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533	0.0000	2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.1699**	**1.3532**	**1.5232**	**0.0189**	**1.2533**	**1.2721**	**0.0000**	**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.8235	8.6340	10.5061	0.0245	0.5848	0.1465	0.7313	0.1603	0.1348	0.2951		2,483.3612	2,483.3612	0.0181		2,483.7415
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.9081**	**8.7542**	**11.7444**	**0.0264**	**0.7491**	**0.1480**	**0.8971**	**0.2039**	**0.1362**	**0.3400**		**2,648.4910**	**2,648.4910**	**0.0298**		**2,649.1173**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323		2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**		**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1377	0.9580	1.7859	2.2000e-003	0.0647	0.0149	0.0796	0.0182	0.0137	0.0319		220.9596	220.9596	1.6800e-003		220.9948

Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2224**	**1.0782**	**3.0242**	**4.1200e-003**	**0.2290**	**0.0164**	**0.2454**	**0.0618**	**0.0150**	**0.0768**		**386.0894**	**386.0894**	**0.0134**		**386.3706**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323	0.0000	2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**	**0.0000**	**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1377	0.9580	1.7859	2.2000e-003	0.0647	0.0149	0.0796	0.0182	0.0137	0.0319		220.9596	220.9596	1.6800e-003		220.9948
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2224**	**1.0782**	**3.0242**	**4.1200e-003**	**0.2290**	**0.0164**	**0.2454**	**0.0618**	**0.0150**	**0.0768**		**386.0894**	**386.0894**	**0.0134**		**386.3706**

3.5 Work Site Restoration - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7899	35.8265	22.8940	0.0356		2.1714	2.1714		2.0304	2.0304		3,506.2369	3,506.2369	0.9063		3,525.2693
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7899**	**35.8265**	**22.8940**	**0.0356**		**2.1714**	**2.1714**		**2.0304**	**2.0304**		**3,506.2369**	**3,506.2369**	**0.9063**		**3,525.2693**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1396	0.1983	2.0432	3.1700e-003	0.2711	2.4700e-003	0.2736	0.0719	2.2500e-003	0.0742		272.4642	272.4642	0.0193		272.8701
Total	**0.1396**	**0.1983**	**2.0432**	**3.1700e-003**	**0.2711**	**2.4700e-003**	**0.2736**	**0.0719**	**2.2500e-003**	**0.0742**		**272.4642**	**272.4642**	**0.0193**		**272.8701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	3.7899	35.8265	22.8940	0.0356		2.1714	2.1714		2.0304	2.0304	0.0000	3,506.2369	3,506.2369	0.9063		3,525.2693
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7899**	**35.8265**	**22.8940**	**0.0356**		**2.1714**	**2.1714**		**2.0304**	**2.0304**	**0.0000**	**3,506.2369**	**3,506.2369**	**0.9063**		**3,525.2693**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1396	0.1983	2.0432	3.1700e-003	0.2711	2.4700e-003	0.2736	0.0719	2.2500e-003	0.0742		272.4642	272.4642	0.0193		272.8701
Total	**0.1396**	**0.1983**	**2.0432**	**3.1700e-003**	**0.2711**	**2.4700e-003**	**0.2736**	**0.0719**	**2.2500e-003**	**0.0742**		**272.4642**	**272.4642**	**0.0193**		**272.8701**

PWD Recycled Water Facilities Master Plan - Phase 3 Construction Emissions

Antelope Valley APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	11.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 16,800 linear feet x 30 feet wide construction zone = 504,000 sf = 11.6 acres.

Construction Phase - Anticipated schedule for Phase 3 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 16,800ft x 4 ft x 13 ft = 873,600 cf = 32,356 cy x 0.25 = 8,089 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	29.00
tblConstructionPhase	NumDays	30.00	29.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	10.00	12.00
tblConstructionPhase	PhaseEndDate	3/8/2016	1/27/2016
tblConstructionPhase	PhaseStartDate	1/28/2016	12/18/2015
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	MaterialExported	0.00	8,089.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	11.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4576	61.2411	48.4688	0.0861	2.3339	3.4408	5.7747	0.5379	3.2418	3.7797	0.0000	8,474.9559	8,474.9559	1.3819	0.0000	8,503.9765
2016	6.9218	56.4557	47.2116	0.0860	1.7009	3.1546	4.8555	0.3826	2.9713	3.3538	0.0000	8,389.2225	8,389.2225	1.3576	0.0000	8,417.7311
Total	**14.3794**	**117.6967**	**95.6804**	**0.1720**	**4.0348**	**6.5954**	**10.6302**	**0.9205**	**6.2131**	**7.1335**	**0.0000**	**16,864.1784**	**16,864.1784**	**2.7395**	**0.0000**	**16,921.7076**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4576	61.2411	48.4688	0.0861	2.0559	3.4408	5.4967	0.5071	3.2418	3.7488	0.0000	8,474.9559	8,474.9559	1.3819	0.0000	8,503.9765
2016	6.9218	56.4557	47.2116	0.0860	1.4229	3.1546	4.5775	0.3517	2.9713	3.3230	0.0000	8,389.2225	8,389.2225	1.3576	0.0000	8,417.7311
Total	**14.3794**	**117.6967**	**95.6804**	**0.1720**	**3.4788**	**6.5954**	**10.0742**	**0.8587**	**6.2131**	**7.0718**	**0.0000**	**16,864.1784**	**16,864.1784**	**2.7395**	**0.0000**	**16,921.7075**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**13.78**	**0.00**	**5.23**	**6.70**	**0.00**	**0.87**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/2/2015	12/17/2015	5	12	

2	Excavation & Shoring	Grading	12/18/2015	1/27/2016	5	29	
3	Pipe Installation	Building Construction	12/18/2015	1/27/2016	5	29	
4	Work Site Restoration	Paving	1/28/2016	2/12/2016	5	12	

Acres of Grading (Site Preparation Phase): 11.6

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20

Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,011.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					1.0296	0.0000	1.0296	0.1114	0.0000	0.1114			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767		3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**1.0296**	**2.0382**	**3.0678**	**0.1114**	**1.9767**	**2.0880**		**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1137	1.2122	1.3474	3.6000e-003	0.0859	0.0215	0.1074	0.0236	0.0198	0.0433		365.6722	365.6722	2.6200e-003		365.7273
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2083**	**1.3251**	**2.8530**	**5.7800e-003**	**0.2502**	**0.0230**	**0.2732**	**0.0671**	**0.0211**	**0.0882**		**552.8604**	**552.8604**	**0.0143**		**553.1615**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4016	0.0000	0.4016	0.0434	0.0000	0.0434			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767	0.0000	3,274.7564	3,274.7564	0.6282		3,287.9482

Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.4016**	**2.0382**	**2.4397**	**0.0434**	**1.9767**	**2.0201**	**0.0000**	**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1137	1.2122	1.3474	3.6000e-003	0.0859	0.0215	0.1074	0.0236	0.0198	0.0433		365.6722	365.6722	2.6200e-003		365.7273
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2083**	**1.3251**	**2.8530**	**5.7800e-003**	**0.2502**	**0.0230**	**0.2732**	**0.0671**	**0.0211**	**0.0882**		**552.8604**	**552.8604**	**0.0143**		**553.1615**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4557	0.0000	0.4557	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533		2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.4557**	**1.3532**	**1.8090**	**0.0506**	**1.2533**	**1.3039**		**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8064	8.5950	9.5538	0.0255	1.4848	0.1522	1.6371	0.3819	0.1400	0.5219		2,592.8318	2,592.8318	0.0186		2,593.2226
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.9010**	**8.7080**	**11.0594**	**0.0277**	**1.6491**	**0.1537**	**1.8028**	**0.4255**	**0.1414**	**0.5669**		**2,780.0200**	**2,780.0200**	**0.0303**		**2,780.6568**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1777	0.0000	0.1777	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533	0.0000	2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.1777**	**1.3532**	**1.5310**	**0.0197**	**1.2533**	**1.2730**	**0.0000**	**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.8064	8.5950	9.5538	0.0255	1.4848	0.1522	1.6371	0.3819	0.1400	0.5219		2,592.8318	2,592.8318	0.0186		2,593.2226
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.9010**	**8.7080**	**11.0594**	**0.0277**	**1.6491**	**0.1537**	**1.8028**	**0.4255**	**0.1414**	**0.5669**		**2,780.0200**	**2,780.0200**	**0.0303**		**2,780.6568**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4557	0.0000	0.4557	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4557**	**1.2446**	**1.7003**	**0.0506**	**1.1532**	**1.2038**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7611	7.2818	9.2193	0.0255	0.8518	0.1331	0.9849	0.2266	0.1224	0.3490		2,562.8496	2,562.8496	0.0176		2,563.2187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698

Total	**0.8448**	**7.3831**	**10.5731**	**0.0277**	**1.0161**	**0.1345**	**1.1506**	**0.2701**	**0.1237**	**0.3938**		**2,743.3944**	**2,743.3944**	**0.0283**		**2,743.9884**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1777	0.0000	0.1777	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1777**	**1.2446**	**1.4223**	**0.0197**	**1.1532**	**1.1729**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7611	7.2818	9.2193	0.0255	0.8518	0.1331	0.9849	0.2266	0.1224	0.3490		2,562.8496	2,562.8496	0.0176		2,563.2187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8448**	**7.3831**	**10.5731**	**0.0277**	**1.0161**	**0.1345**	**1.1506**	**0.2701**	**0.1237**	**0.3938**		**2,743.3944**	**2,743.3944**	**0.0283**		**2,743.9884**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323		2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**		**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1271	0.9236	1.5142	2.2100e-003	0.0647	0.0147	0.0794	0.0182	0.0135	0.0317		222.7989	222.7989	1.6300e-003		222.8331
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2217**	**1.0365**	**3.0198**	**4.3900e-003**	**0.2290**	**0.0162**	**0.2452**	**0.0618**	**0.0149**	**0.0767**		**409.9871**	**409.9871**	**0.0133**		**410.2673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323	0.0000	2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**	**0.0000**	**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1271	0.9236	1.5142	2.2100e-003	0.0647	0.0147	0.0794	0.0182	0.0135	0.0317		222.7989	222.7989	1.6300e-003		222.8331
Worker	0.0946	0.1129	1.5056	2.1800e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		187.1882	187.1882	0.0117		187.4342
Total	**0.2217**	**1.0365**	**3.0198**	**4.3900e-003**	**0.2290**	**0.0162**	**0.2452**	**0.0618**	**0.0149**	**0.0767**		**409.9871**	**409.9871**	**0.0133**		**410.2673**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

PWD Recycled Water Facilities Master Plan - Phase 3 Construction Emissions

Antelope Valley APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	11.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 16,800 linear feet x 30 feet wide construction zone = 504,000 sf = 11.6 acres.

Construction Phase - Anticipated schedule for Phase 3 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 16,800ft x 4 ft x 13 ft = 873,600 cf = 32,356 cy x 0.25 = 8,089 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	29.00
tblConstructionPhase	NumDays	30.00	29.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	10.00	12.00
tblConstructionPhase	PhaseEndDate	3/8/2016	1/27/2016
tblConstructionPhase	PhaseStartDate	1/28/2016	12/18/2015
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	MaterialExported	0.00	8,089.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	11.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4995	61.6879	49.5950	0.0855	2.3339	3.4414	5.7753	0.5379	3.2423	3.7802	0.0000	8,422.7707	8,422.7707	1.3822	0.0000	8,451.7976
2016	6.9623	56.8339	48.3668	0.0854	1.7009	3.1551	4.8560	0.3826	2.9717	3.3543	0.0000	8,338.6157	8,338.6157	1.3579	0.0000	8,367.1308
Total	**14.4618**	**118.5218**	**97.9618**	**0.1709**	**4.0348**	**6.5965**	**10.6313**	**0.9205**	**6.2141**	**7.1345**	**0.0000**	**16,761.3864**	**16,761.3864**	**2.7401**	**0.0000**	**16,818.9284**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	7.4995	61.6879	49.5950	0.0855	2.0559	3.4414	5.4973	0.5071	3.2423	3.7494	0.0000	8,422.7707	8,422.7707	1.3822	0.0000	8,451.7976
2016	6.9623	56.8339	48.3668	0.0854	1.4229	3.1551	4.5780	0.3517	2.9717	3.3234	0.0000	8,338.6156	8,338.6156	1.3579	0.0000	8,367.1308
Total	**14.4618**	**118.5218**	**97.9618**	**0.1709**	**3.4788**	**6.5965**	**10.0753**	**0.8587**	**6.2141**	**7.0728**	**0.0000**	**16,761.3864**	**16,761.3864**	**2.7401**	**0.0000**	**16,818.9284**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**13.78**	**0.00**	**5.23**	**6.70**	**0.00**	**0.87**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/2/2015	12/17/2015	5	12	

2	Excavation & Shoring	Grading	12/18/2015	1/27/2016	5	29	
3	Pipe Installation	Building Construction	12/18/2015	1/27/2016	5	29	
4	Work Site Restoration	Paving	1/28/2016	2/12/2016	5	12	

Acres of Grading (Site Preparation Phase): 11.6

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20

Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,011.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					1.0296	0.0000	1.0296	0.1114	0.0000	0.1114			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767		3,274.7564	3,274.7564	0.6282		3,287.9482
Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**1.0296**	**2.0382**	**3.0678**	**0.1114**	**1.9767**	**2.0880**		**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1210	1.2683	1.5433	3.5900e-003	0.0859	0.0215	0.1074	0.0236	0.0198	0.0434		364.7937	364.7937	2.6600e-003		364.8496
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2056**	**1.3885**	**2.7816**	**5.5100e-003**	**0.2502**	**0.0230**	**0.2732**	**0.0671**	**0.0212**	**0.0883**		**529.9235**	**529.9235**	**0.0144**		**530.2254**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4016	0.0000	0.4016	0.0434	0.0000	0.0434			0.0000			0.0000
Off-Road	3.7666	29.4050	20.2388	0.0342		2.0382	2.0382		1.9767	1.9767	0.0000	3,274.7564	3,274.7564	0.6282		3,287.9482

Total	**3.7666**	**29.4050**	**20.2388**	**0.0342**	**0.4016**	**2.0382**	**2.4397**	**0.0434**	**1.9767**	**2.0201**	**0.0000**	**3,274.7564**	**3,274.7564**	**0.6282**		**3,287.9482**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1210	1.2683	1.5433	3.5900e-003	0.0859	0.0215	0.1074	0.0236	0.0198	0.0434		364.7937	364.7937	2.6600e-003		364.8496
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2056**	**1.3885**	**2.7816**	**5.5100e-003**	**0.2502**	**0.0230**	**0.2732**	**0.0671**	**0.0212**	**0.0883**		**529.9235**	**529.9235**	**0.0144**		**530.2254**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4557	0.0000	0.4557	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533		2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.4557**	**1.3532**	**1.8090**	**0.0506**	**1.2533**	**1.3039**		**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8577	8.9929	10.9429	0.0255	1.4848	0.1526	1.6375	0.3819	0.1404	0.5223		2,586.6026	2,586.6026	0.0189		2,586.9987
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.9423**	**9.1131**	**12.1812**	**0.0274**	**1.6491**	**0.1541**	**1.8033**	**0.4255**	**0.1418**	**0.5673**		**2,751.7324**	**2,751.7324**	**0.0306**		**2,752.3745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1777	0.0000	0.1777	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.4880	25.2918	16.5177	0.0283		1.3532	1.3532		1.2533	1.2533	0.0000	2,814.3470	2,814.3470	0.7710		2,830.5389
Total	**2.4880**	**25.2918**	**16.5177**	**0.0283**	**0.1777**	**1.3532**	**1.5310**	**0.0197**	**1.2533**	**1.2730**	**0.0000**	**2,814.3470**	**2,814.3470**	**0.7710**		**2,830.5389**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.8577	8.9929	10.9429	0.0255	1.4848	0.1526	1.6375	0.3819	0.1404	0.5223		2,586.6026	2,586.6026	0.0189		2,586.9987
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.9423**	**9.1131**	**12.1812**	**0.0274**	**1.6491**	**0.1541**	**1.8033**	**0.4255**	**0.1418**	**0.5673**		**2,751.7324**	**2,751.7324**	**0.0306**		**2,752.3745**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4557	0.0000	0.4557	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4557**	**1.2446**	**1.7003**	**0.0506**	**1.1532**	**1.2038**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8099	7.6183	10.5961	0.0254	0.8518	0.1334	0.9852	0.2266	0.1227	0.3493		2,556.6855	2,556.6855	0.0178		2,557.0600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615

Total	**0.8845**	**7.7260**	**11.7056**	**0.0274**	**1.0161**	**0.1348**	**1.1509**	**0.2701**	**0.1240**	**0.3941**		**2,715.9220**	**2,715.9220**	**0.0286**		**2,716.5215**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1777	0.0000	0.1777	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1777**	**1.2446**	**1.4223**	**0.0197**	**1.1532**	**1.1729**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8099	7.6183	10.5961	0.0254	0.8518	0.1334	0.9852	0.2266	0.1227	0.3493		2,556.6855	2,556.6855	0.0178		2,557.0600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8845**	**7.7260**	**11.7056**	**0.0274**	**1.0161**	**0.1348**	**1.1509**	**0.2701**	**0.1240**	**0.3941**		**2,715.9220**	**2,715.9220**	**0.0286**		**2,716.5215**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323		2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**		**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1377	0.9580	1.7859	2.2000e-003	0.0647	0.0149	0.0796	0.0182	0.0137	0.0319		220.9596	220.9596	1.6800e-003		220.9948
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2224**	**1.0782**	**3.0242**	**4.1200e-003**	**0.2290**	**0.0164**	**0.2454**	**0.0618**	**0.0150**	**0.0768**		**386.0894**	**386.0894**	**0.0134**		**386.3706**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	3.8469	26.2048	17.8719	0.0256		1.9177	1.9177		1.8323	1.8323	0.0000	2,470.6019	2,470.6019	0.5672		2,482.5136
Total	**3.8469**	**26.2048**	**17.8719**	**0.0256**		**1.9177**	**1.9177**		**1.8323**	**1.8323**	**0.0000**	**2,470.6019**	**2,470.6019**	**0.5672**		**2,482.5136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1377	0.9580	1.7859	2.2000e-003	0.0647	0.0149	0.0796	0.0182	0.0137	0.0319		220.9596	220.9596	1.6800e-003		220.9948
Worker	0.0846	0.1202	1.2383	1.9200e-003	0.1643	1.4900e-003	0.1658	0.0436	1.3700e-003	0.0449		165.1298	165.1298	0.0117		165.3758
Total	**0.2224**	**1.0782**	**3.0242**	**4.1200e-003**	**0.2290**	**0.0164**	**0.2454**	**0.0618**	**0.0150**	**0.0768**		**386.0894**	**386.0894**	**0.0134**		**386.3706**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

PWD Recycled Water Facilities Master Plan - Phase 4 Construction Emissions

Antelope Valley APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.82	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 7,000 linear feet x 30 feet wide construction zone =210,000 sf = 4.82 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 7,000 ft x 4 ft x 13 ft = 364,000 cf = 13,481 cy x 0.25 = 3,370 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	12.00
tblConstructionPhase	NumDays	8.00	12.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2016	3/8/2016
tblConstructionPhase	PhaseStartDate	3/9/2016	2/22/2016
tblConstructionPhase	PhaseStartDate	2/20/2016	2/22/2016
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	MaterialExported	0.00	3,370.00
tblGrading	MaterialExported	0.00	215.00
tblLandUse	LotAcreage	0.00	4.82
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9266	56.5019	47.2701	0.0862	1.4642	3.1554	4.6196	0.3243	2.9721	3.2964	0.0000	8,405.4885	8,405.4885	1.3577	0.0000	8,433.9995
Total	**6.9266**	**56.5019**	**47.2701**	**0.0862**	**1.4642**	**3.1554**	**4.6196**	**0.3243**	**2.9721**	**3.2964**	**0.0000**	**8,405.4885**	**8,405.4885**	**1.3577**	**0.0000**	**8,433.9995**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9266	56.5019	47.2701	0.0862	1.1850	3.1554	4.3404	0.2933	2.9721	3.2654	0.0000	8,405.4885	8,405.4885	1.3577	0.0000	8,433.9995
Total	**6.9266**	**56.5019**	**47.2701**	**0.0862**	**1.1850**	**3.1554**	**4.3404**	**0.2933**	**2.9721**	**3.2654**	**0.0000**	**8,405.4885**	**8,405.4885**	**1.3577**	**0.0000**	**8,433.9995**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.07**	**0.00**	**6.04**	**9.56**	**0.00**	**0.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/15/2016	2/19/2016	5	5	
2	Excavation & Shoring	Grading	2/22/2016	3/8/2016	5	12	
3	Pipe Installation	Building Construction	2/22/2016	3/8/2016	5	12	
4	Work Site Restoration	Paving	3/9/2016	3/15/2016	5	5	

Acres of Grading (Site Preparation Phase): 4.82

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	21.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	421.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0262	0.0000	1.0262	0.1110	0.0000	0.1110			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**1.0262**	**1.8424**	**2.8685**	**0.1110**	**1.7859**	**1.8969**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0917	0.8773	1.1107	3.0700e-003	0.0734	0.0160	0.0894	0.0201	0.0148	0.0349		308.7587	308.7587	2.1200e-003		308.8032
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1754**	**0.9786**	**2.4645**	**5.2500e-003**	**0.2377**	**0.0174**	**0.2551**	**0.0637**	**0.0161**	**0.0797**		**489.3036**	**489.3036**	**0.0128**		**489.5730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.4002	0.0000	0.4002	0.0433	0.0000	0.0433			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.4002**	**1.8424**	**2.2426**	**0.0433**	**1.7859**	**1.8292**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0917	0.8773	1.1107	3.0700e-003	0.0734	0.0160	0.0894	0.0201	0.0148	0.0349		308.7587	308.7587	2.1200e-003		308.8032
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1754**	**0.9786**	**2.4645**	**5.2500e-003**	**0.2377**	**0.0174**	**0.2551**	**0.0637**	**0.0161**	**0.0797**		**489.3036**	**489.3036**	**0.0128**		**489.5730**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4577	0.0000	0.4577	0.0508	0.0000	0.0508			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157

Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4577**	**1.2446**	**1.7023**	**0.0508**	**1.1532**	**1.2040**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7659	7.3281	9.2778	0.0256	0.6131	0.1339	0.7470	0.1681	0.1232	0.2913		2,579.1156	2,579.1156	0.0177		2,579.4870
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8496**	**7.4293**	**10.6317**	**0.0278**	**0.7774**	**0.1353**	**0.9127**	**0.2117**	**0.1245**	**0.3361**		**2,759.6605**	**2,759.6605**	**0.0284**		**2,760.2568**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1785	0.0000	0.1785	0.0198	0.0000	0.0198			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1785**	**1.2446**	**1.4231**	**0.0198**	**1.1532**	**1.1730**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7659	7.3281	9.2778	0.0256	0.6131	0.1339	0.7470	0.1681	0.1232	0.2913		2,579.1156	2,579.1156	0.0177		2,579.4870
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8496**	**7.4293**	**10.6317**	**0.0278**	**0.7774**	**0.1353**	**0.9127**	**0.2117**	**0.1245**	**0.3361**		**2,759.6605**	**2,759.6605**	**0.0284**		**2,760.2568**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698

Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

PWD Recycled Water Facilities Master Plan - Phase 4 Construction Emissions

Antelope Valley APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.82	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 7,000 linear feet x 30 feet wide construction zone =210,000 sf = 4.82 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 7,000 ft x 4 ft x 13 ft = 364,000 cf = 13,481 cy x 0.25 = 3,370 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	12.00
tblConstructionPhase	NumDays	8.00	12.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2016	3/8/2016
tblConstructionPhase	PhaseStartDate	3/9/2016	2/22/2016
tblConstructionPhase	PhaseStartDate	2/20/2016	2/22/2016
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	MaterialExported	0.00	3,370.00
tblGrading	MaterialExported	0.00	215.00
tblLandUse	LotAcreage	0.00	4.82
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9675	56.8822	48.4341	0.0856	1.4642	3.1559	4.6201	0.3243	2.9725	3.2968	0.0000	8,354.8426	8,354.8426	1.3580	0.0000	8,383.3601
Total	**6.9675**	**56.8822**	**48.4341**	**0.0856**	**1.4642**	**3.1559**	**4.6201**	**0.3243**	**2.9725**	**3.2968**	**0.0000**	**8,354.8426**	**8,354.8426**	**1.3580**	**0.0000**	**8,383.3601**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9675	56.8822	48.4341	0.0856	1.1850	3.1559	4.3409	0.2933	2.9725	3.2658	0.0000	8,354.8426	8,354.8426	1.3580	0.0000	8,383.3601
Total	**6.9675**	**56.8822**	**48.4341**	**0.0856**	**1.1850**	**3.1559**	**4.3409**	**0.2933**	**2.9725**	**3.2658**	**0.0000**	**8,354.8426**	**8,354.8426**	**1.3580**	**0.0000**	**8,383.3601**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.07**	**0.00**	**6.04**	**9.56**	**0.00**	**0.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/15/2016	2/19/2016	5	5	
2	Excavation & Shoring	Grading	2/22/2016	3/8/2016	5	12	
3	Pipe Installation	Building Construction	2/22/2016	3/8/2016	5	12	
4	Work Site Restoration	Paving	3/9/2016	3/15/2016	5	5	

Acres of Grading (Site Preparation Phase): 4.82

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	21.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	421.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0262	0.0000	1.0262	0.1110	0.0000	0.1110			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**1.0262**	**1.8424**	**2.8685**	**0.1110**	**1.7859**	**1.8969**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0976	0.9178	1.2766	3.0600e-003	0.0734	0.0161	0.0895	0.0201	0.0148	0.0349		308.0161	308.0161	2.1500e-003		308.0612
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1722**	**1.0255**	**2.3860**	**4.9800e-003**	**0.2377**	**0.0175**	**0.2552**	**0.0637**	**0.0161**	**0.0798**		**467.2527**	**467.2527**	**0.0129**		**467.5227**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.4002	0.0000	0.4002	0.0433	0.0000	0.0433			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.4002**	**1.8424**	**2.2426**	**0.0433**	**1.7859**	**1.8292**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0976	0.9178	1.2766	3.0600e-003	0.0734	0.0161	0.0895	0.0201	0.0148	0.0349		308.0161	308.0161	2.1500e-003		308.0612
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1722**	**1.0255**	**2.3860**	**4.9800e-003**	**0.2377**	**0.0175**	**0.2552**	**0.0637**	**0.0161**	**0.0798**		**467.2527**	**467.2527**	**0.0129**		**467.5227**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4577	0.0000	0.4577	0.0508	0.0000	0.0508			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157

Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4577**	**1.2446**	**1.7023**	**0.0508**	**1.1532**	**1.2040**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8151	7.6667	10.6634	0.0256	0.6131	0.1342	0.7474	0.1681	0.1235	0.2916		2,572.9124	2,572.9124	0.0180		2,573.2893
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8897**	**7.7743**	**11.7728**	**0.0275**	**0.7774**	**0.1356**	**0.9131**	**0.2117**	**0.1248**	**0.3364**		**2,732.1489**	**2,732.1489**	**0.0287**		**2,732.7508**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1785	0.0000	0.1785	0.0198	0.0000	0.0198			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1785**	**1.2446**	**1.4231**	**0.0198**	**1.1532**	**1.1730**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8151	7.6667	10.6634	0.0256	0.6131	0.1342	0.7474	0.1681	0.1235	0.2916		2,572.9124	2,572.9124	0.0180		2,573.2893
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8897**	**7.7743**	**11.7728**	**0.0275**	**0.7774**	**0.1356**	**0.9131**	**0.2117**	**0.1248**	**0.3364**		**2,732.1489**	**2,732.1489**	**0.0287**		**2,732.7508**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615

Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

PWD Recycled Water Facilities Master Plan - Phase 5 Construction Emissions

Antelope Valley APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	8.70	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 12,600 linear feet x 30 feet wide construction zone = 378,000 sf = 8.7 acres.

Construction Phase - Anticipated schedule for Phase 5 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

On-road Fugitive Dust -

Grading - Anticipated 25% of material to be removed during excavation & shroing: 12,600 ft x 4 ft x 13 ft = 655,200 cf = 24,267 cy x 0.25 = 6,067 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	23.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	PhaseEndDate	6/1/2016	4/29/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	3/30/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	5/2/2016
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	MaterialExported	0.00	6,067.00
tblGrading	MaterialExported	0.00	405.00
tblLandUse	LotAcreage	0.00	8.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.8802	56.0576	46.7076	0.0846	1.4003	3.1473	4.5476	0.3111	2.9646	3.2757	0.0000	8,249.1381	8,249.1381	1.3566	0.0000	8,277.6265
Total	**6.8802**	**56.0576**	**46.7076**	**0.0846**	**1.4003**	**3.1473**	**4.5476**	**0.3111**	**2.9646**	**3.2757**	**0.0000**	**8,249.1381**	**8,249.1381**	**1.3566**	**0.0000**	**8,277.6265**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.8802	56.0576	46.7076	0.0846	1.1374	3.1473	4.2847	0.2820	2.9646	3.2465	0.0000	8,249.1381	8,249.1381	1.3566	0.0000	8,277.6265
Total	**6.8802**	**56.0576**	**46.7076**	**0.0846**	**1.1374**	**3.1473**	**4.2847**	**0.2820**	**2.9646**	**3.2465**	**0.0000**	**8,249.1381**	**8,249.1381**	**1.3566**	**0.0000**	**8,277.6265**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.77**	**0.00**	**5.78**	**9.38**	**0.00**	**0.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/16/2016	3/29/2016	5	10	
2	Excavation & Shoring	Grading	3/30/2016	4/29/2016	5	23	
3	Pipe Installation	Building Construction	3/30/2016	4/29/2016	5	23	
4	Work Site Restoration	Paving	5/2/2016	5/13/2016	5	10	

Acres of Grading (Site Preparation Phase): 8.7

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48

Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	758.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9263	0.0000	0.9263	0.1002	0.0000	0.1002			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.9263**	**1.8424**	**2.7686**	**0.1002**	**1.7859**	**1.8861**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0873	0.8355	1.0578	2.9200e-003	0.0699	0.0153	0.0852	0.0192	0.0140	0.0332		294.0559	294.0559	2.0200e-003		294.0983
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1710**	**0.9368**	**2.4116**	**5.1000e-003**	**0.2342**	**0.0167**	**0.2509**	**0.0627**	**0.0153**	**0.0781**		**474.6008**	**474.6008**	**0.0127**		**474.8681**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.3612	0.0000	0.3612	0.0391	0.0000	0.0391			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.3612**	**1.8424**	**2.2036**	**0.0391**	**1.7859**	**1.8250**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0873	0.8355	1.0578	2.9200e-003	0.0699	0.0153	0.0852	0.0192	0.0140	0.0332		294.0559	294.0559	2.0200e-003		294.0983
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1710**	**0.9368**	**2.4116**	**5.1000e-003**	**0.2342**	**0.0167**	**0.2509**	**0.0627**	**0.0153**	**0.0781**		**474.6008**	**474.6008**	**0.0127**		**474.8681**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4310	0.0000	0.4310	0.0478	0.0000	0.0478			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4310**	**1.2446**	**1.6756**	**0.0478**	**1.1532**	**1.2010**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7195	6.8838	8.7154	0.0241	0.5760	0.1258	0.7017	0.1579	0.1157	0.2736		2,422.7652	2,422.7652	0.0166		2,423.1141
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8032**	**6.9851**	**10.0692**	**0.0263**	**0.7403**	**0.1272**	**0.8675**	**0.2015**	**0.1170**	**0.3185**		**2,603.3101**	**2,603.3101**	**0.0273**		**2,603.8839**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1681	0.0000	0.1681	0.0187	0.0000	0.0187			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1681**	**1.2446**	**1.4127**	**0.0187**	**1.1532**	**1.1719**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7195	6.8838	8.7154	0.0241	0.5760	0.1258	0.7017	0.1579	0.1157	0.2736		2,422.7652	2,422.7652	0.0166		2,423.1141
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8032**	**6.9851**	**10.0692**	**0.0263**	**0.7403**	**0.1272**	**0.8675**	**0.2015**	**0.1170**	**0.3185**		**2,603.3101**	**2,603.3101**	**0.0273**		**2,603.8839**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

PWD Recycled Water Facilities Master Plan - Phase 5 Construction Emissions

Antelope Valley APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	8.70	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 12,600 linear feet x 30 feet wide construction zone = 378,000 sf = 8.7 acres.

Construction Phase - Anticipated schedule for Phase 5 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

On-road Fugitive Dust -

Grading - Anticipated 25% of material to be removed during excavation & shroing: 12,600 ft x 4 ft x 13 ft = 655,200 cf = 24,267 cy x 0.25 = 6,067 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	23.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	PhaseEndDate	6/1/2016	4/29/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	3/30/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	5/2/2016
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	MaterialExported	0.00	6,067.00
tblGrading	MaterialExported	0.00	405.00
tblLandUse	LotAcreage	0.00	8.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9181	56.4175	47.7876	0.0840	1.4003	3.1478	4.5480	0.3111	2.9650	3.2762	0.0000	8,198.8682	8,198.8682	1.3569	0.0000	8,227.3629
Total	**6.9181**	**56.4175**	**47.7876**	**0.0840**	**1.4003**	**3.1478**	**4.5480**	**0.3111**	**2.9650**	**3.2762**	**0.0000**	**8,198.8682**	**8,198.8682**	**1.3569**	**0.0000**	**8,227.3629**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9181	56.4175	47.7876	0.0840	1.1374	3.1478	4.2851	0.2820	2.9650	3.2470	0.0000	8,198.8682	8,198.8682	1.3569	0.0000	8,227.3629
Total	**6.9181**	**56.4175**	**47.7876**	**0.0840**	**1.1374**	**3.1478**	**4.2851**	**0.2820**	**2.9650**	**3.2470**	**0.0000**	**8,198.8682**	**8,198.8682**	**1.3569**	**0.0000**	**8,227.3629**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.77**	**0.00**	**5.78**	**9.38**	**0.00**	**0.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/16/2016	3/29/2016	5	10	
2	Excavation & Shoring	Grading	3/30/2016	4/29/2016	5	23	
3	Pipe Installation	Building Construction	3/30/2016	4/29/2016	5	23	
4	Work Site Restoration	Paving	5/2/2016	5/13/2016	5	10	

Acres of Grading (Site Preparation Phase): 8.7

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48

Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	758.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9263	0.0000	0.9263	0.1002	0.0000	0.1002			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.9263**	**1.8424**	**2.7686**	**0.1002**	**1.7859**	**1.8861**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0929	0.8741	1.2158	2.9200e-003	0.0699	0.0153	0.0852	0.0192	0.0141	0.0332		293.3487	293.3487	2.0500e-003		293.3917
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1675**	**0.9818**	**2.3252**	**4.8400e-003**	**0.2342**	**0.0167**	**0.2509**	**0.0627**	**0.0154**	**0.0781**		**452.5852**	**452.5852**	**0.0128**		**452.8531**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.3612	0.0000	0.3612	0.0391	0.0000	0.0391			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.3612**	**1.8424**	**2.2036**	**0.0391**	**1.7859**	**1.8250**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0929	0.8741	1.2158	2.9200e-003	0.0699	0.0153	0.0852	0.0192	0.0141	0.0332		293.3487	293.3487	2.0500e-003		293.3917
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1675**	**0.9818**	**2.3252**	**4.8400e-003**	**0.2342**	**0.0167**	**0.2509**	**0.0627**	**0.0154**	**0.0781**		**452.5852**	**452.5852**	**0.0128**		**452.8531**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4310	0.0000	0.4310	0.0478	0.0000	0.0478			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4310**	**1.2446**	**1.6756**	**0.0478**	**1.1532**	**1.2010**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7657	7.2019	10.0170	0.0241	0.5760	0.1261	0.7021	0.1579	0.1160	0.2739		2,416.9380	2,416.9380	0.0169		2,417.2921
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8403**	**7.3096**	**11.1264**	**0.0260**	**0.7403**	**0.1275**	**0.8678**	**0.2015**	**0.1173**	**0.3188**		**2,576.1746**	**2,576.1746**	**0.0276**		**2,576.7536**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1681	0.0000	0.1681	0.0187	0.0000	0.0187			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1681**	**1.2446**	**1.4127**	**0.0187**	**1.1532**	**1.1719**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7657	7.2019	10.0170	0.0241	0.5760	0.1261	0.7021	0.1579	0.1160	0.2739		2,416.9380	2,416.9380	0.0169		2,417.2921
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8403**	**7.3096**	**11.1264**	**0.0260**	**0.7403**	**0.1275**	**0.8678**	**0.2015**	**0.1173**	**0.3188**		**2,576.1746**	**2,576.1746**	**0.0276**		**2,576.7536**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

PWD Recycled Water Facilities Master Plan - Phase 6 Construction Emissions

Antelope Valley APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 5,810 linear feet x 30 feet wide construction zone = 174,300 sf = 4 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 5,810 ft x 4 ft x 13 ft = 302,120 cf = 11,190 cy x 0.25 = 2,797 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	NumDays	5.00	4.00
tblConstructionPhase	PhaseEndDate	6/16/2016	6/2/2016
tblConstructionPhase	PhaseStartDate	6/3/2016	5/20/2016
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	2,797.00
tblGrading	MaterialExported	0.00	183.00
tblLandUse	LotAcreage	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9248	56.4845	47.2480	0.0861	1.4608	3.1551	4.6159	0.3237	2.9718	3.2954	0.0000	8,399.3623	8,399.3623	1.3576	0.0000	8,427.8724
Total	**6.9248**	**56.4845**	**47.2480**	**0.0861**	**1.4608**	**3.1551**	**4.6159**	**0.3237**	**2.9718**	**3.2954**	**0.0000**	**8,399.3623**	**8,399.3623**	**1.3576**	**0.0000**	**8,427.8724**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9248	56.4845	47.2480	0.0861	1.1828	3.1551	4.3379	0.2928	2.9718	3.2646	0.0000	8,399.3623	8,399.3623	1.3576	0.0000	8,427.8724
Total	**6.9248**	**56.4845**	**47.2480**	**0.0861**	**1.1828**	**3.1551**	**4.3379**	**0.2928**	**2.9718**	**3.2646**	**0.0000**	**8,399.3623**	**8,399.3623**	**1.3576**	**0.0000**	**8,427.8724**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.03**	**0.00**	**6.02**	**9.54**	**0.00**	**0.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/16/2016	5/19/2016	5	4	
2	Excavation & Shoring	Grading	5/20/2016	6/2/2016	5	10	
3	Pipe Installation	Building Construction	5/20/2016	6/2/2016	5	10	
4	Work Site Restoration	Paving	6/3/2016	6/9/2016	5	5	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	18.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	350.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0646	0.0000	1.0646	0.1151	0.0000	0.1151			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**1.0646**	**1.8424**	**2.9070**	**0.1151**	**1.7859**	**1.9010**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0982	0.9399	1.1900	3.2900e-003	0.0786	0.0172	0.0958	0.0216	0.0158	0.0374		330.8129	330.8129	2.2700e-003		330.8606
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1820**	**1.0412**	**2.5439**	**5.4700e-003**	**0.2429**	**0.0186**	**0.2615**	**0.0651**	**0.0171**	**0.0822**		**511.3578**	**511.3578**	**0.0130**		**511.6303**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.4152	0.0000	0.4152	0.0449	0.0000	0.0449			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.4152**	**1.8424**	**2.2576**	**0.0449**	**1.7859**	**1.8308**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0982	0.9399	1.1900	3.2900e-003	0.0786	0.0172	0.0958	0.0216	0.0158	0.0374		330.8129	330.8129	2.2700e-003		330.8606
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.1820**	**1.0412**	**2.5439**	**5.4700e-003**	**0.2429**	**0.0186**	**0.2615**	**0.0651**	**0.0171**	**0.0822**		**511.3578**	**511.3578**	**0.0130**		**511.6303**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4558	0.0000	0.4558	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157

Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4558**	**1.2446**	**1.7004**	**0.0506**	**1.1532**	**1.2038**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7641	7.3107	9.2558	0.0256	0.6117	0.1336	0.7453	0.1677	0.1229	0.2906		2,572.9895	2,572.9895	0.0176		2,573.3600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8478**	**7.4119**	**10.6096**	**0.0278**	**0.7760**	**0.1350**	**0.9110**	**0.2113**	**0.1242**	**0.3354**		**2,753.5343**	**2,753.5343**	**0.0284**		**2,754.1297**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1778	0.0000	0.1778	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1778**	**1.2446**	**1.4223**	**0.0197**	**1.1532**	**1.1729**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7641	7.3107	9.2558	0.0256	0.6117	0.1336	0.7453	0.1677	0.1229	0.2906		2,572.9895	2,572.9895	0.0176		2,573.3600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.8478**	**7.4119**	**10.6096**	**0.0278**	**0.7760**	**0.1350**	**0.9110**	**0.2113**	**0.1242**	**0.3354**		**2,753.5343**	**2,753.5343**	**0.0284**		**2,754.1297**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698
Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1167	0.8024	1.4212	2.2100e-003	0.0648	0.0128	0.0775	0.0183	0.0117	0.0300		220.2518	220.2518	1.5300e-003		220.2839
Worker	0.0837	0.1013	1.3538	2.1800e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		180.5448	180.5448	0.0107		180.7698

Total	**0.2004**	**0.9037**	**2.7750**	**4.3900e-003**	**0.2291**	**0.0142**	**0.2432**	**0.0618**	**0.0130**	**0.0749**		**400.7967**	**400.7967**	**0.0122**		**401.0537**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1381	0.1671	2.2338	3.6000e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		297.8990	297.8990	0.0177		298.2701
Total	**0.1381**	**0.1671**	**2.2338**	**3.6000e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**297.8990**	**297.8990**	**0.0177**		**298.2701**

PWD Recycled Water Facilities Master Plan - Phase 6 Construction Emissions

Antelope Valley APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 5,810 linear feet x 30 feet wide construction zone = 174,300 sf = 4 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 5,810 ft x 4 ft x 13 ft = 302,120 cf = 11,190 cy x 0.25 = 2,797 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	NumDays	5.00	4.00
tblConstructionPhase	PhaseEndDate	6/16/2016	6/2/2016
tblConstructionPhase	PhaseStartDate	6/3/2016	5/20/2016
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	2,797.00
tblGrading	MaterialExported	0.00	183.00
tblLandUse	LotAcreage	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9655	56.8640	48.4087	0.0855	1.4608	3.1556	4.6164	0.3237	2.9722	3.2959	0.0000	8,348.7311	8,348.7311	1.3579	0.0000	8,377.2478
Total	**6.9655**	**56.8640**	**48.4087**	**0.0855**	**1.4608**	**3.1556**	**4.6164**	**0.3237**	**2.9722**	**3.2959**	**0.0000**	**8,348.7311**	**8,348.7311**	**1.3579**	**0.0000**	**8,377.2478**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.9655	56.8640	48.4087	0.0855	1.1828	3.1556	4.3384	0.2928	2.9722	3.2650	0.0000	8,348.7311	8,348.7311	1.3579	0.0000	8,377.2477
Total	**6.9655**	**56.8640**	**48.4087**	**0.0855**	**1.1828**	**3.1556**	**4.3384**	**0.2928**	**2.9722**	**3.2650**	**0.0000**	**8,348.7311**	**8,348.7311**	**1.3579**	**0.0000**	**8,377.2477**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.03**	**0.00**	**6.02**	**9.54**	**0.00**	**0.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/16/2016	5/19/2016	5	4	
2	Excavation & Shoring	Grading	5/20/2016	6/2/2016	5	10	
3	Pipe Installation	Building Construction	5/20/2016	6/2/2016	5	10	
4	Work Site Restoration	Paving	6/3/2016	6/9/2016	5	5	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	18.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	350.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0646	0.0000	1.0646	0.1151	0.0000	0.1151			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859		3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**1.0646**	**1.8424**	**2.9070**	**0.1151**	**1.7859**	**1.9010**		**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1046	0.9834	1.3678	3.2800e-003	0.0786	0.0172	0.0959	0.0216	0.0158	0.0374		330.0173	330.0173	2.3000e-003		330.0656
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1791**	**1.0910**	**2.4772**	**5.2000e-003**	**0.2429**	**0.0186**	**0.2616**	**0.0651**	**0.0171**	**0.0823**		**489.2538**	**489.2538**	**0.0130**		**489.5271**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.4152	0.0000	0.4152	0.0449	0.0000	0.0449			0.0000			0.0000
Off-Road	3.4761	27.2928	19.9158	0.0342		1.8424	1.8424		1.7859	1.7859	0.0000	3,259.1180	3,259.1180	0.6097		3,271.9224
Total	**3.4761**	**27.2928**	**19.9158**	**0.0342**	**0.4152**	**1.8424**	**2.2576**	**0.0449**	**1.7859**	**1.8308**	**0.0000**	**3,259.1180**	**3,259.1180**	**0.6097**		**3,271.9224**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1046	0.9834	1.3678	3.2800e-003	0.0786	0.0172	0.0959	0.0216	0.0158	0.0374		330.0173	330.0173	2.3000e-003		330.0656
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.1791**	**1.0910**	**2.4772**	**5.2000e-003**	**0.2429**	**0.0186**	**0.2616**	**0.0651**	**0.0171**	**0.0823**		**489.2538**	**489.2538**	**0.0130**		**489.5271**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4558	0.0000	0.4558	0.0506	0.0000	0.0506			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532		2,787.4346	2,787.4346	0.7705		2,803.6157

Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.4558**	**1.2446**	**1.7004**	**0.0506**	**1.1532**	**1.2038**		**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8132	7.6484	10.6381	0.0255	0.6117	0.1339	0.7456	0.1677	0.1232	0.2909		2,566.8009	2,566.8009	0.0179		2,567.1770
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8877**	**7.7561**	**11.7475**	**0.0275**	**0.7760**	**0.1353**	**0.9113**	**0.2113**	**0.1245**	**0.3357**		**2,726.0375**	**2,726.0375**	**0.0286**		**2,726.6384**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1778	0.0000	0.1778	0.0197	0.0000	0.0197			0.0000			0.0000
Off-Road	2.3466	23.4237	16.2663	0.0283		1.2446	1.2446		1.1532	1.1532	0.0000	2,787.4346	2,787.4346	0.7705		2,803.6157
Total	**2.3466**	**23.4237**	**16.2663**	**0.0283**	**0.1778**	**1.2446**	**1.4223**	**0.0197**	**1.1532**	**1.1729**	**0.0000**	**2,787.4346**	**2,787.4346**	**0.7705**		**2,803.6157**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8132	7.6484	10.6381	0.0255	0.6117	0.1339	0.7456	0.1677	0.1232	0.2909		2,566.8009	2,566.8009	0.0179		2,567.1770
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.8877**	**7.7561**	**11.7475**	**0.0275**	**0.7760**	**0.1353**	**0.9113**	**0.2113**	**0.1245**	**0.3357**		**2,726.0375**	**2,726.0375**	**0.0286**		**2,726.6384**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814		2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**		**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615
Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5300	24.7451	17.5971	0.0256		1.7614	1.7614		1.6814	1.6814	0.0000	2,457.5968	2,457.5968	0.5465		2,469.0733
Total	**3.5300**	**24.7451**	**17.5971**	**0.0256**		**1.7614**	**1.7614**		**1.6814**	**1.6814**	**0.0000**	**2,457.5968**	**2,457.5968**	**0.5465**		**2,469.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	0.8314	1.6884	2.1900e-003	0.0648	0.0129	0.0777	0.0183	0.0119	0.0301		218.4257	218.4257	1.5800e-003		218.4589
Worker	0.0746	0.1077	1.1094	1.9200e-003	0.1643	1.4100e-003	0.1657	0.0436	1.3000e-003	0.0449		159.2366	159.2366	0.0107		159.4615

Total	**0.2012**	**0.9391**	**2.7979**	**4.1100e-003**	**0.2291**	**0.0143**	**0.2434**	**0.0618**	**0.0132**	**0.0750**		**377.6623**	**377.6623**	**0.0123**		**377.9203**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345		3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**		**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4851	32.5366	22.6919	0.0356		1.9613	1.9613		1.8345	1.8345	0.0000	3,478.2211	3,478.2211	0.9017		3,497.1566
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.4851**	**32.5366**	**22.6919**	**0.0356**		**1.9613**	**1.9613**		**1.8345**	**1.8345**	**0.0000**	**3,478.2211**	**3,478.2211**	**0.9017**		**3,497.1566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1231	0.1776	1.8306	3.1700e-003	0.2711	2.3300e-003	0.2734	0.0719	2.1400e-003	0.0740		262.7403	262.7403	0.0177		263.1114
Total	**0.1231**	**0.1776**	**1.8306**	**3.1700e-003**	**0.2711**	**2.3300e-003**	**0.2734**	**0.0719**	**2.1400e-003**	**0.0740**		**262.7403**	**262.7403**	**0.0177**		**263.1114**

Phase 5 - Unpaved Road Fugitive Dust from Vehicle Travel

Site Preparation Phase

Haul Trucks

VMT[a] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
5.6	3.1	0.3	57	**7.46**	**0.75**

Worker Light Duty Trucks

VMT[c] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
28	0.9	0.1	57	**11.03**	**1.10**

Excavation & Shoring Phase

Haul Trucks

VMT[d] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
46.2	3.1	0.3	57	**61.58**	**6.16**

Worker Light Duty Trucks

VMT[c] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[g]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
28	0.9	0.1	57	**11.03**	**1.10**

Pipe Installation Phase

Vendor Trucks

VMT[e] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
14	3.1	0.3	57	**18.66**	**1.87**

Worker Light Duty Trucks

VMT[c] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
28	0.9	0.1	57	**11.03**	**1.10**

Work Site Restoration Phase

Vendor/Haul Trucks

VMT (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
0	3.1	0.3	57	**0.00**	**0.00**

Worker Light Duty Trucks

VMT[f] (miles/day)	Emission Factors (pounds/VMT)		Control Efficiency[b]	Emissions (pounds/day)	
	PM_{10}	$PM_{2.5}$	%	PM_{10}	$PM_{2.5}$
46.2	0.9	0.1	57	**18.20**	**1.82**

Equation:

Based on AP-42 Emission Factor[r]: E (lbs/VMT) = k (s/12)^a (W/3)^b

Where:

E = emission rate in pounds per vehicle mile traveled

k = particle size multiplier (assumed 1.5 lb/VMT for PM10 and 0.15 lb/VMT for PM2.5 per AP-42, Table 13.2.2-2)

a = 0.9

b = 0.45

s = silt content (assumed 8.5% for a construction site per AP-42, Table 13.2.2-1)

W = average weight (tons) of vehicles (assume heavy trucks weighing 30 tons each and light duty trucks weighing 2 tons each)

Notes:

a) Based on 4 roundtrips by haul trucks traveling on a 1.40 mile-stretch of unpaved road.

b) A control efficiency of 57% is achieved by limiting vehicle speeds to 15 mph on unpaved roads based on SCAQMD's Table XI-A (Mitigation Measure Examples: Fugitive Dust from Construction & Demolition). This dust control measure will be implemented by the project as part of AVAQMD's Rule 403 (Fugitive Dust).

c) Based on 20 roundtrips by worker vehicles traveling on a 1.40 mile-stretch of unpaved road.

d) Based on 33 roundtrips by haul trucks traveling on a 1.40 mile-stretch of unpaved road.

e) Based on 10 roundtrips by vendor trucks traveling on a 1.40 mile-stretch of unpaved road.

f) Based on 33 roundtrips by worker vehicles traveling on a 1.40-mile strech of unpaved road.

APPENDIX A-2

Greenhouse Gas Analysis

PWD Recycled Water Facilities Master Plan - Phase 2 Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	13.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 18,900 linear feet x 30 feet wide construction zone = 567,000 sf = 13 acres.

Construction Phase - Anticipated schedule for Phase 2 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 18,900 ft x 4 ft x 13 ft = 982,800 cf = 36,400 cy x 0.25 = 9,100

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	34.00
tblConstructionPhase	NumDays	30.00	34.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	NumDays	10.00	14.00
tblConstructionPhase	PhaseEndDate	12/29/2015	11/11/2015
tblConstructionPhase	PhaseStartDate	11/12/2015	9/25/2015
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	AcresOfGrading	0.00	13.00
tblGrading	MaterialExported	0.00	9,100.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.1823	1.5121	1.1892	1.9900e-003	0.0342	0.0880	0.1222	6.9500e-003	0.0832	0.0902	0.0000	176.4456	176.4456	0.0313	0.0000	177.1020
Total	**0.1823**	**1.5121**	**1.1892**	**1.9900e-003**	**0.0342**	**0.0880**	**0.1222**	**6.9500e-003**	**0.0832**	**0.0902**	**0.0000**	**176.4456**	**176.4456**	**0.0313**	**0.0000**	**177.1020**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.1823	1.5121	1.1892	1.9900e-003	0.0254	0.0880	0.1134	5.9900e-003	0.0832	0.0892	0.0000	176.4455	176.4455	0.0313	0.0000	177.1019
Total	**0.1823**	**1.5121**	**1.1892**	**1.9900e-003**	**0.0254**	**0.0880**	**0.1134**	**5.9900e-003**	**0.0832**	**0.0892**	**0.0000**	**176.4455**	**176.4455**	**0.0313**	**0.0000**	**177.1019**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.59**	**0.00**	**7.15**	**13.81**	**0.00**	**1.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Preparation	Site Preparation	9/7/2015	9/24/2015	5	14	
2	Excavation & Shoring	Grading	9/25/2015	11/11/2015	5	34	
3	Pipe Installation	Building Construction	9/25/2015	11/11/2015	5	34	
4	Work Site Restoration	Paving	11/12/2015	12/1/2015	5	14	

Acres of Grading (Site Preparation Phase): 13

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29

Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,138.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.9200e-003	0.0000	6.9200e-003	7.5000e-004	0.0000	7.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2058	0.1417	2.4000e-004		0.0143	0.0143		0.0138	0.0138	0.0000	20.7957	20.7957	3.9900e-003	0.0000	20.8794
Total	**0.0264**	**0.2058**	**0.1417**	**2.4000e-004**	**6.9200e-003**	**0.0143**	**0.0212**	**7.5000e-004**	**0.0138**	**0.0146**	**0.0000**	**20.7957**	**20.7957**	**3.9900e-003**	**0.0000**	**20.8794**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	7.7300e-003	9.8700e-003	2.0000e-005	5.1000e-004	1.3000e-004	6.4000e-004	1.4000e-004	1.2000e-004	2.6000e-004	0.0000	1.9884	1.9884	1.0000e-005	0.0000	1.9887
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	8.9000e-004	9.3000e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1400e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	1.0809	1.0809	7.0000e-005	0.0000	1.0824
Total	**1.3200e-003**	**8.6200e-003**	**0.0192**	**3.0000e-005**	**1.6400e-003**	**1.4000e-004**	**1.7800e-003**	**4.4000e-004**	**1.3000e-004**	**5.7000e-004**	**0.0000**	**3.0693**	**3.0693**	**8.0000e-005**	**0.0000**	**3.0711**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-003	0.0000	2.7000e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0264	0.2058	0.1417	2.4000e-004		0.0143	0.0143		0.0138	0.0138	0.0000	20.7956	20.7956	3.9900e-003	0.0000	20.8794
Total	**0.0264**	**0.2058**	**0.1417**	**2.4000e-004**	**2.7000e-003**	**0.0143**	**0.0170**	**2.9000e-004**	**0.0138**	**0.0141**	**0.0000**	**20.7956**	**20.7956**	**3.9900e-003**	**0.0000**	**20.8794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	7.7300e-003	9.8700e-003	2.0000e-005	5.1000e-004	1.3000e-004	6.4000e-004	1.4000e-004	1.2000e-004	2.6000e-004	0.0000	1.9884	1.9884	1.0000e-005	0.0000	1.9887
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	8.9000e-004	9.3000e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1400e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	1.0809	1.0809	7.0000e-005	0.0000	1.0824
Total	**1.3200e-003**	**8.6200e-003**	**0.0192**	**3.0000e-005**	**1.6400e-003**	**1.4000e-004**	**1.7800e-003**	**4.4000e-004**	**1.3000e-004**	**5.7000e-004**	**0.0000**	**3.0693**	**3.0693**	**8.0000e-005**	**0.0000**	**3.0711**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.4100e-003	0.0000	7.4100e-003	8.2000e-004	0.0000	8.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0423	0.4300	0.2808	4.8000e-004		0.0230	0.0230		0.0213	0.0213	0.0000	43.4033	43.4033	0.0119	0.0000	43.6530
Total	**0.0423**	**0.4300**	**0.2808**	**4.8000e-004**	**7.4100e-003**	**0.0230**	**0.0304**	**8.2000e-004**	**0.0213**	**0.0221**	**0.0000**	**43.4033**	**43.4033**	**0.0119**	**0.0000**	**43.6530**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0142	0.1491	0.1903	4.2000e-004	9.7700e-003	2.4900e-003	0.0123	2.6800e-003	2.2900e-003	4.9700e-003	0.0000	38.3522	38.3522	2.8000e-004	0.0000	38.3581
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	2.1600e-003	0.0226	3.0000e-005	2.7400e-003	3.0000e-005	2.7600e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.6250	2.6250	1.8000e-004	0.0000	2.6288
Total	**0.0156**	**0.1512**	**0.2129**	**4.5000e-004**	**0.0125**	**2.5200e-003**	**0.0150**	**3.4100e-003**	**2.3100e-003**	**5.7200e-003**	**0.0000**	**40.9772**	**40.9772**	**4.6000e-004**	**0.0000**	**40.9869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8900e-003	0.0000	2.8900e-003	3.2000e-004	0.0000	3.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0423	0.4300	0.2808	4.8000e-004		0.0230	0.0230		0.0213	0.0213	0.0000	43.4032	43.4032	0.0119	0.0000	43.6529
Total	**0.0423**	**0.4300**	**0.2808**	**4.8000e-004**	**2.8900e-003**	**0.0230**	**0.0259**	**3.2000e-004**	**0.0213**	**0.0216**	**0.0000**	**43.4032**	**43.4032**	**0.0119**	**0.0000**	**43.6529**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0142	0.1491	0.1903	4.2000e-004	9.7700e-003	2.4900e-003	0.0123	2.6800e-003	2.2900e-003	4.9700e-003	0.0000	38.3522	38.3522	2.8000e-004	0.0000	38.3581
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	2.1600e-003	0.0226	3.0000e-005	2.7400e-003	3.0000e-005	2.7600e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.6250	2.6250	1.8000e-004	0.0000	2.6288
Total	**0.0156**	**0.1512**	**0.2129**	**4.5000e-004**	**0.0125**	**2.5200e-003**	**0.0150**	**3.4100e-003**	**2.3100e-003**	**5.7200e-003**	**0.0000**	**40.9772**	**40.9772**	**4.6000e-004**	**0.0000**	**40.9869**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0654	0.4455	0.3038	4.4000e-004		0.0326	0.0326		0.0312	0.0312	0.0000	38.1020	38.1020	8.7500e-003	0.0000	38.2857
Total	**0.0654**	**0.4455**	**0.3038**	**4.4000e-004**		**0.0326**	**0.0326**		**0.0312**	**0.0312**	**0.0000**	**38.1020**	**38.1020**	**8.7500e-003**	**0.0000**	**38.2857**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3800e-003	0.0166	0.0326	4.0000e-005	1.0800e-003	2.5000e-004	1.3300e-003	3.1000e-004	2.3000e-004	5.4000e-004	0.0000	3.4241	3.4241	3.0000e-005	0.0000	3.4247

Worker	1.4000e-003	2.1600e-003	0.0226	3.0000e-005	2.7400e-003	3.0000e-005	2.7600e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.6250	2.6250	1.8000e-004	0.0000	2.6288
Total	**3.7800e-003**	**0.0188**	**0.0552**	**7.0000e-005**	**3.8200e-003**	**2.8000e-004**	**4.0900e-003**	**1.0400e-003**	**2.5000e-004**	**1.2900e-003**	**0.0000**	**6.0491**	**6.0491**	**2.1000e-004**	**0.0000**	**6.0535**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0654	0.4455	0.3038	4.4000e-004		0.0326	0.0326		0.0312	0.0312	0.0000	38.1019	38.1019	8.7500e-003	0.0000	38.2856
Total	**0.0654**	**0.4455**	**0.3038**	**4.4000e-004**		**0.0326**	**0.0326**		**0.0312**	**0.0312**	**0.0000**	**38.1019**	**38.1019**	**8.7500e-003**	**0.0000**	**38.2856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3800e-003	0.0166	0.0326	4.0000e-005	1.0800e-003	2.5000e-004	1.3300e-003	3.1000e-004	2.3000e-004	5.4000e-004	0.0000	3.4241	3.4241	3.0000e-005	0.0000	3.4247
Worker	1.4000e-003	2.1600e-003	0.0226	3.0000e-005	2.7400e-003	3.0000e-005	2.7600e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.6250	2.6250	1.8000e-004	0.0000	2.6288
Total	**3.7800e-003**	**0.0188**	**0.0552**	**7.0000e-005**	**3.8200e-003**	**2.8000e-004**	**4.0900e-003**	**1.0400e-003**	**2.5000e-004**	**1.2900e-003**	**0.0000**	**6.0491**	**6.0491**	**2.1000e-004**	**0.0000**	**6.0535**

3.5 Work Site Restoration - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0265	0.2508	0.1603	2.5000e-004		0.0152	0.0152		0.0142	0.0142	0.0000	22.2656	22.2656	5.7600e-003	0.0000	22.3865
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0265**	**0.2508**	**0.1603**	**2.5000e-004**		**0.0152**	**0.0152**		**0.0142**	**0.0142**	**0.0000**	**22.2656**	**22.2656**	**5.7600e-003**	**0.0000**	**22.3865**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	1.4700e-003	0.0154	2.0000e-005	1.8600e-003	2.0000e-005	1.8800e-003	4.9000e-004	2.0000e-005	5.1000e-004	0.0000	1.7835	1.7835	1.2000e-004	0.0000	1.7860
Total	**9.5000e-004**	**1.4700e-003**	**0.0154**	**2.0000e-005**	**1.8600e-003**	**2.0000e-005**	**1.8800e-003**	**4.9000e-004**	**2.0000e-005**	**5.1000e-004**	**0.0000**	**1.7835**	**1.7835**	**1.2000e-004**	**0.0000**	**1.7860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.0265	0.2508	0.1603	2.5000e-004		0.0152	0.0152		0.0142	0.0142	0.0000	22.2656	22.2656	5.7600e-003	0.0000	22.3865
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0265**	**0.2508**	**0.1603**	**2.5000e-004**		**0.0152**	**0.0152**		**0.0142**	**0.0142**	**0.0000**	**22.2656**	**22.2656**	**5.7600e-003**	**0.0000**	**22.3865**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	1.4700e-003	0.0154	2.0000e-005	1.8600e-003	2.0000e-005	1.8800e-003	4.9000e-004	2.0000e-005	5.1000e-004	0.0000	1.7835	1.7835	1.2000e-004	0.0000	1.7860
Total	**9.5000e-004**	**1.4700e-003**	**0.0154**	**2.0000e-005**	**1.8600e-003**	**2.0000e-005**	**1.8800e-003**	**4.9000e-004**	**2.0000e-005**	**5.1000e-004**	**0.0000**	**1.7835**	**1.7835**	**1.2000e-004**	**0.0000**	**1.7860**

PWD Recycled Water Facilities Master Plan - Phase 3 Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	11.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 16,800 linear feet x 30 feet wide construction zone = 504,000 sf = 11.6 acres.

Construction Phase - Anticipated schedule for Phase 3 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 16,800ft x 4 ft x 13 ft = 873,600 cf = 32,356 cy x 0.25 = 8,089 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	29.00
tblConstructionPhase	NumDays	30.00	29.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	10.00	12.00
tblConstructionPhase	PhaseEndDate	3/8/2016	1/27/2016
tblConstructionPhase	PhaseStartDate	1/28/2016	12/18/2015
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	AcresOfGrading	0.00	11.60
tblGrading	MaterialExported	0.00	8,089.00
tblGrading	MaterialExported	0.00	600.00
tblLandUse	LotAcreage	0.00	11.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0614	0.4942	0.3924	6.7000e-004	0.0235	0.0296	0.0530	4.1900e-003	0.0282	0.0324	0.0000	59.0121	59.0121	9.7700e-003	0.0000	59.2172
2016	0.0879	0.7377	0.6167	1.0500e-003	0.0198	0.0418	0.0616	4.2600e-003	0.0393	0.0435	0.0000	92.3954	92.3954	0.0167	0.0000	92.7462
Total	**0.1493**	**1.2319**	**1.0091**	**1.7200e-003**	**0.0433**	**0.0713**	**0.1146**	**8.4500e-003**	**0.0675**	**0.0759**	**0.0000**	**151.4074**	**151.4074**	**0.0265**	**0.0000**	**151.9633**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0614	0.4942	0.3924	6.7000e-004	0.0157	0.0296	0.0452	3.3300e-003	0.0282	0.0315	0.0000	59.0120	59.0120	9.7700e-003	0.0000	59.2171
2016	0.0879	0.7377	0.6167	1.0500e-003	0.0158	0.0418	0.0575	3.8100e-003	0.0393	0.0431	0.0000	92.3953	92.3953	0.0167	0.0000	92.7461
Total	**0.1493**	**1.2319**	**1.0091**	**1.7200e-003**	**0.0314**	**0.0713**	**0.1028**	**7.1400e-003**	**0.0675**	**0.0746**	**0.0000**	**151.4073**	**151.4073**	**0.0265**	**0.0000**	**151.9632**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**27.34**	**0.00**	**10.32**	**15.50**	**0.00**	**1.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/2/2015	12/17/2015	5	12	

2	Excavation & Shoring	Grading	12/18/2015	1/27/2016	5	29	
3	Pipe Installation	Building Construction	12/18/2015	1/27/2016	5	29	
4	Work Site Restoration	Paving	1/28/2016	2/12/2016	5	12	

Acres of Grading (Site Preparation Phase): 11.6

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20

Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	59.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	1,011.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					6.1800e-003	0.0000	6.1800e-003	6.7000e-004	0.0000	6.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0226	0.1764	0.1214	2.1000e-004		0.0122	0.0122		0.0119	0.0119	0.0000	17.8249	17.8249	3.4200e-003	0.0000	17.8967
Total	**0.0226**	**0.1764**	**0.1214**	**2.1000e-004**	**6.1800e-003**	**0.0122**	**0.0184**	**6.7000e-004**	**0.0119**	**0.0125**	**0.0000**	**17.8249**	**17.8249**	**3.4200e-003**	**0.0000**	**17.8967**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	7.7300e-003	9.8700e-003	2.0000e-005	5.1000e-004	1.3000e-004	6.4000e-004	1.4000e-004	1.2000e-004	2.6000e-004	0.0000	1.9884	1.9884	1.0000e-005	0.0000	1.9887
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.6000e-004	7.9800e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.9265	0.9265	6.0000e-005	0.0000	0.9278
Total	**1.2400e-003**	**8.4900e-003**	**0.0179**	**3.0000e-005**	**1.4800e-003**	**1.4000e-004**	**1.6200e-003**	**4.0000e-004**	**1.3000e-004**	**5.2000e-004**	**0.0000**	**2.9149**	**2.9149**	**7.0000e-005**	**0.0000**	**2.9165**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.4100e-003	0.0000	2.4100e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0226	0.1764	0.1214	2.1000e-004		0.0122	0.0122		0.0119	0.0119	0.0000	17.8248	17.8248	3.4200e-003	0.0000	17.8966

Total	**0.0226**	**0.1764**	**0.1214**	**2.1000e-004**	**2.4100e-003**	**0.0122**	**0.0146**	**2.6000e-004**	**0.0119**	**0.0121**	**0.0000**	**17.8248**	**17.8248**	**3.4200e-003**	**0.0000**	**17.8966**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	7.7300e-003	9.8700e-003	2.0000e-005	5.1000e-004	1.3000e-004	6.4000e-004	1.4000e-004	1.2000e-004	2.6000e-004	0.0000	1.9884	1.9884	1.0000e-005	0.0000	1.9887
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.6000e-004	7.9800e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.9265	0.9265	6.0000e-005	0.0000	0.9278
Total	**1.2400e-003**	**8.4900e-003**	**0.0179**	**3.0000e-005**	**1.4800e-003**	**1.4000e-004**	**1.6200e-003**	**4.0000e-004**	**1.3000e-004**	**5.2000e-004**	**0.0000**	**2.9149**	**2.9149**	**7.0000e-005**	**0.0000**	**2.9165**

3.3 Excavation & Shoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.6100e-003	0.0000	6.6100e-003	7.3000e-004	0.0000	7.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1265	0.0826	1.4000e-004		6.7700e-003	6.7700e-003		6.2700e-003	6.2700e-003	0.0000	12.7657	12.7657	3.5000e-003	0.0000	12.8391
Total	**0.0124**	**0.1265**	**0.0826**	**1.4000e-004**	**6.6100e-003**	**6.7700e-003**	**0.0134**	**7.3000e-004**	**6.2700e-003**	**7.0000e-003**	**0.0000**	**12.7657**	**12.7657**	**3.5000e-003**	**0.0000**	**12.8391**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.3600e-003	0.0457	0.0583	1.3000e-004	7.2700e-003	7.6000e-004	8.0400e-003	1.8700e-003	7.0000e-004	2.5700e-003	0.0000	11.7490	11.7490	8.0000e-005	0.0000	11.7508
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**4.7700e-003**	**0.0463**	**0.0650**	**1.4000e-004**	**8.0800e-003**	**7.7000e-004**	**8.8500e-003**	**2.0800e-003**	**7.1000e-004**	**2.7900e-003**	**0.0000**	**12.5211**	**12.5211**	**1.3000e-004**	**0.0000**	**12.5240**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5800e-003	0.0000	2.5800e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1265	0.0826	1.4000e-004		6.7700e-003	6.7700e-003		6.2700e-003	6.2700e-003	0.0000	12.7657	12.7657	3.5000e-003	0.0000	12.8391
Total	**0.0124**	**0.1265**	**0.0826**	**1.4000e-004**	**2.5800e-003**	**6.7700e-003**	**9.3500e-003**	**2.9000e-004**	**6.2700e-003**	**6.5600e-003**	**0.0000**	**12.7657**	**12.7657**	**3.5000e-003**	**0.0000**	**12.8391**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	4.3600e-003	0.0457	0.0583	1.3000e-004	7.2700e-003	7.6000e-004	8.0400e-003	1.8700e-003	7.0000e-004	2.5700e-003	0.0000	11.7490	11.7490	8.0000e-005	0.0000	11.7508
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**4.7700e-003**	**0.0463**	**0.0650**	**1.4000e-004**	**8.0800e-003**	**7.7000e-004**	**8.8500e-003**	**2.0800e-003**	**7.1000e-004**	**2.7900e-003**	**0.0000**	**12.5211**	**12.5211**	**1.3000e-004**	**0.0000**	**12.5240**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.6100e-003	0.0000	6.6100e-003	7.3000e-004	0.0000	7.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.2225	0.1545	2.7000e-004		0.0118	0.0118		0.0110	0.0110	0.0000	24.0228	24.0228	6.6400e-003	0.0000	24.1623
Total	**0.0223**	**0.2225**	**0.1545**	**2.7000e-004**	**6.6100e-003**	**0.0118**	**0.0184**	**7.3000e-004**	**0.0110**	**0.0117**	**0.0000**	**24.0228**	**24.0228**	**6.6400e-003**	**0.0000**	**24.1623**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.8200e-003	0.0735	0.1072	2.4000e-004	7.9400e-003	1.2700e-003	9.2100e-003	2.1200e-003	1.1600e-003	3.2800e-003	0.0000	22.0650	22.0650	1.5000e-004	0.0000	22.0682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	1.0800e-003	0.0113	2.0000e-005	1.5300e-003	1.0000e-005	1.5400e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.4146	1.4146	9.0000e-005	0.0000	1.4166

Total	**8.5100e-003**	**0.0746**	**0.1185**	**2.6000e-004**	**9.4700e-003**	**1.2800e-003**	**0.0108**	**2.5300e-003**	**1.1700e-003**	**3.7000e-003**	**0.0000**	**23.4796**	**23.4796**	**2.4000e-004**	**0.0000**	**23.4848**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5800e-003	0.0000	2.5800e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.2225	0.1545	2.7000e-004		0.0118	0.0118		0.0110	0.0110	0.0000	24.0228	24.0228	6.6400e-003	0.0000	24.1623
Total	**0.0223**	**0.2225**	**0.1545**	**2.7000e-004**	**2.5800e-003**	**0.0118**	**0.0144**	**2.9000e-004**	**0.0110**	**0.0113**	**0.0000**	**24.0228**	**24.0228**	**6.6400e-003**	**0.0000**	**24.1623**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.8200e-003	0.0735	0.1072	2.4000e-004	7.9400e-003	1.2700e-003	9.2100e-003	2.1200e-003	1.1600e-003	3.2800e-003	0.0000	22.0650	22.0650	1.5000e-004	0.0000	22.0682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	1.0800e-003	0.0113	2.0000e-005	1.5300e-003	1.0000e-005	1.5400e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.4146	1.4146	9.0000e-005	0.0000	1.4166
Total	**8.5100e-003**	**0.0746**	**0.1185**	**2.6000e-004**	**9.4700e-003**	**1.2800e-003**	**0.0108**	**2.5300e-003**	**1.1700e-003**	**3.7000e-003**	**0.0000**	**23.4796**	**23.4796**	**2.4000e-004**	**0.0000**	**23.4848**

3.4 Pipe Installation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0192	0.1310	0.0894	1.3000e-004		9.5900e-003	9.5900e-003		9.1600e-003	9.1600e-003	0.0000	11.2065	11.2065	2.5700e-003	0.0000	11.2605
Total	**0.0192**	**0.1310**	**0.0894**	**1.3000e-004**		**9.5900e-003**	**9.5900e-003**		**9.1600e-003**	**9.1600e-003**	**0.0000**	**11.2065**	**11.2065**	**2.5700e-003**	**0.0000**	**11.2605**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	4.8900e-003	9.5900e-003	1.0000e-005	3.2000e-004	7.0000e-005	3.9000e-004	9.0000e-005	7.0000e-005	1.6000e-004	0.0000	1.0071	1.0071	1.0000e-005	0.0000	1.0073
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**1.1100e-003**	**5.5300e-003**	**0.0162**	**2.0000e-005**	**1.1300e-003**	**8.0000e-005**	**1.2000e-003**	**3.0000e-004**	**8.0000e-005**	**3.8000e-004**	**0.0000**	**1.7792**	**1.7792**	**6.0000e-005**	**0.0000**	**1.7804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0192	0.1310	0.0894	1.3000e-004		9.5900e-003	9.5900e-003		9.1600e-003	9.1600e-003	0.0000	11.2065	11.2065	2.5700e-003	0.0000	11.2605
Total	**0.0192**	**0.1310**	**0.0894**	**1.3000e-004**		**9.5900e-003**	**9.5900e-003**		**9.1600e-003**	**9.1600e-003**	**0.0000**	**11.2065**	**11.2065**	**2.5700e-003**	**0.0000**	**11.2605**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	4.8900e-003	9.5900e-003	1.0000e-005	3.2000e-004	7.0000e-005	3.9000e-004	9.0000e-005	7.0000e-005	1.6000e-004	0.0000	1.0071	1.0071	1.0000e-005	0.0000	1.0073
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**1.1100e-003**	**5.5300e-003**	**0.0162**	**2.0000e-005**	**1.1300e-003**	**8.0000e-005**	**1.2000e-003**	**3.0000e-004**	**8.0000e-005**	**3.8000e-004**	**0.0000**	**1.7792**	**1.7792**	**6.0000e-005**	**0.0000**	**1.7804**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0335	0.2351	0.1672	2.4000e-004		0.0167	0.0167		0.0160	0.0160	0.0000	21.1802	21.1802	4.7100e-003	0.0000	21.2791
Total	**0.0335**	**0.2351**	**0.1672**	**2.4000e-004**		**0.0167**	**0.0167**		**0.0160**	**0.0160**	**0.0000**	**21.1802**	**21.1802**	**4.7100e-003**	**0.0000**	**21.2791**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	8.0600e-003	0.0172	2.0000e-005	6.0000e-004	1.2000e-004	7.3000e-004	1.7000e-004	1.1000e-004	2.8000e-004	0.0000	1.8916	1.8916	1.0000e-005	0.0000	1.8919
Worker	6.9000e-004	1.0800e-003	0.0113	2.0000e-005	1.5300e-003	1.0000e-005	1.5400e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.4146	1.4146	9.0000e-005	0.0000	1.4166
Total	**1.9100e-003**	**9.1400e-003**	**0.0285**	**4.0000e-005**	**2.1300e-003**	**1.3000e-004**	**2.2700e-003**	**5.8000e-004**	**1.2000e-004**	**7.0000e-004**	**0.0000**	**3.3062**	**3.3062**	**1.0000e-004**	**0.0000**	**3.3084**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0335	0.2351	0.1672	2.4000e-004		0.0167	0.0167		0.0160	0.0160	0.0000	21.1802	21.1802	4.7100e-003	0.0000	21.2791
Total	**0.0335**	**0.2351**	**0.1672**	**2.4000e-004**		**0.0167**	**0.0167**		**0.0160**	**0.0160**	**0.0000**	**21.1802**	**21.1802**	**4.7100e-003**	**0.0000**	**21.2791**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2200e-003	8.0600e-003	0.0172	2.0000e-005	6.0000e-004	1.2000e-004	7.3000e-004	1.7000e-004	1.1000e-004	2.8000e-004	0.0000	1.8916	1.8916	1.0000e-005	0.0000	1.8919
Worker	6.9000e-004	1.0800e-003	0.0113	2.0000e-005	1.5300e-003	1.0000e-005	1.5400e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.4146	1.4146	9.0000e-005	0.0000	1.4166
Total	**1.9100e-003**	**9.1400e-003**	**0.0285**	**4.0000e-005**	**2.1300e-003**	**1.3000e-004**	**2.2700e-003**	**5.8000e-004**	**1.2000e-004**	**7.0000e-004**	**0.0000**	**3.3062**	**3.3062**	**1.0000e-004**	**0.0000**	**3.3084**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0209	0.1952	0.1362	2.1000e-004		0.0118	0.0118		0.0110	0.0110	0.0000	18.9323	18.9323	4.9100e-003	0.0000	19.0354
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0209**	**0.1952**	**0.1362**	**2.1000e-004**		**0.0118**	**0.0118**		**0.0110**	**0.0110**	**0.0000**	**18.9323**	**18.9323**	**4.9100e-003**	**0.0000**	**19.0354**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	1.1300e-003	0.0118	2.0000e-005	1.5900e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.4000e-004	0.0000	1.4742	1.4742	1.0000e-004	0.0000	1.4762
Total	**7.2000e-004**	**1.1300e-003**	**0.0118**	**2.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.4742**	**1.4742**	**1.0000e-004**	**0.0000**	**1.4762**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0209	0.1952	0.1362	2.1000e-004		0.0118	0.0118		0.0110	0.0110	0.0000	18.9323	18.9323	4.9100e-003	0.0000	19.0354
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0209**	**0.1952**	**0.1362**	**2.1000e-004**		**0.0118**	**0.0118**		**0.0110**	**0.0110**	**0.0000**	**18.9323**	**18.9323**	**4.9100e-003**	**0.0000**	**19.0354**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	1.1300e-003	0.0118	2.0000e-005	1.5900e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.4000e-004	0.0000	1.4742	1.4742	1.0000e-004	0.0000	1.4762
Total	**7.2000e-004**	**1.1300e-003**	**0.0118**	**2.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.4742**	**1.4742**	**1.0000e-004**	**0.0000**	**1.4762**

PWD Recycled Water Facilities Master Plan - Phase 4 Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.82	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 7,000 linear feet x 30 feet wide construction zone =210,000 sf = 4.82 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 7,000 ft x 4 ft x 13 ft = 364,000 cf = 13,481 cy x 0.25 = 3,370 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	12.00
tblConstructionPhase	NumDays	8.00	12.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2016	3/8/2016
tblConstructionPhase	PhaseStartDate	3/9/2016	2/22/2016
tblConstructionPhase	PhaseStartDate	2/20/2016	2/22/2016
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	AcresOfGrading	0.00	4.82
tblGrading	MaterialExported	0.00	3,370.00
tblGrading	MaterialExported	0.00	215.00
tblLandUse	LotAcreage	0.00	4.82
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0600	0.4949	0.4143	7.1000e-004	0.0125	0.0285	0.0410	2.5300e-003	0.0269	0.0295	0.0000	62.5212	62.5212	0.0109	0.0000	62.7498
Total	**0.0600**	**0.4949**	**0.4143**	**7.1000e-004**	**0.0125**	**0.0285**	**0.0410**	**2.5300e-003**	**0.0269**	**0.0295**	**0.0000**	**62.5212**	**62.5212**	**0.0109**	**0.0000**	**62.7498**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0600	0.4949	0.4143	7.1000e-004	9.2500e-003	0.0285	0.0377	2.1700e-003	0.0269	0.0291	0.0000	62.5211	62.5211	0.0109	0.0000	62.7498
Total	**0.0600**	**0.4949**	**0.4143**	**7.1000e-004**	**9.2500e-003**	**0.0285**	**0.0377**	**2.1700e-003**	**0.0269**	**0.0291**	**0.0000**	**62.5211**	**62.5211**	**0.0109**	**0.0000**	**62.7498**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.94**	**0.00**	**7.91**	**14.23**	**0.00**	**1.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/15/2016	2/19/2016	5	5	
2	Excavation & Shoring	Grading	2/22/2016	3/8/2016	5	12	
3	Pipe Installation	Building Construction	2/22/2016	3/8/2016	5	12	
4	Work Site Restoration	Paving	3/9/2016	3/15/2016	5	5	

Acres of Grading (Site Preparation Phase): 4.82

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	21.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	421.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5700e-003	0.0000	2.5700e-003	2.8000e-004	0.0000	2.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6900e-003	0.0682	0.0498	9.0000e-005		4.6100e-003	4.6100e-003		4.4600e-003	4.4600e-003	0.0000	7.3916	7.3916	1.3800e-003	0.0000	7.4206
Total	**8.6900e-003**	**0.0682**	**0.0498**	**9.0000e-005**	**2.5700e-003**	**4.6100e-003**	**7.1800e-003**	**2.8000e-004**	**4.4600e-003**	**4.7400e-003**	**0.0000**	**7.3916**	**7.3916**	**1.3800e-003**	**0.0000**	**7.4206**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	2.3300e-003	3.4000e-003	1.0000e-005	1.8000e-004	4.0000e-005	2.2000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.6996	0.6996	0.0000	0.0000	0.6997
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.8000e-004	2.9800e-003	0.0000	4.0000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3723	0.3723	2.0000e-005	0.0000	0.3728
Total	**4.3000e-004**	**2.6100e-003**	**6.3800e-003**	**1.0000e-005**	**5.8000e-004**	**4.0000e-005**	**6.3000e-004**	**1.6000e-004**	**4.0000e-005**	**2.0000e-004**	**0.0000**	**1.0718**	**1.0718**	**2.0000e-005**	**0.0000**	**1.0724**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-003	0.0000	1.0000e-003	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6900e-003	0.0682	0.0498	9.0000e-005		4.6100e-003	4.6100e-003		4.4600e-003	4.4600e-003	0.0000	7.3916	7.3916	1.3800e-003	0.0000	7.4206
Total	**8.6900e-003**	**0.0682**	**0.0498**	**9.0000e-005**	**1.0000e-003**	**4.6100e-003**	**5.6100e-003**	**1.1000e-004**	**4.4600e-003**	**4.5700e-003**	**0.0000**	**7.3916**	**7.3916**	**1.3800e-003**	**0.0000**	**7.4206**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	2.3300e-003	3.4000e-003	1.0000e-005	1.8000e-004	4.0000e-005	2.2000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.6996	0.6996	0.0000	0.0000	0.6997
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.8000e-004	2.9800e-003	0.0000	4.0000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3723	0.3723	2.0000e-005	0.0000	0.3728
Total	**4.3000e-004**	**2.6100e-003**	**6.3800e-003**	**1.0000e-005**	**5.8000e-004**	**4.0000e-005**	**6.3000e-004**	**1.6000e-004**	**4.0000e-005**	**2.0000e-004**	**0.0000**	**1.0718**	**1.0718**	**2.0000e-005**	**0.0000**	**1.0724**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7500e-003	0.0000	2.7500e-003	3.0000e-004	0.0000	3.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1405	0.0976	1.7000e-004		7.4700e-003	7.4700e-003		6.9200e-003	6.9200e-003	0.0000	15.1723	15.1723	4.1900e-003	0.0000	15.2604

Total	**0.0141**	**0.1405**	**0.0976**	**1.7000e-004**	**2.7500e-003**	**7.4700e-003**	**0.0102**	**3.0000e-004**	**6.9200e-003**	**7.2200e-003**	**0.0000**	**15.1723**	**15.1723**	**4.1900e-003**	**0.0000**	**15.2604**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9700e-003	0.0467	0.0681	1.5000e-004	3.6200e-003	8.0000e-004	4.4200e-003	9.9000e-004	7.4000e-004	1.7300e-003	0.0000	14.0242	14.0242	1.0000e-004	0.0000	14.0263
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	6.8000e-004	7.1400e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8935	0.8935	6.0000e-005	0.0000	0.8947
Total	**5.4100e-003**	**0.0474**	**0.0753**	**1.6000e-004**	**4.5900e-003**	**8.1000e-004**	**5.3900e-003**	**1.2500e-003**	**7.5000e-004**	**1.9900e-003**	**0.0000**	**14.9177**	**14.9177**	**1.6000e-004**	**0.0000**	**14.9209**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0700e-003	0.0000	1.0700e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1405	0.0976	1.7000e-004		7.4700e-003	7.4700e-003		6.9200e-003	6.9200e-003	0.0000	15.1723	15.1723	4.1900e-003	0.0000	15.2604
Total	**0.0141**	**0.1405**	**0.0976**	**1.7000e-004**	**1.0700e-003**	**7.4700e-003**	**8.5400e-003**	**1.2000e-004**	**6.9200e-003**	**7.0400e-003**	**0.0000**	**15.1723**	**15.1723**	**4.1900e-003**	**0.0000**	**15.2604**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9700e-003	0.0467	0.0681	1.5000e-004	3.6200e-003	8.0000e-004	4.4200e-003	9.9000e-004	7.4000e-004	1.7300e-003	0.0000	14.0242	14.0242	1.0000e-004	0.0000	14.0263
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	6.8000e-004	7.1400e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8935	0.8935	6.0000e-005	0.0000	0.8947
Total	**5.4100e-003**	**0.0474**	**0.0753**	**1.6000e-004**	**4.5900e-003**	**8.1000e-004**	**5.3900e-003**	**1.2500e-003**	**7.5000e-004**	**1.9900e-003**	**0.0000**	**14.9177**	**14.9177**	**1.6000e-004**	**0.0000**	**14.9209**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0212	0.1485	0.1056	1.5000e-004		0.0106	0.0106		0.0101	0.0101	0.0000	13.3770	13.3770	2.9700e-003	0.0000	13.4394
Total	**0.0212**	**0.1485**	**0.1056**	**1.5000e-004**		**0.0106**	**0.0106**		**0.0101**	**0.0101**	**0.0000**	**13.3770**	**13.3770**	**2.9700e-003**	**0.0000**	**13.4394**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	5.0900e-003	0.0109	1.0000e-005	3.8000e-004	8.0000e-005	4.6000e-004	1.1000e-004	7.0000e-005	1.8000e-004	0.0000	1.1947	1.1947	1.0000e-005	0.0000	1.1949
Worker	4.4000e-004	6.8000e-004	7.1400e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8935	0.8935	6.0000e-005	0.0000	0.8947
Total	**1.2100e-003**	**5.7700e-003**	**0.0180**	**2.0000e-005**	**1.3500e-003**	**9.0000e-005**	**1.4300e-003**	**3.7000e-004**	**8.0000e-005**	**4.4000e-004**	**0.0000**	**2.0881**	**2.0881**	**7.0000e-005**	**0.0000**	**2.0895**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0212	0.1485	0.1056	1.5000e-004		0.0106	0.0106		0.0101	0.0101	0.0000	13.3770	13.3770	2.9700e-003	0.0000	13.4394
Total	**0.0212**	**0.1485**	**0.1056**	**1.5000e-004**		**0.0106**	**0.0106**		**0.0101**	**0.0101**	**0.0000**	**13.3770**	**13.3770**	**2.9700e-003**	**0.0000**	**13.4394**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	5.0900e-003	0.0109	1.0000e-005	3.8000e-004	8.0000e-005	4.6000e-004	1.1000e-004	7.0000e-005	1.8000e-004	0.0000	1.1947	1.1947	1.0000e-005	0.0000	1.1949
Worker	4.4000e-004	6.8000e-004	7.1400e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8935	0.8935	6.0000e-005	0.0000	0.8947

Total	**1.2100e-003**	**5.7700e-003**	**0.0180**	**2.0000e-005**	**1.3500e-003**	**9.0000e-005**	**1.4300e-003**	**3.7000e-004**	**8.0000e-005**	**4.4000e-004**	**0.0000**	**2.0881**	**2.0881**	**7.0000e-005**	**0.0000**	**2.0895**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.7100e-003	0.0813	0.0567	9.0000e-005		4.9000e-003	4.9000e-003		4.5900e-003	4.5900e-003	0.0000	7.8885	7.8885	2.0400e-003	0.0000	7.9314
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7100e-003**	**0.0813**	**0.0567**	**9.0000e-005**		**4.9000e-003**	**4.9000e-003**		**4.5900e-003**	**4.5900e-003**	**0.0000**	**7.8885**	**7.8885**	**2.0400e-003**	**0.0000**	**7.9314**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	4.7000e-004	4.9100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	1.0000e-005	1.8000e-004	0.0000	0.6143	0.6143	4.0000e-005	0.0000	0.6151
Total	**3.0000e-004**	**4.7000e-004**	**4.9100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6143**	**0.6143**	**4.0000e-005**	**0.0000**	**0.6151**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.7100e-003	0.0813	0.0567	9.0000e-005		4.9000e-003	4.9000e-003		4.5900e-003	4.5900e-003	0.0000	7.8885	7.8885	2.0400e-003	0.0000	7.9314
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7100e-003**	**0.0813**	**0.0567**	**9.0000e-005**		**4.9000e-003**	**4.9000e-003**		**4.5900e-003**	**4.5900e-003**	**0.0000**	**7.8885**	**7.8885**	**2.0400e-003**	**0.0000**	**7.9314**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	4.7000e-004	4.9100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	1.0000e-005	1.8000e-004	0.0000	0.6143	0.6143	4.0000e-005	0.0000	0.6151
Total	**3.0000e-004**	**4.7000e-004**	**4.9100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6143**	**0.6143**	**4.0000e-005**	**0.0000**	**0.6151**

PWD Recycled Water Facilities Master Plan - Phase 5 Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	8.70	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 12,600 linear feet x 30 feet wide construction zone = 378,000 sf = 8.7 acres.

Construction Phase - Anticipated schedule for Phase 5 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

On-road Fugitive Dust -

Grading - Anticipated 25% of material to be removed during excavation & shroing: 12,600 ft x 4 ft x 13 ft = 655,200 cf = 24,267 cy x 0.25 = 6,067 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	23.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	PhaseEndDate	6/1/2016	4/29/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	3/30/2016
tblConstructionPhase	PhaseStartDate	4/30/2016	5/2/2016
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	AcresOfGrading	0.00	8.70
tblGrading	MaterialExported	0.00	6,067.00
tblGrading	MaterialExported	0.00	405.00
tblLandUse	LotAcreage	0.00	8.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1159	0.9555	0.7957	1.3600e-003	0.0230	0.0553	0.0783	4.6900e-003	0.0523	0.0570	0.0000	119.5500	119.5500	0.0212	0.0000	119.9941
Total	**0.1159**	**0.9555**	**0.7957**	**1.3600e-003**	**0.0230**	**0.0553**	**0.0783**	**4.6900e-003**	**0.0523**	**0.0570**	**0.0000**	**119.5500**	**119.5500**	**0.0212**	**0.0000**	**119.9941**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1159	0.9555	0.7957	1.3600e-003	0.0172	0.0553	0.0725	4.0500e-003	0.0523	0.0563	0.0000	119.5499	119.5499	0.0212	0.0000	119.9940
Total	**0.1159**	**0.9555**	**0.7957**	**1.3600e-003**	**0.0172**	**0.0553**	**0.0725**	**4.0500e-003**	**0.0523**	**0.0563**	**0.0000**	**119.5499**	**119.5499**	**0.0212**	**0.0000**	**119.9940**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.42**	**0.00**	**7.47**	**13.65**	**0.00**	**1.14**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/16/2016	3/29/2016	5	10	
2	Excavation & Shoring	Grading	3/30/2016	4/29/2016	5	23	
3	Pipe Installation	Building Construction	3/30/2016	4/29/2016	5	23	
4	Work Site Restoration	Paving	5/2/2016	5/13/2016	5	10	

Acres of Grading (Site Preparation Phase): 8.7

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82
Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48

Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	758.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6300e-003	0.0000	4.6300e-003	5.0000e-004	0.0000	5.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0174	0.1365	0.0996	1.7000e-004		9.2100e-003	9.2100e-003		8.9300e-003	8.9300e-003	0.0000	14.7831	14.7831	2.7700e-003	0.0000	14.8412
Total	**0.0174**	**0.1365**	**0.0996**	**1.7000e-004**	**4.6300e-003**	**9.2100e-003**	**0.0138**	**5.0000e-004**	**8.9300e-003**	**9.4300e-003**	**0.0000**	**14.7831**	**14.7831**	**2.7700e-003**	**0.0000**	**14.8412**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.7000e-004	4.4400e-003	6.4700e-003	1.0000e-005	3.4000e-004	8.0000e-005	4.2000e-004	9.0000e-005	7.0000e-005	1.6000e-004	0.0000	1.3325	1.3325	1.0000e-005	0.0000	1.3327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456
Total	**8.3000e-004**	**5.0100e-003**	**0.0124**	**2.0000e-005**	**1.1500e-003**	**9.0000e-005**	**1.2300e-003**	**3.0000e-004**	**8.0000e-005**	**3.8000e-004**	**0.0000**	**2.0770**	**2.0770**	**6.0000e-005**	**0.0000**	**2.0782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					1.8100e-003	0.0000	1.8100e-003	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0174	0.1365	0.0996	1.7000e-004		9.2100e-003	9.2100e-003		8.9300e-003	8.9300e-003	0.0000	14.7831	14.7831	2.7700e-003	0.0000	14.8412
Total	**0.0174**	**0.1365**	**0.0996**	**1.7000e-004**	**1.8100e-003**	**9.2100e-003**	**0.0110**	**2.0000e-004**	**8.9300e-003**	**9.1300e-003**	**0.0000**	**14.7831**	**14.7831**	**2.7700e-003**	**0.0000**	**14.8412**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.7000e-004	4.4400e-003	6.4700e-003	1.0000e-005	3.4000e-004	8.0000e-005	4.2000e-004	9.0000e-005	7.0000e-005	1.6000e-004	0.0000	1.3325	1.3325	1.0000e-005	0.0000	1.3327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456
Total	**8.3000e-004**	**5.0100e-003**	**0.0124**	**2.0000e-005**	**1.1500e-003**	**9.0000e-005**	**1.2300e-003**	**3.0000e-004**	**8.0000e-005**	**3.8000e-004**	**0.0000**	**2.0770**	**2.0770**	**6.0000e-005**	**0.0000**	**2.0782**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.9600e-003	0.0000	4.9600e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2694	0.1871	3.3000e-004		0.0143	0.0143		0.0133	0.0133	0.0000	29.0803	29.0803	8.0400e-003	0.0000	29.2491
Total	**0.0270**	**0.2694**	**0.1871**	**3.3000e-004**	**4.9600e-003**	**0.0143**	**0.0193**	**5.5000e-004**	**0.0133**	**0.0138**	**0.0000**	**29.0803**	**29.0803**	**8.0400e-003**	**0.0000**	**29.2491**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9400e-003	0.0841	0.1227	2.8000e-004	6.5100e-003	1.4500e-003	7.9600e-003	1.7900e-003	1.3300e-003	3.1200e-003	0.0000	25.2503	25.2503	1.7000e-004	0.0000	25.2539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	1.3100e-003	0.0137	2.0000e-005	1.8500e-003	2.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.7125	1.7125	1.1000e-004	0.0000	1.7148
Total	**9.7700e-003**	**0.0854**	**0.1364**	**3.0000e-004**	**8.3600e-003**	**1.4700e-003**	**9.8300e-003**	**2.2800e-003**	**1.3400e-003**	**3.6300e-003**	**0.0000**	**26.9627**	**26.9627**	**2.8000e-004**	**0.0000**	**26.9687**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.9300e-003	0.0000	1.9300e-003	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2694	0.1871	3.3000e-004		0.0143	0.0143		0.0133	0.0133	0.0000	29.0802	29.0802	8.0400e-003	0.0000	29.2490
Total	**0.0270**	**0.2694**	**0.1871**	**3.3000e-004**	**1.9300e-003**	**0.0143**	**0.0162**	**2.1000e-004**	**0.0133**	**0.0135**	**0.0000**	**29.0802**	**29.0802**	**8.0400e-003**	**0.0000**	**29.2490**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9400e-003	0.0841	0.1227	2.8000e-004	6.5100e-003	1.4500e-003	7.9600e-003	1.7900e-003	1.3300e-003	3.1200e-003	0.0000	25.2503	25.2503	1.7000e-004	0.0000	25.2539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	1.3100e-003	0.0137	2.0000e-005	1.8500e-003	2.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.7125	1.7125	1.1000e-004	0.0000	1.7148
Total	**9.7700e-003**	**0.0854**	**0.1364**	**3.0000e-004**	**8.3600e-003**	**1.4700e-003**	**9.8300e-003**	**2.2800e-003**	**1.3400e-003**	**3.6300e-003**	**0.0000**	**26.9627**	**26.9627**	**2.8000e-004**	**0.0000**	**26.9687**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0406	0.2846	0.2024	2.9000e-004		0.0203	0.0203		0.0193	0.0193	0.0000	25.6392	25.6392	5.7000e-003	0.0000	25.7589
Total	**0.0406**	**0.2846**	**0.2024**	**2.9000e-004**		**0.0203**	**0.0203**		**0.0193**	**0.0193**	**0.0000**	**25.6392**	**25.6392**	**5.7000e-003**	**0.0000**	**25.7589**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	1.4800e-003	9.7500e-003	0.0209	3.0000e-005	7.3000e-004	1.5000e-004	8.8000e-004	2.1000e-004	1.4000e-004	3.4000e-004	0.0000	2.2898	2.2898	2.0000e-005	0.0000	2.2901
Worker	8.3000e-004	1.3100e-003	0.0137	2.0000e-005	1.8500e-003	2.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.7125	1.7125	1.1000e-004	0.0000	1.7148
Total	**2.3100e-003**	**0.0111**	**0.0345**	**5.0000e-005**	**2.5800e-003**	**1.7000e-004**	**2.7500e-003**	**7.0000e-004**	**1.5000e-004**	**8.5000e-004**	**0.0000**	**4.0023**	**4.0023**	**1.3000e-004**	**0.0000**	**4.0049**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0406	0.2846	0.2024	2.9000e-004		0.0203	0.0203		0.0193	0.0193	0.0000	25.6392	25.6392	5.7000e-003	0.0000	25.7589
Total	**0.0406**	**0.2846**	**0.2024**	**2.9000e-004**		**0.0203**	**0.0203**		**0.0193**	**0.0193**	**0.0000**	**25.6392**	**25.6392**	**5.7000e-003**	**0.0000**	**25.7589**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4800e-003	9.7500e-003	0.0209	3.0000e-005	7.3000e-004	1.5000e-004	8.8000e-004	2.1000e-004	1.4000e-004	3.4000e-004	0.0000	2.2898	2.2898	2.0000e-005	0.0000	2.2901
Worker	8.3000e-004	1.3100e-003	0.0137	2.0000e-005	1.8500e-003	2.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.7125	1.7125	1.1000e-004	0.0000	1.7148
Total	**2.3100e-003**	**0.0111**	**0.0345**	**5.0000e-005**	**2.5800e-003**	**1.7000e-004**	**2.7500e-003**	**7.0000e-004**	**1.5000e-004**	**8.5000e-004**	**0.0000**	**4.0023**	**4.0023**	**1.3000e-004**	**0.0000**	**4.0049**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1627	0.1135	1.8000e-004		9.8100e-003	9.8100e-003		9.1700e-003	9.1700e-003	0.0000	15.7770	15.7770	4.0900e-003	0.0000	15.8628
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**0.1627**	**0.1135**	**1.8000e-004**		**9.8100e-003**	**9.8100e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**15.7770**	**15.7770**	**4.0900e-003**	**0.0000**	**15.8628**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	9.4000e-004	9.8200e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.2285	1.2285	8.0000e-005	0.0000	1.2302
Total	**6.0000e-004**	**9.4000e-004**	**9.8200e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.2285**	**1.2285**	**8.0000e-005**	**0.0000**	**1.2302**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1627	0.1135	1.8000e-004		9.8100e-003	9.8100e-003		9.1700e-003	9.1700e-003	0.0000	15.7769	15.7769	4.0900e-003	0.0000	15.8628
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**0.1627**	**0.1135**	**1.8000e-004**		**9.8100e-003**	**9.8100e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**15.7769**	**15.7769**	**4.0900e-003**	**0.0000**	**15.8628**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	9.4000e-004	9.8200e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.2285	1.2285	8.0000e-005	0.0000	1.2302
Total	**6.0000e-004**	**9.4000e-004**	**9.8200e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.2285**	**1.2285**	**8.0000e-005**	**0.0000**	**1.2302**

PWD Recycled Water Facilities Master Plan - Phase 6 Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 5,810 linear feet x 30 feet wide construction zone = 174,300 sf = 4 acres.

Construction Phase - Anticipated schedule for Phase 4 of Construction: Site prep. and site restoration to be 30% of schedule; excavation & shoring and pipe installation to be 70% of schedule.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for pipe installation phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Off-road Equipment - Anticipated equipment for work site restoration phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 25% of material to be removed during excavation & shroing: 5,810 ft x 4 ft x 13 ft = 302,120 cf = 11,190 cy x 0.25 = 2,797 cy

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	5.00
tblConstructionPhase	NumDays	5.00	4.00
tblConstructionPhase	PhaseEndDate	6/16/2016	6/2/2016
tblConstructionPhase	PhaseStartDate	6/3/2016	5/20/2016
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	2,797.00
tblGrading	MaterialExported	0.00	183.00
tblLandUse	LotAcreage	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0512	0.4237	0.3537	6.0000e-004	0.0105	0.0244	0.0349	2.1300e-003	0.0231	0.0252	0.0000	53.2482	53.2482	9.3700e-003	0.0000	53.4451
Total	**0.0512**	**0.4237**	**0.3537**	**6.0000e-004**	**0.0105**	**0.0244**	**0.0349**	**2.1300e-003**	**0.0231**	**0.0252**	**0.0000**	**53.2482**	**53.2482**	**9.3700e-003**	**0.0000**	**53.4451**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0512	0.4237	0.3537	6.0000e-004	7.8000e-003	0.0244	0.0322	1.8400e-003	0.0231	0.0249	0.0000	53.2482	53.2482	9.3700e-003	0.0000	53.4450
Total	**0.0512**	**0.4237**	**0.3537**	**6.0000e-004**	**7.8000e-003**	**0.0244**	**0.0322**	**1.8400e-003**	**0.0231**	**0.0249**	**0.0000**	**53.2482**	**53.2482**	**9.3700e-003**	**0.0000**	**53.4450**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.57**	**0.00**	**7.71**	**13.62**	**0.00**	**1.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/16/2016	5/19/2016	5	4	
2	Excavation & Shoring	Grading	5/20/2016	6/2/2016	5	10	
3	Pipe Installation	Building Construction	5/20/2016	6/2/2016	5	10	
4	Work Site Restoration	Paving	6/3/2016	6/9/2016	5	5	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	8.00	78	0.48
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Signal Boards	2	24.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Excavation & Shoring	Dumpers/Tenders	1	8.00	16	0.38
Excavation & Shoring	Excavators	2	8.00	162	0.38
Excavation & Shoring	Graders	0	8.00	174	0.41
Excavation & Shoring	Off-Highway Trucks	1	4.00	400	0.38
Excavation & Shoring	Rubber Tired Dozers	0	8.00	255	0.40
Excavation & Shoring	Scrapers	0	8.00	361	0.48
Excavation & Shoring	Signal Boards	2	24.00	6	0.82

Excavation & Shoring	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipe Installation	Air Compressors	1	4.00	78	0.48
Pipe Installation	Cement and Mortar Mixers	1	4.00	9	0.56
Pipe Installation	Cranes	1	4.00	226	0.29
Pipe Installation	Forklifts	2	8.00	89	0.20
Pipe Installation	Generator Sets	1	8.00	84	0.74
Pipe Installation	Rollers	1	8.00	80	0.38
Pipe Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipe Installation	Welders	2	8.00	46	0.45
Work Site Restoration	Air Compressors	1	8.00	78	0.48
Work Site Restoration	Cement and Mortar Mixers	2	8.00	9	0.56
Work Site Restoration	Pavers	2	8.00	125	0.42
Work Site Restoration	Paving Equipment	2	8.00	130	0.36
Work Site Restoration	Rollers	2	8.00	80	0.38
Work Site Restoration	Signal Boards	2	24.00	6	0.82
Work Site Restoration	Sweepers/Scrubbers	1	2.00	64	0.46
Work Site Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	18.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation & Shoring	8	20.00	0.00	350.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Installation	10	20.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Work Site Restoration	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1300e-003	0.0000	2.1300e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0546	0.0398	7.0000e-005		3.6800e-003	3.6800e-003		3.5700e-003	3.5700e-003	0.0000	5.9132	5.9132	1.1100e-003	0.0000	5.9365
Total	**6.9500e-003**	**0.0546**	**0.0398**	**7.0000e-005**	**2.1300e-003**	**3.6800e-003**	**5.8100e-003**	**2.3000e-004**	**3.5700e-003**	**3.8000e-003**	**0.0000**	**5.9132**	**5.9132**	**1.1100e-003**	**0.0000**	**5.9365**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	2.0000e-003	2.9100e-003	1.0000e-005	1.5000e-004	3.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.5996	0.5996	0.0000	0.0000	0.5997
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	2.3000e-004	2.3800e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2978	0.2978	2.0000e-005	0.0000	0.2982
Total	**3.6000e-004**	**2.2300e-003**	**5.2900e-003**	**1.0000e-005**	**4.7000e-004**	**3.0000e-005**	**5.1000e-004**	**1.3000e-004**	**3.0000e-005**	**1.6000e-004**	**0.0000**	**0.8974**	**0.8974**	**2.0000e-005**	**0.0000**	**0.8979**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					8.3000e-004	0.0000	8.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9500e-003	0.0546	0.0398	7.0000e-005		3.6800e-003	3.6800e-003		3.5700e-003	3.5700e-003	0.0000	5.9132	5.9132	1.1100e-003	0.0000	5.9365
Total	**6.9500e-003**	**0.0546**	**0.0398**	**7.0000e-005**	**8.3000e-004**	**3.6800e-003**	**4.5100e-003**	**9.0000e-005**	**3.5700e-003**	**3.6600e-003**	**0.0000**	**5.9132**	**5.9132**	**1.1100e-003**	**0.0000**	**5.9365**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	2.0000e-003	2.9100e-003	1.0000e-005	1.5000e-004	3.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.5996	0.5996	0.0000	0.0000	0.5997
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	2.3000e-004	2.3800e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2978	0.2978	2.0000e-005	0.0000	0.2982
Total	**3.6000e-004**	**2.2300e-003**	**5.2900e-003**	**1.0000e-005**	**4.7000e-004**	**3.0000e-005**	**5.1000e-004**	**1.3000e-004**	**3.0000e-005**	**1.6000e-004**	**0.0000**	**0.8974**	**0.8974**	**2.0000e-005**	**0.0000**	**0.8979**

3.3 Excavation & Shoring - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.2800e-003	0.0000	2.2800e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.1171	0.0813	1.4000e-004		6.2200e-003	6.2200e-003		5.7700e-003	5.7700e-003	0.0000	12.6436	12.6436	3.5000e-003	0.0000	12.7170

Total	**0.0117**	**0.1171**	**0.0813**	**1.4000e-004**	**2.2800e-003**	**6.2200e-003**	**8.5000e-003**	**2.5000e-004**	**5.7700e-003**	**6.0200e-003**	**0.0000**	**12.6436**	**12.6436**	**3.5000e-003**	**0.0000**	**12.7170**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1300e-003	0.0388	0.0567	1.3000e-004	3.0100e-003	6.7000e-004	3.6700e-003	8.3000e-004	6.2000e-004	1.4400e-003	0.0000	11.6591	11.6591	8.0000e-005	0.0000	11.6608
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456
Total	**4.4900e-003**	**0.0394**	**0.0626**	**1.4000e-004**	**3.8200e-003**	**6.8000e-004**	**4.4800e-003**	**1.0400e-003**	**6.3000e-004**	**1.6600e-003**	**0.0000**	**12.4036**	**12.4036**	**1.3000e-004**	**0.0000**	**12.4064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9000e-004	0.0000	8.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.1171	0.0813	1.4000e-004		6.2200e-003	6.2200e-003		5.7700e-003	5.7700e-003	0.0000	12.6436	12.6436	3.5000e-003	0.0000	12.7170
Total	**0.0117**	**0.1171**	**0.0813**	**1.4000e-004**	**8.9000e-004**	**6.2200e-003**	**7.1100e-003**	**1.0000e-004**	**5.7700e-003**	**5.8700e-003**	**0.0000**	**12.6436**	**12.6436**	**3.5000e-003**	**0.0000**	**12.7170**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1300e-003	0.0388	0.0567	1.3000e-004	3.0100e-003	6.7000e-004	3.6700e-003	8.3000e-004	6.2000e-004	1.4400e-003	0.0000	11.6591	11.6591	8.0000e-005	0.0000	11.6608
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456
Total	**4.4900e-003**	**0.0394**	**0.0626**	**1.4000e-004**	**3.8200e-003**	**6.8000e-004**	**4.4800e-003**	**1.0400e-003**	**6.3000e-004**	**1.6600e-003**	**0.0000**	**12.4036**	**12.4036**	**1.3000e-004**	**0.0000**	**12.4064**

3.4 Pipe Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1237	0.0880	1.3000e-004		8.8100e-003	8.8100e-003		8.4100e-003	8.4100e-003	0.0000	11.1475	11.1475	2.4800e-003	0.0000	11.1995
Total	**0.0177**	**0.1237**	**0.0880**	**1.3000e-004**		**8.8100e-003**	**8.8100e-003**		**8.4100e-003**	**8.4100e-003**	**0.0000**	**11.1475**	**11.1475**	**2.4800e-003**	**0.0000**	**11.1995**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-004	4.2400e-003	9.0700e-003	1.0000e-005	3.2000e-004	6.0000e-005	3.8000e-004	9.0000e-005	6.0000e-005	1.5000e-004	0.0000	0.9956	0.9956	1.0000e-005	0.0000	0.9957
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456
Total	**1.0000e-003**	**4.8100e-003**	**0.0150**	**2.0000e-005**	**1.1300e-003**	**7.0000e-005**	**1.1900e-003**	**3.0000e-004**	**7.0000e-005**	**3.7000e-004**	**0.0000**	**1.7401**	**1.7401**	**6.0000e-005**	**0.0000**	**1.7413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1237	0.0880	1.3000e-004		8.8100e-003	8.8100e-003		8.4100e-003	8.4100e-003	0.0000	11.1475	11.1475	2.4800e-003	0.0000	11.1995
Total	**0.0177**	**0.1237**	**0.0880**	**1.3000e-004**		**8.8100e-003**	**8.8100e-003**		**8.4100e-003**	**8.4100e-003**	**0.0000**	**11.1475**	**11.1475**	**2.4800e-003**	**0.0000**	**11.1995**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-004	4.2400e-003	9.0700e-003	1.0000e-005	3.2000e-004	6.0000e-005	3.8000e-004	9.0000e-005	6.0000e-005	1.5000e-004	0.0000	0.9956	0.9956	1.0000e-005	0.0000	0.9957
Worker	3.6000e-004	5.7000e-004	5.9500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7445	0.7445	5.0000e-005	0.0000	0.7456

Total	**1.0000e-003**	**4.8100e-003**	**0.0150**	**2.0000e-005**	**1.1300e-003**	**7.0000e-005**	**1.1900e-003**	**3.0000e-004**	**7.0000e-005**	**3.7000e-004**	**0.0000**	**1.7401**	**1.7401**	**6.0000e-005**	**0.0000**	**1.7413**

3.5 Work Site Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.7100e-003	0.0813	0.0567	9.0000e-005		4.9000e-003	4.9000e-003		4.5900e-003	4.5900e-003	0.0000	7.8885	7.8885	2.0400e-003	0.0000	7.9314
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7100e-003**	**0.0813**	**0.0567**	**9.0000e-005**		**4.9000e-003**	**4.9000e-003**		**4.5900e-003**	**4.5900e-003**	**0.0000**	**7.8885**	**7.8885**	**2.0400e-003**	**0.0000**	**7.9314**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	4.7000e-004	4.9100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	1.0000e-005	1.8000e-004	0.0000	0.6143	0.6143	4.0000e-005	0.0000	0.6151
Total	**3.0000e-004**	**4.7000e-004**	**4.9100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6143**	**0.6143**	**4.0000e-005**	**0.0000**	**0.6151**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.7100e-003	0.0813	0.0567	9.0000e-005		4.9000e-003	4.9000e-003		4.5900e-003	4.5900e-003	0.0000	7.8885	7.8885	2.0400e-003	0.0000	7.9314
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7100e-003**	**0.0813**	**0.0567**	**9.0000e-005**		**4.9000e-003**	**4.9000e-003**		**4.5900e-003**	**4.5900e-003**	**0.0000**	**7.8885**	**7.8885**	**2.0400e-003**	**0.0000**	**7.9314**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	4.7000e-004	4.9100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	1.0000e-005	1.8000e-004	0.0000	0.6143	0.6143	4.0000e-005	0.0000	0.6151
Total	**3.0000e-004**	**4.7000e-004**	**4.9100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6143**	**0.6143**	**4.0000e-005**	**0.0000**	**0.6151**

PWD Recycled Water Facilities Master Plan - Pump Station Construction Emissions

Antelope Valley APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	0.01	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 0.01-acre site footprint.

Construction Phase - Anticipated schedule for pump station construction.

Off-road Equipment - Anticipated equipment for excavation and shoring phase.

Off-road Equipment - Anticipated equipment for site preparation phase.

Trips and VMT - Anticipated project-related trips.

Grading - Anticipated 100 cy of material to be exported during grading phase.

Construction Off-road Equipment Mitigation -

Off-road Equipment - Anticipated equipment for grading phase.

Off-road Equipment - Anticipated equipment for building construction phase.

Off-road Equipment - Anticipated equipment for paving phase.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	20.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	1.00	5.00
tblGrading	AcresOfGrading	2.50	0.01
tblGrading	AcresOfGrading	2.50	0.01
tblGrading	MaterialExported	0.00	100.00
tblLandUse	LotAcreage	0.00	0.01
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0553	0.4242	0.2981	4.4000e-004	4.2800e-003	0.0276	0.0318	1.6800e-003	0.0261	0.0278	0.0000	38.8303	38.8303	8.6900e-003	0.0000	39.0128
Total	**0.0553**	**0.4242**	**0.2981**	**4.4000e-004**	**4.2800e-003**	**0.0276**	**0.0318**	**1.6800e-003**	**0.0261**	**0.0278**	**0.0000**	**38.8303**	**38.8303**	**8.6900e-003**	**0.0000**	**39.0128**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0553	0.4242	0.2981	4.4000e-004	3.1200e-003	0.0276	0.0307	1.0500e-003	0.0261	0.0272	0.0000	38.8303	38.8303	8.6900e-003	0.0000	39.0128
Total	**0.0553**	**0.4242**	**0.2981**	**4.4000e-004**	**3.1200e-003**	**0.0276**	**0.0307**	**1.0500e-003**	**0.0261**	**0.0272**	**0.0000**	**38.8303**	**38.8303**	**8.6900e-003**	**0.0000**	**39.0128**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**27.10**	**0.00**	**3.64**	**37.50**	**0.00**	**2.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/25/2015	10/1/2015	5	5	
2	Grading	Grading	10/2/2015	10/8/2015	5	5	
3	Building	Building Construction	10/9/2015	11/5/2015	5	20	

4	Paving	Paving	11/6/2015	11/12/2015	5	5	

Acres of Grading (Site Preparation Phase): 0.01

Acres of Grading (Grading Phase): 0.01

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building	Cranes	1	4.00	226	0.29
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Site Preparation	Off-Highway Trucks	1	4.00	400	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Off-Highway Trucks	1	4.00	400	0.38
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building	Air Compressors	1	4.00	78	0.48
Building	Forklifts	2	8.00	89	0.20
Building	Generator Sets	1	8.00	84	0.74
Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Sweepers/Scrubbers	1	2.00	64	0.46
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	10.00	0.00	13.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building	8	10.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9300e-003	0.0607	0.0320	5.0000e-005		3.5000e-003	3.5000e-003		3.2200e-003	3.2200e-003	0.0000	4.6820	4.6820	1.3700e-003	0.0000	4.7108
Total	**5.9300e-003**	**0.0607**	**0.0320**	**5.0000e-005**	**1.0000e-005**	**3.5000e-003**	**3.5100e-003**	**0.0000**	**3.2200e-003**	**3.2200e-003**	**0.0000**	**4.6820**	**4.6820**	**1.3700e-003**	**0.0000**	**4.7108**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	2.1000e-004	2.1600e-003	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2509	0.2509	2.0000e-005	0.0000	0.2513
Total	**1.3000e-004**	**2.1000e-004**	**2.1600e-003**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2509**	**0.2509**	**2.0000e-005**	**0.0000**	**0.2513**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9300e-003	0.0607	0.0320	5.0000e-005		3.5000e-003	3.5000e-003		3.2200e-003	3.2200e-003	0.0000	4.6820	4.6820	1.3700e-003	0.0000	4.7108
Total	**5.9300e-003**	**0.0607**	**0.0320**	**5.0000e-005**	**0.0000**	**3.5000e-003**	**3.5000e-003**	**0.0000**	**3.2200e-003**	**3.2200e-003**	**0.0000**	**4.6820**	**4.6820**	**1.3700e-003**	**0.0000**	**4.7108**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	2.1000e-004	2.1600e-003	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2509	0.2509	2.0000e-005	0.0000	0.2513
Total	**1.3000e-004**	**2.1000e-004**	**2.1600e-003**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2509**	**0.2509**	**2.0000e-005**	**0.0000**	**0.2513**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8900e-003	0.0000	1.8900e-003	1.0400e-003	0.0000	1.0400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0600e-003	0.0801	0.0469	7.0000e-005		4.5600e-003	4.5600e-003		4.2700e-003	4.2700e-003	0.0000	6.6700	6.6700	1.7300e-003	0.0000	6.7064
Total	**8.0600e-003**	**0.0801**	**0.0469**	**7.0000e-005**	**1.8900e-003**	**4.5600e-003**	**6.4500e-003**	**1.0400e-003**	**4.2700e-003**	**5.3100e-003**	**0.0000**	**6.6700**	**6.6700**	**1.7300e-003**	**0.0000**	**6.7064**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	1.7000e-003	2.1700e-003	0.0000	1.1000e-004	3.0000e-005	1.4000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.4381	0.4381	0.0000	0.0000	0.4382
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	1.6000e-004	1.6600e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	6.0000e-005	0.0000	0.1930	0.1930	1.0000e-005	0.0000	0.1933
Total	**2.6000e-004**	**1.8600e-003**	**3.8300e-003**	**0.0000**	**3.1000e-004**	**3.0000e-005**	**3.4000e-004**	**8.0000e-005**	**3.0000e-005**	**1.2000e-004**	**0.0000**	**0.6311**	**0.6311**	**1.0000e-005**	**0.0000**	**0.6315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.4000e-004	0.0000	7.4000e-004	4.0000e-004	0.0000	4.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0600e-003	0.0801	0.0469	7.0000e-005		4.5600e-003	4.5600e-003		4.2700e-003	4.2700e-003	0.0000	6.6700	6.6700	1.7300e-003	0.0000	6.7064
Total	**8.0600e-003**	**0.0801**	**0.0469**	**7.0000e-005**	**7.4000e-004**	**4.5600e-003**	**5.3000e-003**	**4.0000e-004**	**4.2700e-003**	**4.6700e-003**	**0.0000**	**6.6700**	**6.6700**	**1.7300e-003**	**0.0000**	**6.7064**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	1.7000e-003	2.1700e-003	0.0000	1.1000e-004	3.0000e-005	1.4000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.4381	0.4381	0.0000	0.0000	0.4382
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	1.6000e-004	1.6600e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	6.0000e-005	0.0000	0.1930	0.1930	1.0000e-005	0.0000	0.1933
Total	**2.6000e-004**	**1.8600e-003**	**3.8300e-003**	**0.0000**	**3.1000e-004**	**3.0000e-005**	**3.4000e-004**	**8.0000e-005**	**3.0000e-005**	**1.2000e-004**	**0.0000**	**0.6311**	**0.6311**	**1.0000e-005**	**0.0000**	**0.6315**

3.4 Building - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0345	0.2266	0.1568	2.3000e-004		0.0166	0.0166		0.0159	0.0159	0.0000	19.6861	19.6861	4.3800e-003	0.0000	19.7780
Total	**0.0345**	**0.2266**	**0.1568**	**2.3000e-004**		**0.0166**	**0.0166**		**0.0159**	**0.0159**	**0.0000**	**19.6861**	**19.6861**	**4.3800e-003**	**0.0000**	**19.7780**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-003	9.7700e-003	0.0192	2.0000e-005	6.4000e-004	1.5000e-004	7.8000e-004	1.8000e-004	1.4000e-004	3.2000e-004	0.0000	2.0142	2.0142	1.0000e-005	0.0000	2.0145
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**1.8100e-003**	**0.0104**	**0.0258**	**3.0000e-005**	**1.4500e-003**	**1.6000e-004**	**1.5900e-003**	**3.9000e-004**	**1.5000e-004**	**5.4000e-004**	**0.0000**	**2.7863**	**2.7863**	**6.0000e-005**	**0.0000**	**2.7877**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0345	0.2266	0.1568	2.3000e-004		0.0166	0.0166		0.0159	0.0159	0.0000	19.6861	19.6861	4.3800e-003	0.0000	19.7780

Total	**0.0345**	**0.2266**	**0.1568**	**2.3000e-004**		**0.0166**	**0.0166**		**0.0159**	**0.0159**	**0.0000**	**19.6861**	**19.6861**	**4.3800e-003**	**0.0000**	**19.7780**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-003	9.7700e-003	0.0192	2.0000e-005	6.4000e-004	1.5000e-004	7.8000e-004	1.8000e-004	1.4000e-004	3.2000e-004	0.0000	2.0142	2.0142	1.0000e-005	0.0000	2.0145
Worker	4.1000e-004	6.4000e-004	6.6500e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7721	0.7721	5.0000e-005	0.0000	0.7732
Total	**1.8100e-003**	**0.0104**	**0.0258**	**3.0000e-005**	**1.4500e-003**	**1.6000e-004**	**1.5900e-003**	**3.9000e-004**	**1.5000e-004**	**5.4000e-004**	**0.0000**	**2.7863**	**2.7863**	**6.0000e-005**	**0.0000**	**2.7877**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.3600e-003	0.0441	0.0277	4.0000e-005		2.7100e-003	2.7100e-003		2.5000e-003	2.5000e-003	0.0000	3.7765	3.7765	1.0800e-003	0.0000	3.7992
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.3600e-003**	**0.0441**	**0.0277**	**4.0000e-005**		**2.7100e-003**	**2.7100e-003**		**2.5000e-003**	**2.5000e-003**	**0.0000**	**3.7765**	**3.7765**	**1.0800e-003**	**0.0000**	**3.7992**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.9000e-004	2.9900e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3474	0.3474	2.0000e-005	0.0000	0.3479
Total	**1.9000e-004**	**2.9000e-004**	**2.9900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3474**	**0.3474**	**2.0000e-005**	**0.0000**	**0.3479**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.3600e-003	0.0441	0.0277	4.0000e-005		2.7100e-003	2.7100e-003		2.5000e-003	2.5000e-003	0.0000	3.7765	3.7765	1.0800e-003	0.0000	3.7992
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.3600e-003**	**0.0441**	**0.0277**	**4.0000e-005**		**2.7100e-003**	**2.7100e-003**		**2.5000e-003**	**2.5000e-003**	**0.0000**	**3.7765**	**3.7765**	**1.0800e-003**	**0.0000**	**3.7992**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.9000e-004	2.9900e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3474	0.3474	2.0000e-005	0.0000	0.3479
Total	**1.9000e-004**	**2.9000e-004**	**2.9900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3474**	**0.3474**	**2.0000e-005**	**0.0000**	**0.3479**

EMISSIONS OF GREENHOUSE GAS EMISSIONS FROM ELECTRICITY GENERATION

Project Name: PRWA Recycled Water Facilities Plan

ELECTRICITY DEMAND

Total Megawatt Hours (MWh) per Year: 1,776.1

GREENHOUSE GAS EMISSIONS

Emissions	Emission Factors (lbs/MWh)	Emissions (tons)	CO_2 Equivalency Factors	CO_2 Equivalent Emissions (tons per year)
Carbon Dioxide	630.89	560.26	1	560.26
Methane	0.029	0.026	25	0.64
Nitrous Oxide	0.006	0.005	298	1.63
	Total Emissions:	560.29		562.54

Source of GHG emission factors: CalEEMod, Version 2013.2.2

APPENDIX B
Biological Technical Report

RECYCLED WATER FACILITIES PROJECT

Biological Resources Technical Report

Prepared for
Palmdale Recycled Water Authority

August 2014



RECYCLED WATER FACILITIES PROJECT

Biological Resources Technical Report

Prepared for
Palmdale Recycled Water Authority

August 2014

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RECYCLED WATER FACILITIES PROJECT
Biological Resources Technical Report

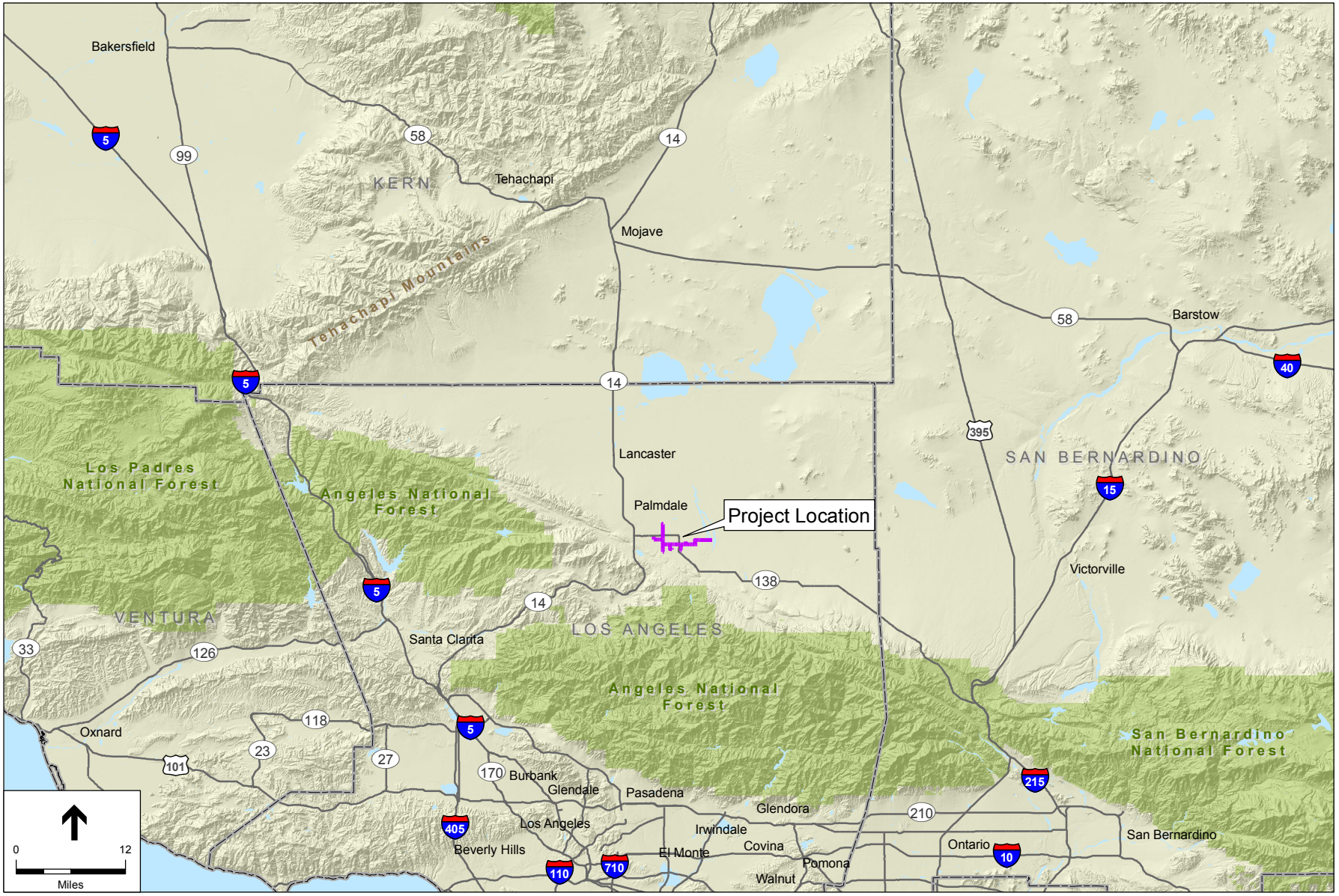
1. Introduction

This report presents the findings of technical biological resources assessment conducted by Environmental Science Associates (ESA), for Palmdale Recycled Water Authority's Recycled Water Facilities Project (project) located in the City of Palmdale, Los Angeles County, California. This report documents the existing biological resources within the project site and includes a discussion of potential impacts to protected biological resources associated with construction of the proposed project. Recommendations for reducing impacts to a level that is considered "less than significant" according to the standards pursuant to the California Environmental Quality Act (CEQA) are provided at the end of this report. This document has been prepared to inform an Initial Study/Mitigated Negative Declaration that will be prepared for the proposed project.

1.1 Project Site

The project site is located within the limits of unincorporated Los Angeles County and the City of Palmdale; approximately 60 miles north of the City of Los Angeles and 95 miles southeast of the City of Bakersfield, along the southwestern perimeter of the Antelope Valley (see **Figure 1**). The Antelope Valley is a 2,400-square mile triangular basin bounded on the northwest by the Tehachapi Mountains, on the southwest by the San Gabriel Mountains, and on the east by a series of buttes and hills that roughly parallel the Los Angeles/San Bernardino County Line.

The project site is 47.4 acres in size and includes all the project components described below in Section 2. Many of the project's features will be located within several existing road rights-of-ways and immediately adjacent vacant lands within the City of Palmdale (see **Figure 2**). The project site is generally bound in the west by 20th Street East, Avenue P to the north, 80th Street East to the east, and Fairfield Avenue to the south. The project site is located within the U.S. Geological Survey (USGS) 7.5-minute Palmdale and Littlerock topographic quadrangle maps.

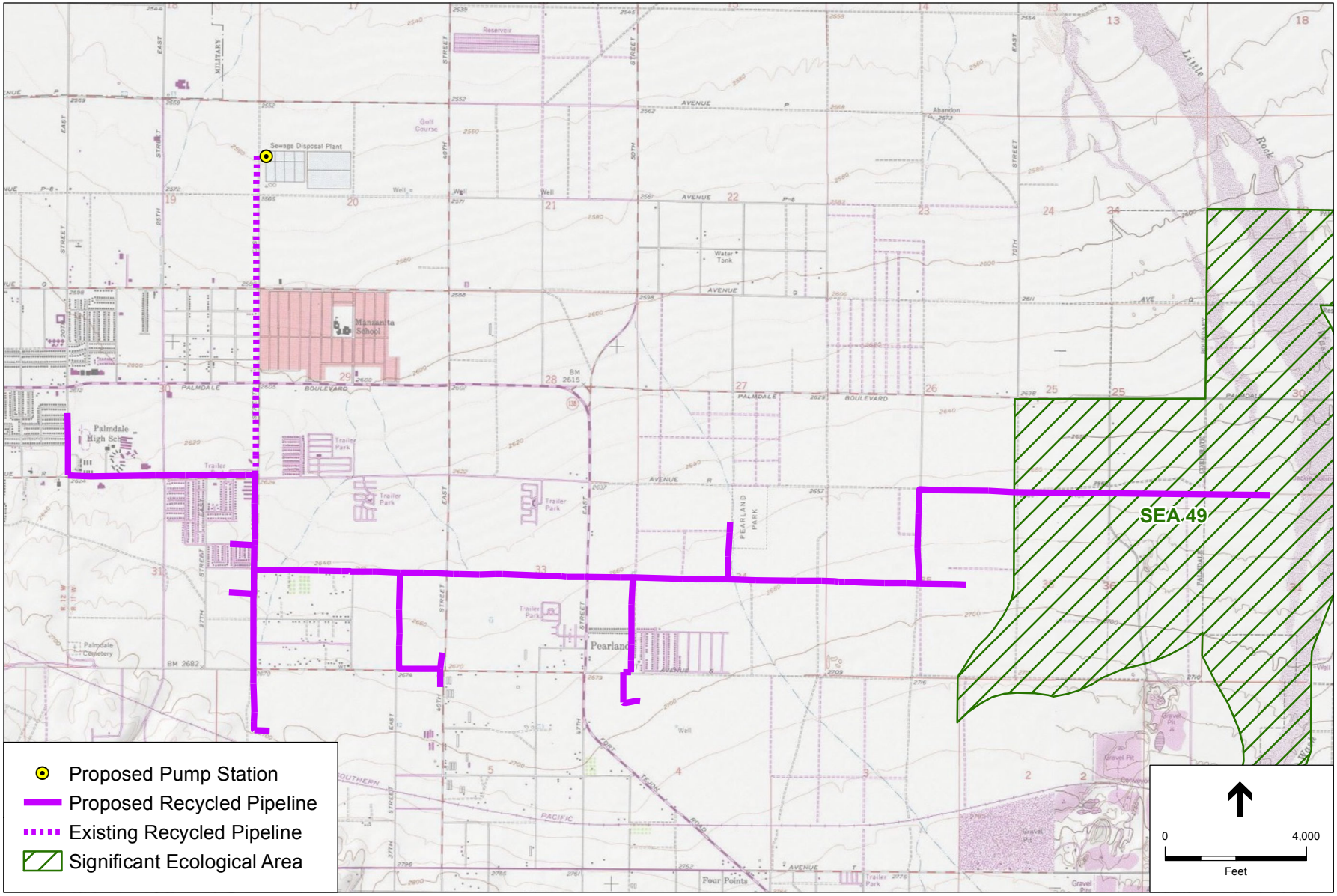


SOURCE: ESRI

Palmdale Water District Recycled Water Project . 130096

Figure 1

Regional Location



SOURCE: USGS

Palmdale Water District Recycled Water Project . 130096

Figure 2

Project Site

2. Project Description

Palmdale Water District (PWD) is proposing to implement their 2014 Recycled Water Facilities Plan, which includes construction and operation of distribution pipelines and laterals and pumping facilities as described below and shown in **Figure 3**.

2.1 Project Components

Pump Station

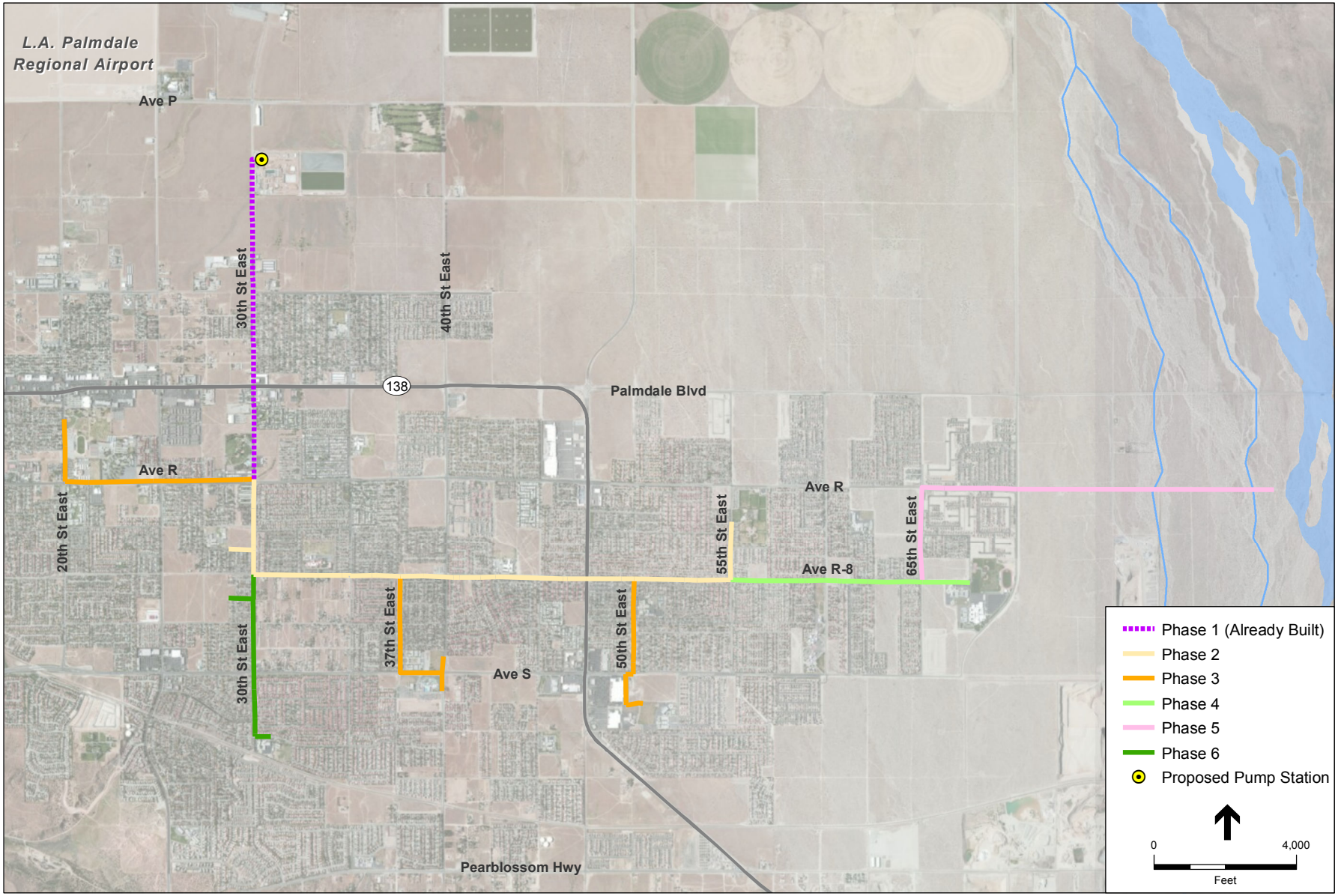
The proposed project would install one new pump station at the PWRP (see **Figure 3**). The PWRP is owned and operated by LACSD No. 20. The plant, which occupies 286 acres east of Highway 14, provides tertiary treatment for 12 million gallons per day (mgd) of wastewater. The proposed pump station would have a firm pumping capacity of about 800 brake horsepower (bhp), which is based on a maximum supply capacity of about 6,675 gallons per minute (gpm) and 70 percent pump efficiency. The proposed pump station would be housed within a masonry building and would have a footprint of approximately 15 feet by 35 feet, which would accommodate up to four installed vertical turbine pumps at build-out, mounted at grade above a concrete slab. There would either be a buried concrete wet well below the pump motors, or vertical pump cans extending through the concrete slab and into the ground below. The pump station building would include an electrical control room to house new electrical panels for the pumps. Other major pump station components would include a generator, for standby power, a surge tank, and a small amount of piping.

Pipelines

The proposed project includes approximately 70,000 linear feet of new recycled water pipe, with pipeline diameters ranging from six inches (for laterals) to 24 inches (for distribution pipes). The majority of the pipeline alignment would be within developed and paved portions of roadway rights-of-way, with the exception of approximately 7,400 linear feet of pipe extending east along Avenue R toward Littlerock Creek, beyond the intersection with 70th Street East. East of 70th Street East, Avenue R is a dirt road that is bordered by open space. Proposed recycled water pipeline segments and phases are listed in **Table 1** and shown in **Figure 3**. Phase 1 of the proposed project has already been built, with a pipeline leading from the PWRP down 30th Street East to Avenue R.

TABLE 1
ROADWAYS WITH PROPOSED RECYCLED WATER PIPELINES

Distribution Pipelines (24-inch diameter)	Laterals (6-inch to 12-inch diameter)
Phase 2	
• PRWA pump station at PWRP	• East Avenue R-6 to Desert Rose Elementary School
• 30th Street East between Avenue R and Avenue R-8	• 55 Street East to Dominic Massari Park
• Avenue R-8 between 30th St East and 55th St East	
• Avenue R and 20th Street East to Palmdale High School	
Phase 3	
	• 37th Street East, Avenue S, 40th Street East to Dry Town Water Park
	• 55th Street East to Buena Vista Elementary School
Phase 4	
• Avenue R-8 between 55th St East and 65th St East	• Avenue R-8 to Los Amigos School and Pete Knight High School
Phase 5	
• 65th Street East between Avenue R-8 and Avenue R	
• Avenue R between 65th Street East and Littlerock Creek	
Phase 6	
• 30th Street East between Avenue R-8 and Joshua Hills Elementary School and Park	• East Avenue R-12 to Palmdale Park



SOURCE: ESRI

Palmdale Water District Recycled Water Project . 130096

Figure 3

Project Components

2.2 Project Construction

Project construction would occur in sequential phases, as shown in Figure 4. As mentioned previously, Phase 1 of the pipeline has already been constructed. The proposed pump station would be built as part of Phase 2. Facility construction would take place primarily on previously developed areas, including paved public roadways and immediately adjacent vacant lands. Construction of the pipelines would be located within City of Palmdale and Los Angeles County owned public zones and roadway rights-of-way.

One exception is Phase 5 of the pipeline, which would be installed along a segment of Avenue R, east of 70th Street East, along an unimproved dirt road immediately surrounded by open space. This phase would only be constructed if the results of the ongoing feasibility study recommend implementing groundwater recharge in the area of Littlerock Creek adjacent to the terminus of the Phase 5 pipeline alignment. Nonetheless, Phase 5 was assessed and is addressed in this report.

Construction Equipment and Staging

Pipeline installation for the majority of sections would use standard open-cut trenching techniques, except where surface features such as high-volume roadways, State Routes (e.g., State Route 138), or storm drains may require special techniques to avoid disturbance, such as jack-and-bore or directional drilling. Standard installation of the pipelines using trenching techniques would proceed at the rate of approximately 100 feet per day in more difficult conditions, and 200 to 300 feet per day in easier conditions, with an average estimate of 200 feet per day. The work zone (maximum construction area at any given time) would be between 300 to 400 feet long. For work within the roadways, trench width would be approximately 4 feet, with active work areas of about 8 feet on one side of the trench and 10 to 12 feet on the other side for access by trucks and loaders. This would result in a total construction zone approximately 20 to 30 feet wide. For the purpose of this IS/MND, a construction zone width of 30 feet is assumed and will be used as the area of potential effect. Pipeline excavation depths would probably range from 5 to 20 feet, with an average of about 6 to 7 feet to the bottom of the pipe. Excavated trench materials would be redistributed over the completed pipeline area and/or transported off-site.

Construction of the pump station would require grading, site preparation, and facility installation. Maximum excavation depth of 8 feet is anticipated for the proposed above-grade pump stations. Installation of the proposed facilities would require, but not be limited to, the equipment listed below. Equipment and vehicle staging would be accommodated either at each construction site or at a centralized staging area.

- track-mounted excavator
- backhoe
- front-end loader
- dump truck
- crane
- compactor
- water truck
- flat-bed delivery truck
- forklift
- pavement cutter
- compressor/jack hammer
- asphalt paver
- concrete trucks

Hydrostatic Testing

Hydrostatic testing would be conducted for each pipeline segment and would consist of filling the pipeline with water, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. After hydrostatic testing, the test water would be disposed of back into the sanitary sewer system. Temporary approvals for test water use and discharge would be obtained by the construction contractor, as required.

Surface Restoration

Damage to roadways and non-paved areas would be repaired in accordance with the requirements of jurisdictional agencies, including the Los Angeles County Department of Public Works, the City of Palmdale, and/or Caltrans. Where the pipelines are installed in a paved roadway, new asphalt or concrete pavement would be placed to match the surrounding road type. Temporary asphalt material may be installed to allow traffic to use the roadway immediately after construction. Final repaving would be done after pipeline installations and testing are complete. For unpaved surfaces, restoration would generally involve replanting with annual grasses or native vegetation.

2.3 Construction Schedule

Construction Phases 2 through 6 would take approximately 16 months, assuming sequential but continuous construction. Construction would occur Monday through Friday, primarily between the hours of 7:00 a.m. and 4:00 p.m. or otherwise in accordance with local noise ordinances. Construction of Phase 2 is expected to commence in fall 2015.

2.4 Operation and Maintenance Activities

Once facilities are installed, ongoing project activities would include maintenance of distribution system facilities, customer service, and inspection/backflow prevention testing. PRWA would operate the non-potable system and, therefore, provide staff and equipment for system operations. The proposed project would likely need at least one recycled water coordinator and one certified operator. The Authority could use existing trained staff at PWD or the City in the interim. Staff could be added as-needed, most likely in association with implementation of each phase and system expansion.

- **Recycled Water Coordinator**: Responsible for coordinating most of the activities identified in the 2014 Facilities Plan, as well as billing and customer service.

- **Certified Operator**: Responsible for field work, including system operations and maintenance (O&M), meter reading, on-site supervisor training, and site inspection.

Large equipment would be made available to recycled water program staff from either the City or PWD, including a dump truck, a backhoe, a pick-up/utility vehicle, and spare mechanical parts for critical facilities such as the pump station.

3. Methods

An initial literature review provided information on plant and animal species occurrences in the region of the project site, applicable laws and regulations, and additional background information on sensitive biological resources from previous biological studies in the region. A field investigation followed, which included the development of a map of the plant communities, sensitive species habitat assessments, and a preliminary assessment of jurisdictional resources within or adjacent to the project site. No focused species surveys were conducted to determine presence/absence.

3.1 Literature Review

The majority of the information and analysis presented in this report derived from the following sources:

- Biological Technical Report for the Recycled Water Master Plan prepared by PCR Services Corporation (PCR 2009) for Palmdale Water District;
- Biological Resources Technical Report for the Regional Recycled Water Project Phase II prepared by ESA (ESA 2012) for Los Angeles County Waterworks District No. 40;
- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps: Littlerock, and Palmdale;
- California Department of Fish and Wildlife (CDFW)) California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) On-line Inventory of Rare, Threatened and Endangered Plants of California record search for USGS 7.5-minute topographic quadrangle maps: Alpine Butte, Little Rock, Juniper Hills, Pacifico Mtn., Acton, Lancaster East , Lancaster West, Ritter Ridge, Hi Vista, Lovejoy Buttes, Valyermo, and Palmdale (CDFG 2014 and CNPS 2014, respectively);
- Various literature specific to descriptions of the climate, habitat, vegetation types, and special status species occurring in the region of the project site(see References); and,
- Aerial photographs of the project site (ESRI 2014).

3.2 Biological Resources Assessment

ESA biologist Matthew South visited the project site on June 5, 2014 to describe and map plant communities and potential jurisdictional resources, assess the habitat on the project site for the ability to support special status species and sensitive natural communities, and to note any wildlife or sign observed.

Plant Community Mapping

Plant communities were mapped initially on the computer by digitizing visual boundaries on aerial photographs into ESA's Geographic Information System (GIS) and printed for use during the field investigation. The digitized boundaries were adjusted during the field investigation to reflect the observed plant community boundaries and updated in the GIS to calculate acreages.

Plant community names and descriptions were based on ESA findings and descriptions contained in *A Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolfe, and Evens 2009), where appropriate.

All plant species observed during the investigation were either identified in the field or collected and later identified using *The Jepsen Manual: Vascular Plants of California – Second Edition* (Hickman 2012).

Special-Status Species Assessment

The potential for special-status plant and wildlife species to occur within the project site and adjacent areas is based on (but not limited to) an evaluation of the habitat suitability onsite and in the immediate vicinity, historical occurrences and known geographic distributions, and known elevation limitations. Special-status species are those that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies as under threat from human-associated developments. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as special-status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Special-status species include:

- Species listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act or the California Endangered Species Act;
- Species that meet the definitions of rare or endangered under California Environmental Quality Act (CEQA - Guidelines Section 15380);
- Species covered under an adopted NCCP/HCP;
- Species considered "sensitive" by the Bureau of Land Management (BLM);
- Wildlife species of special concern to California Department of Fish and Wildlife (CDFW);
- Wildlife fully protected in California (California Fish and Game Code Sections 3511, 4700, and 5050);
- A plant species considered by the CNPS to be "rare, threatened, or endangered in California" (CNPS List 1A, 1B, and 2);
- A plant listed as rare under the California Native Plant Protection Act, and/or;
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances;

Preliminary Jurisdictional Resources Assessment

A preliminary jurisdictional resource assessment was conducted by ESA during the field investigations discussed above. All riparian features observed within the project site or immediately area that are potentially regulated by the U.S. Army Corps of Engineers (USACE), CDFW, and/or Regional Water Quality Control Board (RWQCB) were noted and mapped on an aerial photograph and are described in this report. A formal jurisdictional delineation was not conducted.

4. Natural Resources Setting

The climate of the project region is characterized as arid desert, with average annual temperatures ranging from a high of 77.2˚ F to a low of 47.2˚ F (WRCC 2014). The Palmdale area averages 7.6 inches of annual precipitation, with the majority of this amount accumulating as rain between the months of December to March (WRCC 2014).

A majority of the pipeline would be constructed within the public right-of-way of City of Palmdale and Los Angeles County streets and a small portion will be constructed in Little Rock Wash. Prominent land uses in the area include the aerospace and agricultural industries. Land uses on the project site vary in degree of development and disturbance, including residential, commercial, industrial, institutional, agricultural, and open space. For the purpose of this report, the project site is defined as the areas of direct impacts and up to 15 feet on either side of the proposed pipeline. The project vicinity may include suitable species-specific habitats occurring outside of the right-of-way of the pipeline, but in the vicinity of the project site.

4.1 Plant Communities and Habitats

Ruderal Vegetation

A total of 42.4 acres of the 47.4 acre project site is developed, with various scattered commercial and residential developments adjacent to the proposed pipeline right-of-way. Undeveloped areas adjacent to the right-of-way mainly consist of native and nonnative ruderal vegetation, such as black mustard (*Brassica nigra*), Russian thistle (*Salsola kali*), vinegarweed (*Trichostema lanceolatum*), and common nightshade (*Circaea alpine*). Common native vegetation observed along and adjacent to portions of the right-of-way include (but not limited to) rubber rabbitbrush (*Chrysothamnus nauseosus*), creosote bush (*Larrea tridentate*), fourwing saltbush (*Atriplex canescens*), California buckwheat (*Eriogonum fasciculatum*), and bursage (*Ambrosia dumosa*). Several clusters of mature Joshua trees (*Yucca brevifolia*) occur with other associated native plant species adjacent to the right-of-way in undeveloped areas.

Joshua Tree Woodland

The portion of the project site east of 70th Street East includes 5 acres of undisturbed Joshua tree woodland. This community is an open canopy woodland with scattered Joshua trees and a diverse shrub layer largely consisting of a mixture of fourwing saltbush, rubber rabbitbrush, Mormon tea (*Ephedra nevadensis*), cheesebush (*Ambrosia salsola*), and bursage. An infrequently

traveled dirt road approximately 15 feet wide runs through this section of the project site. In some areas the road is lined with trash and debris such as furniture, small appliances, tires, and other materials from illegal dumping. However, the majority of this portion of the project site functions as an undisturbed, intact plant community. A map of the plant communities, including this 5 acre Joshua tree woodland area is depicted below in **Figure 4**.

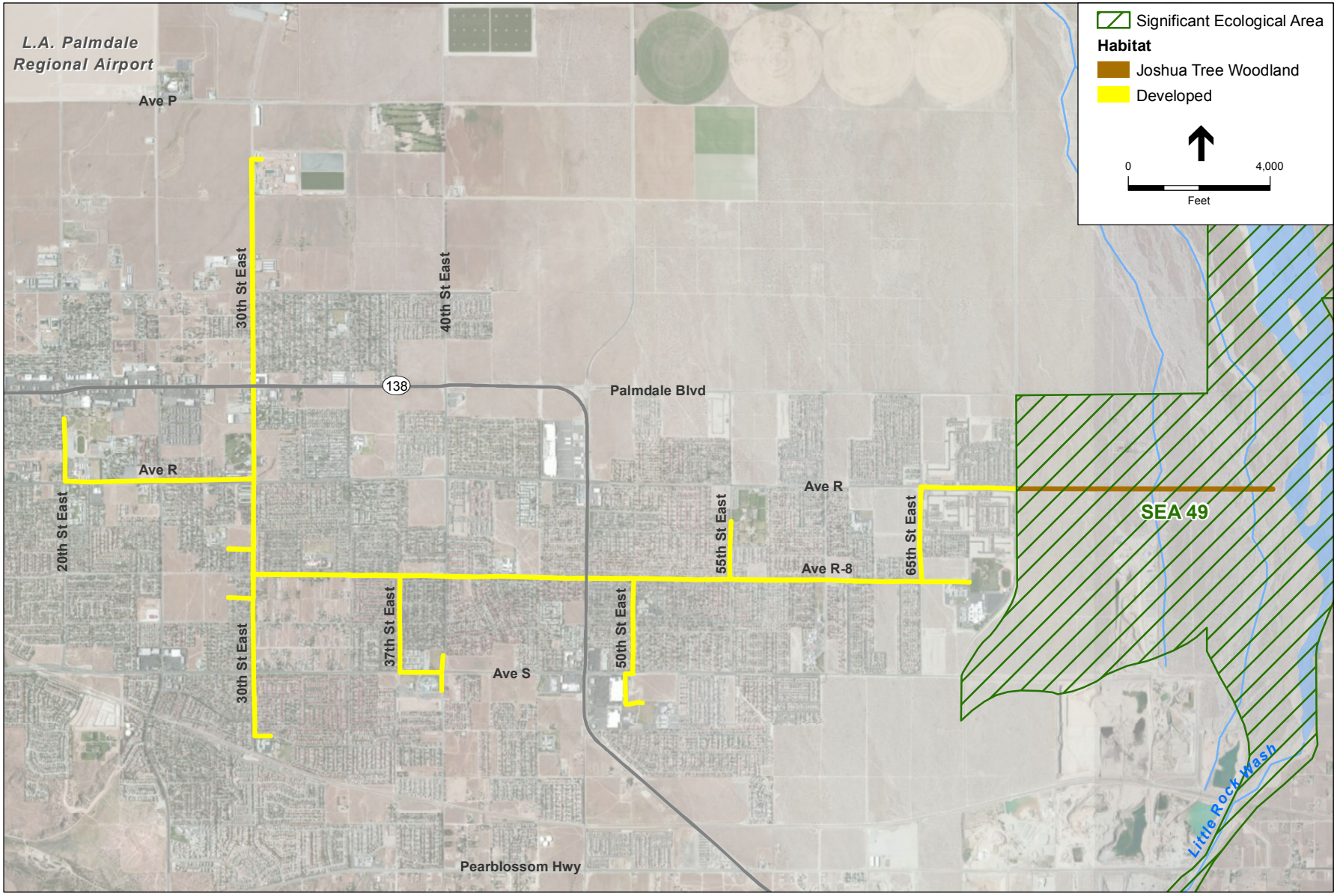
Scoured soils and sediment deposits occur in the western portion of this plant community due to intermittent water flows through Littlerock Wash. . The water flow is not substantial enough to remove the vegetation from the wash, and the plant community thrives in the areas where water flows.

4.2 Common Wildlife

Disturbed, non-native habitats such as those which occur within the majority of the project site generally provide low quality wildlife habitat; however, agricultural areas can provide high quality habitat for certain wildlife species (i.e., raptor foraging habitat). The desert scrub habitats adjacent to the project area provide potential habitat for a wide variety of lizards and snakes. Lizards that may occur in the project area include banded gecko (*Coleonyx variegatus*), desert iguana (*Dipsosaurus dorsalis*), common chuckwalla (*Sauromalus obesus*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), zebra-tailed lizard (*Callisaurus craconoides*), desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), yucca night lizard (*Xantusia vigilis*), and western whiptail (*Cnemidophorus tigris*). Snake species that may occur include western blind snake (*Leptotyphlops humilis*), spotted leafnosed snake (*Phyllorhynchus decurtatus*), coachwhip (*Masticophis flagellum*), western patchnosed snake (*Salvadora hexalepis*), glossy snake (*Arizona elegans*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), long-nosed snake (*Rhinocheilus lecontei*), western shovel-nosed snake (*Chionactis occipitalis*), night snake (*Hypsiglena torquata*), speckled rattlesnake (*Crotalus mitchelli*), Mojave green rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*).

Some common bird species expected include California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), ladder-backed woodpecker (*Picoides scalaris*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*) (a CDFW Species of Special Concern), rock wren (*Salpinctes obsoletus*), and bewick's wren (*Thryomanes bewickii*). Raptor species expected to utilize agricultural areas for foraging include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), prairie falcon (*Falco mexicanus*), and northern harrier (*Circus cyaneus*).

Mammals are known to occur in the area of the project site, and some common species include black-tailed jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canus latrans*), desert cottontail (*Sylvilagus audubonii*), desert woodrat (*Neotoma lepida*), white-tailed antelope squirrel (*Ammospermophilus leucurus*).



SOURCE: ESRI

Palmdale Water District Recycled Water Project . 130096

Figure 4

Plant Communities

4.3 Special-Status Species

Special-Status Wildlife

As a result of the literature review and field investigation conducted for the project site, a total of 18 special-status wildlife species were identified as having the potential to occur within the project site or adjacent areas, due the presence of suitable habitat and/or previsouly recorded occurrences in the region. Included in this list is Mohave ground squirrel (*Xerospermophilus mohavensis*) and Swainson's hawk (*Buteo swainsoni*), both state threatened species; and Townsend's big-eared bat (*Corynorhinus townsendii*), which is a candidate for state threatened listing. Other species that have potential to occur within the project site or adjacent areas include silvery legless lizard (*Anniella pulchra pulchra*), rosy boa (*Charina trivirgata*), coast horned lizard (*Phrynosoma blainvillii*), Cooper's hawk (*Accipiter cooperii*), Bell's sage sparrow (*Artermisiospiza belli belli*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), mountain plover (*Charadrius montanus*), prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), Le Conte's thrasher (*Toxostoma lecontei*), pallid bat (*Antrozous pallidus*), pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*), southern grasshopper mouse (*Onychomys torridus ramona*), and American badger (*Taxidea taxus*). The special-status species with a potential to occur within the project vicinity are described in detail below.

Silvery legless lizard (*Anniella pulchra pulchra*) is a very small, slender lizard with smooth scales and no legs. It is sometimes confused for a snake; however eyelids (a diagnostic character) are visible. Although sometimes found on the surface at dawn and dusk, this lizard spends most of its time underground in loose, sandy soil or under leaf litter, where it forages for insects and spiders. The preferred habitat for this species is moist, sparsely vegetated areas of scrub, washes and stream terraces with loose soil and leaf litter.

C**oast horned lizard** (*Phrynosoma blainvillii*) , is a California Species of Special Concern and a BLM Sensitive species is distributed throughout the coast of southern California and into northern Baja, Mexico. This species prefers open areas of sandy soil with low vegetation in valleys, foothills and semiarid mountains. Its primary food source is harvester ants, native to the southern California region; this specialty diet is intimately related to its subsequent decline in southern California. The rapid urbanization of the southern California region has facilitated the invasion of the Argentine ant which is associated with residential areas. These ants displace the native harvester ants and thus, there is less food available for the coast horned lizard. Although this species was not observed during the biological resources reconnaissance survey, CNDDB occurrences have been recorded in the vicinity of the project site and suitable habitat occurs in the undisturbed habitat on the project site and surrounding areas.

Cooper's hawk (*Accipiter cooperii*) , a CDFW Watch List species, is a breeding resident throughout most of the wooded portions California. This species breeds in the southern Sierra Nevada foothills, New York Mts., Owens Valley, and other local areas in southern California. It prefers dense stands of live oak, riparian deciduous or other forest habitats. It also frequents landscapes where wooded areas occur in patches and groves, including patchy woodlands and edges with snags for perching. Cooper's hawks nest in dense stands with moderate crown-depths. This species catches small birds, especially young during the nesting season. They will also take

small mammals, reptiles, and amphibians. This species often hunts in broken woodland and habitat edges. Breeding numbers in southern California have been reduced in recent decades.

Burrowing owl (*Athene cunicularia*), a California Species of Special Concern and a BLM Sensitive species, is a yearlong resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. In southern California this species is most common in open grasslands and shrublands, particularly agricultural areas, with available perches and burrows. This species was formerly common in appropriate habitats throughout the California, excluding the humid northwest coastal forests and high mountains. Burrowing owls eat mostly insects, but also prey upon small mammals, reptiles, birds, and carrion. Burrowing owls use rodent or other burrows for roosting and nesting cover, and can be found in disturbed areas with sparse or low vegetation. This species can use debris piles and buildings as cover sites well.

Conversion of grassland to agriculture, other habitat destruction, and poisoning of ground squirrels have contributed to the reduction in numbers in recent decades, which was noted in the 1940s, and earlier (Grinnell and Miller 1944, Zarn 1974a, Remsen 1978). Predators include prairie falcons, red-tailed hawks, Swainson's hawks, ferruginous hawks, northern harriers, golden eagles, foxes, coyotes, and domestic dogs and cats. Fleas, lice, and feather mites are common ectoparasites. Collisions with autos may be a significant cause of mortality.

Ferruginous hawk (*Buteo regalis*), a CDFW Watch List species, is an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. This species is a fairly common winter resident of grasslands and agricultural areas in southwestern California, and a casual resident in the northeast during the summer. Ferruginous hawks frequent open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. This species roosts in open areas, usually in a lone tree or utility pole. It searches for prey from low flights over open, treeless areas, and glides to intercept prey on the ground. Ferruginous hawks prey on lagomorphs, ground squirrels, mice, and small birds, reptiles, and amphibians. Urban development may contribute to a loss of suitable wintering habitat in southern California.

Swainson's hawk (*Buteo swainsoni*), a State Threatened and Federal Threatened species, is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley (Bloom 1980, Garrett and Dunn 1981). This species breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley and forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. In southern California, this species is mostly limited to spring and fall transients. Typical habitat for this species is open desert, grassland, or cropland containing scattered, large trees or small groves. It roosts in large trees, but will roost on the ground if none available. Swainson's hawks nest on a platform of sticks, bark, and fresh leaves in a tree, bush, or utility pole often in riparian habitat in scattered trees or small groves in sparsely vegetated flatlands. This species eats mice, gophers, ground squirrels, rabbits, large arthropods, amphibians, reptiles, birds, and, rarely, fish. It soars at low and high levels in search of prey, and may also

walk on the ground to catch invertebrates and other prey. It also is known to catch insects and bats in flight. Migrating individuals move south through the southern and central interior of California in September and October, and north March through May. Some individuals migrate as far south as South America, passing in large flocks through Central America (Brown and Amadon, 1968). Swainson hawk nesting habitat in southern California has sharply declined in recent decades, mostly due to urbanization and other human developments.

Prairie falcon (*Falco mexicanus*), a CDFW Watch List species, is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. This species uses open terrain for foraging. It usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area, and sometimes uses old raven or golden eagle stick nests on cliffs, bluffs, or rock outcrops. It eats mostly small mammals, some birds, and reptiles. The prairie falcon catches prey in the air or on the ground in open areas. This species is vulnerable to Dichlorodiphenyldichloroethylene (DDE) poisoning. Egg and nestling predation can occur at sites accessible to mammal predators, great horned owls, and golden eagles.

Loggerhead shrike (*Lanius ludovicianus*) , a California Species of Special Concern and a federal Bird of Conservation Concern , is a common resident and winter visitor in lowlands and foothills throughout California. This species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. Occurs only rarely in heavily urbanized areas, but often found in open cropland. Sometimes uses edges of denser habitats. Loggerhead shrikes frequent open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low or sparse herbaceous cover. This species often uses shrubs or small trees for cover. Shrikes build nests on stable branches in densely-foliated shrubs or trees, usually well-concealed. Eats mostly large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. Shrikes frequently skewer prey on thorns, sharp twigs, wire barbs, or forces it into a crotch to feed or cache for later.

Le Conte's thrasher (*Toxostoma lecontei*) , a California Species of Concern and a federal Bird of Conservation Concern , is an uncommon to rare, local resident in southern California deserts from southern Mono County south to the Mexican border, and in western and southern San Joaquin Valley. This species occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs. It frequents desert washes and flats with scattered shrubs and large areas of open, sandy, or alkaline terrain in desert wash, desert shrub, alkali desert scrub, and desert succulent shrub habitats. It uses scattered desert shrubs and cactus for cover; frequently saltbush and cholla cactus. Le Conte's thrasher feed primarily on a variety of insects and other terrestrial arthropods, and occasionally on seeds, small lizards, and other small vertebrates. This species is often exceptionally wary of humans and is vulnerable to off-road vehicle activity, other disturbances, and removal of shrubs for agricultural and other development.

Pallid bat (*Antrozous pallidus*) , a state Species of Special Concern, a BLM Sensitive species, and a Western Bat Working Group (WBWG) High Priority species, occurs throughout western North America. According to the WBWG (WBWG 2005a), the species inhabitats low elevation rocky arid deserts and Canyonlands, shrub-steppe grasslands, karst formations, and higher elevations coniferous forests. It is most abundant in the Great Basin, Mojave, and Sonoran Deserts due to the xeric ecosystems. Pallid bats roost alone, in small groups, or gregariously in rocky outcrops and cliffs, caves, mines, trees, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings. As a generalist it's diet consists of antlions, beetles, centipedes, cicadas, crickets, grasshoppers, Jerusalem crickets, keydids, moths, praying mantids, scorpions, solpugids, termites, and rarely take geckos, lizards, skinks, small rodents, and plant material. It is vulnerable to mass displacement from roosting sites because of the gregarious nature and their relative sensitivity to disturbance. Maternal roosting sites are particularly susceptible to disturbance.

Townsend's big-eared bat (*Corynorhinus townsendii*), a state Species of Special Concern, a BLM Sensitive species, and a WBWG High Priority species, occurs throughout the west along the central coast to central Mexico, and east into the Great Plains. According to the Western Bat Working Group (WBWG 2005b), the species uses a wide variety of habitats including coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. This species is nocturnal and almost exclusively eats moths. Maternity colonies are formed by the females and are highly correlated with the presence of cave-like roosting habitats. This species has a very large home range and can travel over 150 kilometers in one night. Loss of caves or mines used for roosting is the major threat to this species.

Southern grasshopper mouse (*Onychomys torridus*), a state Species of Special Concern, is common in arid desert habitats of the Mojave Desert and Central Valley of California. According to CDFW California Wildlife Habitat Relationship System (CDFW 2014) it prefers alkali desert scrub and desert scrub habitats, and a lower density is found in other desert habitat such as succulent scrub, wash, and riparian areas. The species feeds on mostly arthropods such as scorpions, and also eats grasshoppers, crickets, caterpillars, moths, salamanders, lizards, frogs, and small mammals. Southern grasshopper mouse prefers friable souls for excavating nests, but also constructs nests in burrows abandoned by other rodents.It is nocturnal and active year round.

American Badger (*Taxidea taxus*), a state Species of Special Concern, occurs throughout California, and is most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. It is carnivorous with a seasonally shifting diet of reptiles, insects, earthworms, eggs, birds, and carrion. Badgers build burrows in friable soils that they frequently return to and use for breeding and winter cover. This species is generally tolerant of humans, but control of prey items such as small mammals and loss of habitat threaten the species.

Mohave ground squirrel (*Xerospermophilus mohavensis*), a state Threatened species and BLM Sensitive species, is endemic to the Mojave Desert and prefers sandy-to-gravelly soils in open desert scrub, alkali scrub, and Joshua tree woodland. The species finds cover and nests in burrows at the base of shrubs, and eats a wide variety of green vegetation, seeds, and fruits. This species is

diurnal, and is active above ground in spring and early summer. Emergence dates vary from March to June, depending on elevation, and aestivation begins in July or August.

Special-Status Plants

A total of 7 special-status plant species were identified as having the potential to occur within the project site and adjacent areas; none of which are federally or state listed species. Included in the list is Lancaster milk-vetch (*Astragalus preussii* var. *laxiflorus*), alkali mariposa-lily (*Calochortus striatus*), white pygmy-poppy (*Canbya candida*), sagebrush loeflingia (*Loeflingia sqarrosa* var. *artemisiarum*), Peirson's lupine (*Lupinus peirsonii*), short-joint beavertail (*Opuntia basilaris* var. *brachyclada*), and Parish's popcornflower (*Plagiobothrys parishii*). **Figure 5** below shows the locations of all special-status species occurrences in the vicinity of the project site that were recorded to the CNDDB.

Sensitive Natural Communities

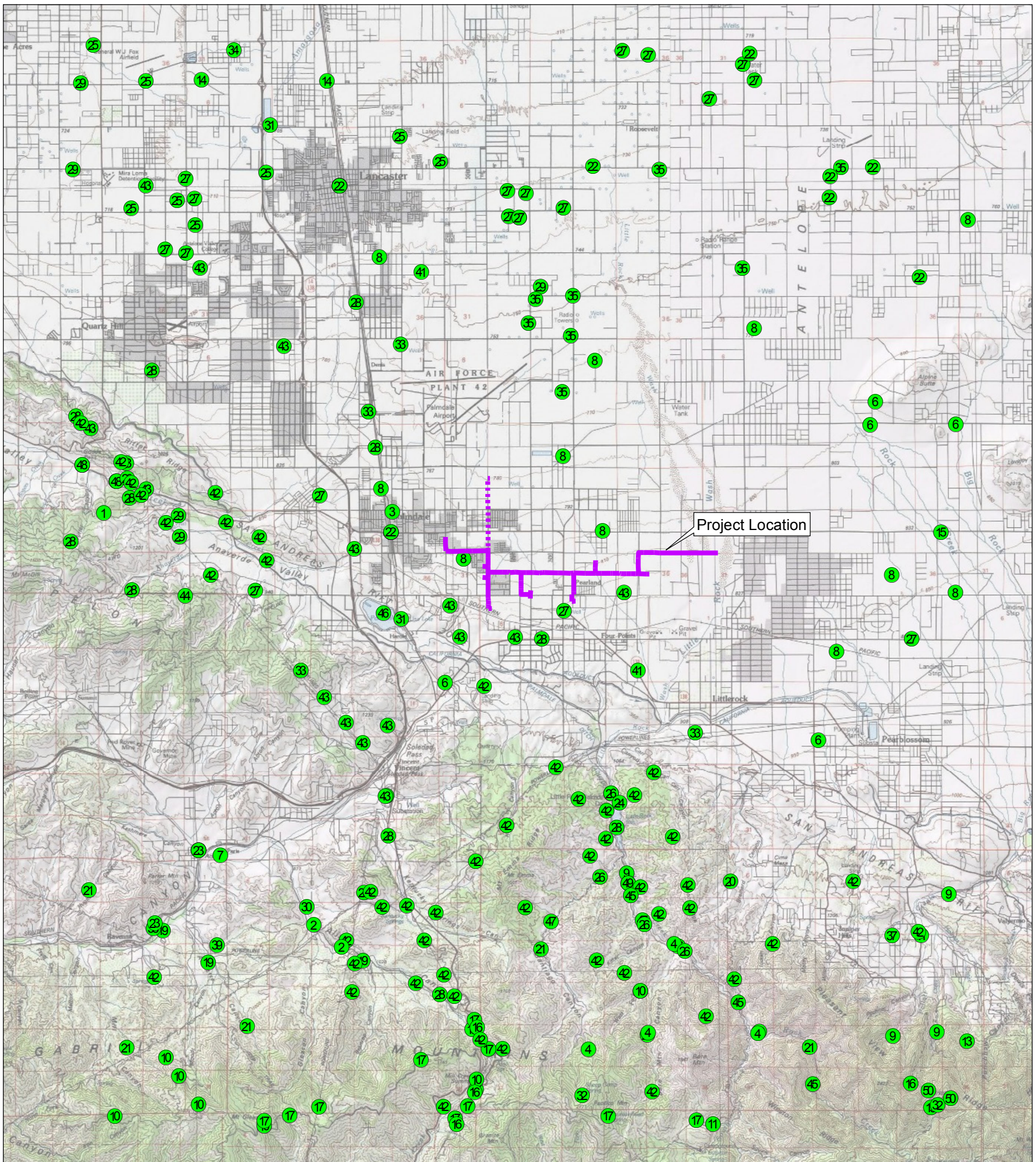
There were no sensitive natural communities identified in the project vicinity or recorded in the immediate area according to the CNDDB search (CNDDB 2014).

4.5 Jurisdictional Resources

Wetlands and permanent, intermittent and ephemeral drainages, creeks, and streams identified as waters of the U.S. are generally subject to the jurisdiction of the USACE under Section 404 of the Federal Clean Water Act (CWA). However, the USACE has determined that surface water features within the Antelope Valley are not considered waters of the U.S. due to their isolation from navigable waters[1]. Therefore, projects affecting surface waters and wetlands are not subject to Section 404 permitting. However, Little Rock Wash would be under the jurisdiction of the Regional Water Quality Control Board (RWQCB) and is subject to section 401 of the CWA and the Porter-Cologne Water Quality Control Act, which requires water quality certification for dredging, filling, or excavation of isolated waters.

Streambeds are subject to regulation by the CDFW under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy. Under this definition, Little Rock Wash would fall under the jurisdiction of the CDFW under Section 1602 of the California Fish and Game Code.

[1] Based on the Supreme Court ruling Solid Waste Agency of Northern Cook City. v. Army Corps of Engineers, 531 U. S. 159 (SWANCC) concerning the Clean Water Act jurisdiction over isolated waters (January 9, 2001), non-navigable, isolated, intrastate waters based solely on the use of such waters by migratory birds are no longer defined as waters of the United States. Jurisdiction of non-navigable, isolated, intrastate waters may be possible if their use, degradation, or destruction could affect other waters of the Unites States, or interstate or foreign commerce. Jurisdiction over such other waters is analyzed on a case-by-case basis. Impoundments of waters, tributaries of waters, and wetlands adjacent to waters should be analyzed on a case-by-case basis.



1. Bell's sage sparrow
2. California red-legged frog
3. Cooper's hawk
4. Greata's aster
5. Lancaster milk-vetch
6. Le Conte's thrasher
7. Mason's neststraw
8. Mohave ground squirrel
9. Mojave Riparian Forest
10. Mt. Gleason paintbrush
11. Palmer's mariposa-lily
12. Parry's spineflower
13. Peirson's lupine
14. Rosamond eriastrum
15. San Bernardino kangaroo rat
16. San Gabriel linanthus
17. San Gabriel manzanita
18. San Joaquin pocket mouse
19. Southern Cottonwood Willow Riparian Forest
20. Southern Riparian Scrub
21. Southern Sycamore Alder Riparian Woodland
22. Swainson's hawk
23. Townsend's big-eared bat
24. Yuma myotis
25. alkali mariposa-lily
26. arroyo toad
27. burrowing owl
28. coast horned lizard
29. ferruginous hawk
30. golden eagle
31. least Bell's vireo
32. lemon lily
33. loggerhead shrike
34. merlin
35. mountain plover
36. pale-yellow layia
37. pallid San Diego pocket mouse
38. pallid bat
39. prairie falcon
40. rosy boa
41. sagebrush loeflingia
42. short-joint beavertail
43. silvery legless lizard
44. southern California rufous-crowned sparrow
45. southern mountain yellow-legged frog
46. tricolored blackbird
47. two-striped garter snake
48. western pond turtle
49. white pygmy-poppy
50. woolly mountain-parsley

SOURCE: California Natural Diversity Database

Palmdale Water District Recycled Water Project . 130096

Figure 5

CNDDB Special-Status Species Occurrences

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4.6 Connectivity and Migration Corridors

Habitat linkages are contiguous areas of open space that connect two larger habitat areas. Linkages provide for both diffusion and dispersal for a variety of species within the landscape. In addition, linkages can serve as primary habitat for some smaller species. Corridors are linear linkages between two or more habitat patches. Corridors provide for movement and dispersal, but do not necessarily include habitat capable of supporting all life history requirements of a species.

Open space areas within and adjacent to the project site are highly fragmented by existing development expect for the portion of proposed pipeline to the east of 70th Street East. Prominent features that are expected to convey wildlife movement include drainages, in particular Little Rock Wash. The wash and surrounding area on the project site was adopted by the Los Angeles County as a Sensitive Ecological Area (SEA) for the value as a migration corridor for wildlife and as a plant seed dispersal vector that gives the region high habitat diversity.

Little Rock Wash is also within a Linkage Planning Area for Science and Collaboration for Connected Wildlands' (SC Wildlands) California Desert Connectivity Project. When designated, the Linkage Planning Areas will be used to guide conservation efforts based on the habitat suitability and movement needs of over 40 focal species. The Linkage Planning Area that includes Little Rock Wash would connect the San Gabriel Mountains to the south of the project site, with Edwards Air Force Base in the interior of the Mojave Desert to the north of the project site. This area is used for movement of large mammals such as coyotes and bobcats, as well as provides habitat and dispersal areas for small mammals such as white-tailed antelope squirrel.

5. Regulatory Framework

The proposed project is subject to a number of federal, state, and local regulations regarding biological resources. A summary of the primary regulations pertaining to the project is provided below.

5.1 Federal

Federal Endangered Species Act

Under the federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 USC 1533(c)). Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed or proposed species may be present in the project region and determine whether the proposed project would have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536(3), (4)). Project-related impacts to these species or their habitats would be considered "significant." Section 7 of FESA contains a "take" prohibition which prohibits any action conducted, funded, or approved by a federal agency that adversely affects a member of an endangered or threatened species without prior formal

consultation with the USFWS. Formal consultation with the USFWS would result in the issuance of a Biological Opinion (BO) that includes either a jeopardy or non-jeopardy decision issued by the USFWS to the consulting federal agency. The BO would also include the possible issuance of an "incidental take" permit. If such authorization is given, the project proponent must provide the USFWS with a Habitat Conservation Plan (HCP) for the affected species and publish notification of the application for a permit in the Federal Register.

Section 4(a)(3) and (b)(2) of the FESA requires the designation of critical habitat to the maximum extent possible and prudent based on the best available scientific data and after considering the economic impacts of any designations. Critical habitat is defined in section 3(5)(A) of the FESA as (1) areas within the geographic range of a species that are occupied by individuals of that species and contain the primary constituent elements (physical and biological features) essential to the conservation of the species, thus warranting special management consideration or protection, and (2) areas outside of the geographic range of a species at the time of listing but that are considered essential to the conservation of the species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (U.S. Code Title 16, Section 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

Federal Regulation of Waters of the United States, Including Wetlands

Wetlands are a subset of "waters of the United States" and receive protection under Section 404 of the Clean Water Act (CWA). The term "waters of the U.S." as defined in Code of Federal Regulations (33 CFR 328.3(a); 40 CFR 230.3(s)), includes all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide. Wetlands are defined by the federal government (CFR, Section 328.3(b), 1991) as those areas that are inundated or saturated by surface or groundwater 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 soil conditions. Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the FCWA, the final authority regarding CWA jurisdiction remains with U.S. Environmental Protection Agency (EPA) (328.3(a)(8) added 58 FR 45035, August 25, 1993). The

Corps regulates the discharge of dredged or fill material into waters of the U.S. under Section 404 of the CWA.

Regional Water Quality Control Board

Under Section 401 of the CWA, the Regional Water Quality Control Board (RWQCB) must certify that actions receiving authorization under section 404 of the CWA also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act (Porter-Cologne Act). The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts to wetlands and/or waters of the state. The RWQCB also has jurisdiction over waters deemed 'isolated' or not subject to Section 404 jurisdiction under the SWANCC decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of the Porter-Cologne Act.

Clean Water Act

In accordance with Section 404 of the federal CWA, the Corps regulates discharge of dredged or fill material into waters of the U.S. Waters of the U.S. and their lateral limits are defined in Title 33, Part 328.3(a) of the Code of Federal Regulations to include navigable waters of the U.S., interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the U.S. are often categorized as "jurisdictional wetlands" (i.e., wetlands over which the Corps exercises jurisdiction under Section 404) and "other waters of the United States" when habitat values and characteristics are being described. "Fill" is defined as any material that replaces any portion of a water of the U.S. with dry land or that changes the bottom elevation of any portion of a water of the U.S. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from Corps. In accordance with Section 401 of the CWA, projects that apply for a Corps permit for discharge of dredged or fill material must obtain water quality certification from the appropriate RWQCB indicating that the proposed project would uphold State of California water quality standards.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

Draft West Mojave Habitat Conservation Plan

The Draft West Mojave Plan area in Los Angeles County covers the entirety of the county located northeast of the Transverse Ranges, which are covered under the U.S. Forest Service Southern California Province Forest Plan.

The Draft West Mojave Plan is a pending HCP pursuant to the FESA and an amendment to the California Desert Conservation Area Plan covering over nine million acres in five counties (Inyo, Kern, Los Angeles, San Bernardino, and Riverside) with a purpose of creating a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and almost 100 other sensitive species, as well as the natural communities where they reside. In addition, this HCP provides a streamlined program for complying with the requirements of the California Endangered Species Act (CESA) and FESA.

In 2007, the USFWS issued a BO amending the incidental take permit for desert tortoise, authorizing a specified level of take within the West Mojave Plan area from BLM-authorized activities.

According to the BLM's March 2006 Record of Decision for the Final EIR evaluating the amendment to the California Desert Conservation Area Plan, the HCP has not yet been adopted. Once it is completed, incidental take permits for an additional 48 covered species would be issued to participating local jurisdictions and state agencies. This incidental take authorization cannot be implemented, however, until the local governments complete the application for incidental take permits and receive approval from state and federal wildlife agencies.

5.2 State

CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, *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 specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected, and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDB as sensitive are considered by CDFW to be significant resources and fall under the *CEQA Guidelines* for addressing impacts. Local planning documents such as general plans often identify these resources as well.

California Wetland Definition

Unlike the federal government, California has adopted the Cowardin, et al. (1979) definition of wetlands. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Under normal circumstances, the federal definition of wetlands requires all three wetland identification parameters to be met, whereas the Cowardin definition requires the presence of at least one of these parameters. For this reason, identification of wetlands by state agencies consists of the union of all areas that are periodically inundated or saturated, or in which at least seasonal dominance by hydrophytes may be documented, or in which hydric soils are present.

California Department of Fish and Wildlife Streambed Alteration Agreement

CDFW regulates activities that would interfere with the natural flow of, or substantially alter, a channel, bed, or bank of a lake, river, or stream. These activities are regulated under the California Fish and Game Code Sections 1600-1616. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements. Requirements may include avoidance or minimization of the use of heavy equipment, limitations on work periods to avoid impacts on wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses. A Streambed Alteration Agreement may be required by CDFW for construction activities that could result in an accidental release into a jurisdictional area.

Both state and federal wetland laws require that the biological and hydrological functions, which are lost when a wetland or water is altered or filled, be replaced as part of the respective permit processes. Compensatory actions include replacement of lost wetland acreage, usually in amounts substantially greater than the amount lost.

California Endangered Species Act

Under CESA, the CDFW is responsible for maintaining a list of threatened and endangered species (California Fish and Game Code, 2007), candidate species, and species of special concern. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state listed endangered or threatened species may be present on the project region and determine whether the proposed project would have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. If there were project-related impacts to species on the CESA threatened and endangered list, they would be considered "significant." Impacts to "species of concern" would be considered "significant" under certain circumstances, discussed below.

Although threatened and endangered species are protected by specific federal and state statutes, 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 specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not yet been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

State Fish and Game Codes

Section 2080 of the State Fish and Game Code states, "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act." Pursuant to Section 2081 of the Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memoranda of Understanding if: (1) the take is incidental to an otherwise lawful activity; (2) impacts of the authorized take are minimized and fully mitigated; (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species; and (4) the applicant ensures adequate funding to implement the measures required by CDFW. The CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce. Due to the potential presence of state-listed rare, threatened, or endangered species on the project site, Sections 2080 and 2081 of the Code were considered in this evaluation.

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying CDFW: substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may

pass into any river, stream, or lake. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW streambed alteration agreement must be obtained for any project that would result in an impact on a river, stream, or lake.

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. CDFW has informed nonfederal agencies and private parties that they must avoid take of any fully protected species in carrying out projects.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) includes measures to preserve, protect, and enhance rare and endangered native plants. The list of native plants afforded protection pursuant to the NPPA includes those listed as rare and endangered under the CESA. The NPPA provides limitations on take as follows: "No person will import into this State, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the act. Individual landowners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material. Due to the absence of state-listed rare, threatened, or endangered plant species on the project site, the NPPA was not considered in this evaluation.

California Desert Native Plants Act

The California Desert Native Plants Act (California Food and Agricultural Code, Sections 80001-80006) was enacted to protect desert vegetation from unlawful harvest on both private and public lands. Protected species under the Act include, among others, Joshua trees and other yuccas, bristlecone pine, fan palm, and a variety of cacti. The Act requires a permit for removal of Joshua trees and other desert vegetation.

5.3 Local

Los Angeles County General Plan

The Draft Los Angeles County General Plan identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation and protection of biological resources that must be considered by the County during the decision-making process for projects that have the potential to affect biological resources. The Draft Los Angeles County General Plan includes the following goals related to biological resources.

The Draft General Plan identifies six main types of biological resources to be protected and enhanced: regional habitat linkages; forests; coastal zone; riparian habitats; streambeds and

wetlands; woodlands; and Significant Ecological Areas (SEAs). Additionally, the Draft General Plan outlines two unincorporated areas under U.S. Department of Defense control that contain significant biological resources: Edwards Air Force Base and San Clemente Island.

The Draft General Plan outlines the following policies to protect biological resources within the County.

Policies

Policy C/NR 3.1: Conserve and enhance the ecological function of the County's diverse natural habitats and biological resources.

Policy C/NR 3.2: Create and administer innovative County programs incentivizing the permanent dedication of SEAs and other important biological resources as open space areas.

Policy C/NR 3.3: Restore significant riparian resources such as degraded streams, rivers, wetlands to maintain ecological function.

Policy C/NR 3.4: Conserve and sustainably manage the County's forests and woodlands.

Policy C/NR 3.5: Ensure compatibility of development in the national forests in conjunction with the U.S. Forest Service Land and Resource Management Plan.

Policy C/NR 3.6: Assist state and federal agencies with the preservation of special status species, their associated habitat and wildlife movement corridors through the administration of the SEAs and other programs.

Policy C/NR 3.7: Participate in inter-jurisdictional collaborative strategies that protect biological resources.

Policy C/NR 3.8: Discourage development in areas with identified significant biological resources, such as SEAs.

Policy C/NR 3.9: Consider the following in the design of a project that is located within an SEA, to the greatest extent feasible:

- Preservation of biologically valuable habitats, species, wildlife corridors and linkages;
- Protection of sensitive resources on the site within open space;
- Protection of water sources from hydromodification to maintain the ecological function of riparian habitats; and
- Placement of the development in the least biologically sensitive areas on the site.

Policy C/NR 3.10: Require that development mitigate 'in-kind' for unavoidable impacts on biologically sensitive areas within the County, and permanently preserve mitigation sites.

Policy C/NR 3.11: Discourage new development from increasing the urban-wildland interface in undisturbed natural areas through compact design.

Policy C/NR 3.12: Discourage development to maintain and support the preservation of riparian habitats, streambeds, and wetlands in a natural state, unaltered by grading, fill, or diversion activities.

Los Angeles County Significant Ecological Areas (SEAs)

SEA No. 49 - Little Rock Wash

The area of the proposed pipeline that crosses into Little Rock Wash is within an adopted SEA No. 49 as shown in Figure 2 above. SEA No. 49 was adopted by the Los Angeles County General Plan in 1980 to protect Little Rock Wash. Nesting birds and small mammals are found in high abundance and great variety in the SEA because of the sandy soils, dense shrub layer, and large undisturbed landscape. Little Rock Wash facilitates wildlife movement and plant seed dispersal, which is why the SEA is considered an area of great ecological importance to the region.

As part of the General Plan Conservation/Open Space and Land Use elements, the County had identified and adopted policies for SEAs. The purpose of establishing an SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. The project site is within SEA No. 49, which was established to conserve the ecological processes associated with Little Rock Wash.

Palmdale Native Plant Ordinance

The Joshua Tree and Native Desert Vegetation Preservation Ordinance (Chapter 14.04 of Title 14 of the Palmdale Municipal Code) applies to all public and private property which contains Joshua trees or other desert vegetation including California juniper. For development in these areas, a proposal application would be necessary, including a desert vegetation preservation plan which depicts the location of each Joshua tree and California juniper, details tree age and health, and describes which can be saved and maintained on the site or relocated. A permit must be obtained from the City of Palmdale's landscape architect prior to removal of protected vegetation.

6. Impacts Discussion

This section discusses the direct, indirect, and cumulative impacts to biological resources that may occur as a result of implementation the project. Under the stipulations of CEQA, potential impacts to biological resources could be considered significant if actions associated with the project:

a) 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 Game or U.S. Fish and Wildlife Service.

Less than significant with mitigation incorporated.

Construction of the project could impact plants and wildlife in a variety of ways. Construction activities could result in mortality or harm to sensitive species or displace wildlife from home range or migratory routes, and would result in the loss of habitat for plant and wildlife species. However, loss of habitat would be temporary and project construction would not result in permanent development of native habitat. It should be noted that the current design of Phase 5 of the project shows the pipeline's eastern-most end within Little Rock Wash.

Special Status Wildlife

Of the 18 special-status wildlife species analyzed in the project area, 14 were determined to have a high potential to occur in the project site and thus have potential to be impacted by the project. The special-status species with a potential to occur within the project vicinity are described in detail below.

Silvery legless lizard is a state Species of Special Concern and a BLM Sensitive species. Native habitats at the base of San Gabriel Mountains provide potentially suitable habitat within the known range of this species. This species may occur within Little Rock Wash. Potential impacts to silvery legless lizard would be reduced to a level less than significant with implementation of recommended mitigation measures described in **Section. 7.2,** below.

Coast horned lizard is a California Species of Special Concern and a BLM Sensitive species. Although this species was not observed during the biological resources reconnaissance survey, CNDDB occurrences have been recorded in the vicinity of the project site and suitable habitat occurs in the undisturbed habitat on the project site and surrounding areas. This species thus has a high potential to occur within the project site. Potential impacts to coast horned lizard, however, would be reduced to a level less than significant with implementation of recommended mitigation measures described in **Section 7.2,** below.

Cooper's hawk may occur within the vicinity of the project site during migration and winter, and rarely in the summer. It may also nest in the vicinity of the project site where groves of trees exist. Potential impacts to Cooper's hawk would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Burrowing owl has a moderate to high potential to be present on the project site, and any impacts to burrowing owls would be considered significant. Potential impacts to burrowing owl would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Ferruginous was not observed during the biological resources reconnaissance survey and no known CNDDB occurrences have been recorded in the immediate area, this species is known to

compete with other locally-occurring raptor species and may forage in suitable habitat in the vicinity of the project site. Potential impacts to ferruginous hawk would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Swainson's hawk may occur in the project vicinity as a rare migrant. Suitable nesting habitat occurs in Little Rock Wash. Potential impacts to Swainson's hawk would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Prairie falcon was not observed during the biological resources reconnaissance survey and no known CNDDB occurrences have been recorded on the site, this species is known to compete with other locally-occurring raptor species and may forage on the project site and in the vicinity. Potential impacts to prairie falcon would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Loggerhead shrike was not observed during the biological resources reconnaissance survey; however, CNDDB occurrences have been recorded in the vicinity and suitable habitat occurs in the Joshua tree woodlands on the project site. Thus, this species has a high potential to occur and/or nest on the project site and surrounding areas. Potential impacts to loggerhead shrike would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Le Conte's thrasher may occur in relatively undisturbed areas of Little Rock Wash or other undisturbed washes in the project vicinity. Potential impacts to Le Conte's thrasher would be avoided and/or reduced to a level less than significant with implementation of the recommended mitigation measures described in **Section 7.1**, below.

Pallid bat do not likely have a maternal roosting site on or adjacent to the project site, because of the lack of suitable rock outcrops, caves, abandoned structures or bridges that are typically used as roosting and maternity sites. However, small roosting sites may occur in the buildings and trees in the vicinity of the project site and there is a high potential for the species to use the project site for foraging. Potential impacts to pallid bat foraging habitat would be temporary and would not affect the species' ability to forage and persist in nearby undisturbed areas. Therefore, no mitigation is necessary because the impacts would be less than significant.

Townsend's big-eared bat would not roost in the vicinity of the project due to a lack of caves or mines present in the vicinity of the project site. Therefore, it is unlikely that a maternity colony occurs in the vicinity. However, the species has a high potential to forage on the project site and vicinity. Potential impacts to Townsend's big-eared bat foraging habitat would be temporary and would not affect the species' ability to forage and persist in nearby undisturbed areas. Therefore, no mitigation is necessary because the impacts would be less than significant.

Southern grasshopper mouse may be subject to habitat loss by implementation of the proposed project, and this species may occur in the undisturbed habitat on the project site, particularly in Little Rock Wash. Potential impacts to southern grasshopper mouse would be reduced to a level

less than significant with implementation of recommended mitigation measures described in **Section 7.2**, below.

American Badger has a high potential to occur on the project site in the undisturbed habitats with friable soils. Potential impacts to American badger would be reduced to a level less than significant with implementation of recommended mitigation measures described in **Section 7.2**, below.

Mohave ground squirrel has potential to occur in native, undisturbed habitats in Little Rock Wash and in the vicinity of the project site, and CNDDB occurrences have recorded this species within a 3-mile radius of the project site. Potential impacts to Mohave ground squirrel would be reduced to a level less than significant with implementation of recommended mitigation measures described in **Section 7.2,** below.

Special-Status Plants

A total of 7 special-status plant species were identified as having the potential to occur within the project site and adjacent undisturbed areas. None of these species are federally or state listed species. Included in the list is Lancaster milk-vetch , alkali mariposa-lily , white pygmy-poppy , sagebrush loeflingia , Peirson's lupine , short-joint beavertail , and Parish's popcornflower . Focused rare and special-status plant surveys were not conducted for the project area and thus the special-status plants listed above could potentially occur on the project site. Avoidance measures detailed below in **Section 7.3** would reduce potential impacts to a level less than significant.

b) 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 Game or US Fish and Wildlife Service.

No Impact

Based on the field assessment, Little Rock Wash does not support riparian vegetation or habitat because it is too dry. Only upland desert scrub species were observed within the portion of the wash that is within and adjacent to the project site. In addition, the project site does not support any natural communities considered sensitive by CDFW or USFWS. Therefore, the project will not result in adverse effects to any sensitive or riparian natural community.

c) 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.

Less than significant with mitigation incorporated.

A jurisdictional delineation was not conducted for the project but it is likely that Little Rock Wash is not subject to the jurisdiction of the USACE under Section 404 of the Federal Clean Water Act, because it lacks a nexus with a traditional navigable waterway. In the past the USACE has determined that surface water features within the Antelope Valley are not considered waters of the US due to their isolation from navigable waters. Therefore, projects affecting surface waters and wetlands are not subject to Section 404 permitting.

Little Rock Wash would, however, be under the jurisdiction of the RWQCB and is subject to section 401 of the CWA. A water quality certification for dredging, filling, or excavation of Little Rock Wash must be approved for the project. Details of the certification are discussed in more detail in **Section 7.4** below.

Little Rock Wash is also an ephemeral wash that is subject to regulation by the CDFW under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy. Although areas of the wash where improvements are to be made do not support riparian or wetland vegetation, a Streambed Alteration Agreement (SAA) with the CDFW will need to be established. Details of the SAA are discussed in more detail in **Section 7.4**, below.

d) 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.

Less than significant with mitigation incorporated.

The project site has the potential to support nesting songbirds and raptors in trees and native vegetation found throughout. Nesting bird activities typically occur from February 1 through August 31. Destruction or disturbance of active nests would be a violation of the MBTA and Sections 3505, 3503.5, and 3800 of the Fish and Game Code; and would be considered a potentially significant impact. Potential impacts to nesting birds would be reduced to a level less than significant with implementation of recommended mitigation measures described in **Section 7.1**, below

Little Rock Wash is expected to convey local and regional wildlife movement. The wash and surrounding area on the project site was adopted as an SEA for the value as a migration corridor for wildlife and as a plant seed dispersal vector that gives the region high habitat diversity. The wash is also within a Linkage Planning Area for Science and Collaboration for Connected Wildlands' (SC Wildlands) California Desert Connectivity Project. When designated, the Linkage Planning Areas will be used to guide conservation efforts based on the habitat suitability and movement needs of over 40 focal species. The Linkage Planning Area that includes Little Rock Wash would connect the San Gabriel Mountains to the south of the project site, with Edwards Air Force Base in the interior of the Mojave Desert to the north of the project site. This area is used for movement of large mammals such as coyotes as well as provides habitat and dispersal areas for small mammals such as white-tailed antelope squirrel.

Impacts on wildlife movement are expected to be minimal based on the type of impacts that would occur. New pipeline constructed for the project is unlikely to affect regional movement because construction would be temporary and would occur in short segments, and wildlife would be expected to easily travel around construction. Nevertheless, any impacts to wildlife movement such as deterrents from corridors due to night lighting or supplemental resources for predators from ponding water and trash on the project site would be considered a significant impact under

CEQA. Impacts on wildlife movement would be considered less than significant with incorporation of the mitigation measures described in **Section 7.5** below.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Less than significant with mitigation incorporated.

Some areas where pipelines are to be constructed are within or directly adjacent to Joshua tree woodland and Joshua trees occur within or immediately adjacent to the construction zone in some cases. Joshua trees are protected under the City of Palmdale's Joshua Tree and Native Desert Vegetation Preservation Ordinance (Chapter 14.04 of Title 14 of the Palmdale Municipal Code). If Joshua trees are to be disturbed or removed as a consequence of construction activities, the operating agencies must fulfill the requirements outlined in **Section 7.6,** below**,** to reduce potential impacts to Joshua trees to a level less than significant.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Less than significant with mitigation incorporated.

As part of the Los Angeles County General Plan Open Space and Land Use elements, the County of Los Angeles had identified and adopted policies for SEAs. The purpose of establishing an SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. The project site is within SEA No. 49, which was established to conserve the ecological processes associated with Little Rock Wash. The project has the potential to impact or alter the SEA during construction or maintenance of the project. Preparation of a Biota Report detailed below in **Section 7.7** would reduce potential impacts to a level less than significant.

7. Recommended Mitigation Measures

Implementation of the project could potentially result in adverse impacts to local and regional biological resources. Due to the highly disturbed/developed nature of the project site, as well as the nature of the improvements being made, however, potential impacts to special-status plant and wildlife species are anticipated to be minimal. The project also has the potential to cause direct and indirect impacts to jurisdictional features (e.g. Little Rock Wash) and Joshua trees, which are protected by a local City of Palmdale ordinance. However, the implementation of appropriate avoidance and mitigation measures, as well as future agreements with state and local agencies would help to minimize these potential impacts as well. The implementation of the recommended mitigation measures provided below would ensure that any potential impacts to biological resources would be reduced to a level less than significant.

7.1 Special-Status and Nesting Birds

- A pre-construction survey should be conducted within areas containing suitable habitat for burrowing owls 14 to 30 days prior to clearing of the site by a qualified biologist in accordance with the most recent CDFW protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Surveys should cover areas disturbed by construction including a 150 meter (500 feet) buffer. The survey would identify adult and juvenile burrowing owls and signs of burrowing owl occupation. If potential presence is determined through an initial survey, three additional surveys should be conducted between April 15 and July 15 when detection is most likely. Surveys should be conducted at least three weeks apart to ensure that all individuals or owl pairs have been located.

- If occupied burrowing owl habitat is detected on or adjacent (i.e., within 500 feet) to the proposed project site, measures to avoid, minimize, or mitigate impacts should be incorporated into the project and should include the following:

  – Construction exclusion areas should be established around the occupied burrows in which no disturbance should be allowed to occur while the burrows are occupied. During the non-breeding season (October 16 through March 15), the exclusion zone should extend 50 meters (165 feet) around the occupied burrows. During the breeding season (April 1 through October 15), exclusion areas should extend 200 meters (650 feet) around occupied burrows.

  – Passive relocation of on-site owls may be implemented during the non-breeding season after coordinating with CDFW. Passive relocation should be accomplished by installing one-way doors on the entrances of burrows located within 50 meters of the project site. The one-way doors should be left in place for 48 hours to ensure that the owls have left the burrow.

  – For each burrow affected by project construction, two alternate unoccupied natural or artificial burrows should be provided outside of the 50-meter buffer zone (CDFG 2012). The alternate burrows should be monitored daily for one week to confirm that owls have moved and acclimated. When the project is completed the habitat should be restored and the exclusionary devices should be removed from the natural burrows.

- If construction and vegetation removal is proposed during the typical bird nesting period (February 1 through August 31), preconstruction surveys for nesting bird species should be conducted by a qualified biologist within 30 days prior to construction, with at least one survey conducted no more than five days prior to the onset of construction (or vegetation removal). The surveys should include habitats within 500 feet of the construction limits. This survey should include species protected under the MBTA including the Cooper's hawk, ferruginous hawk, Swainson's hawk, prairie falcon, loggerhead shrike, and Le Conte's thrasher. The survey should cover all reasonably

potential nesting locations for the relevant species on or closely adjacent to the project site.

- Active nest sites located during the pre-construction surveys should be avoided and a non-disturbance buffer zone established dependent on the species as determined by a qualified biologist. Buffer distances are typically 300 feet for common birds and passerine species and 500 feet for raptors and special-status species. The buffer zone should be delineated in the field with flagging, stakes or construction fencing. Nest sites should be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist. CDFW will be notified of the identification of active nests and will be consulted regarding resumption of construction activities.

7.2 Special-Status Wildlife Species

- Prior to ground disturbing activities, a qualified biologist should conduct pre-construction clearance surveys for silvery legless lizard, coast horned lizard, southern grasshopper mouse, and American badger. Appropriate survey methods should be implemented to determine the presence or absence of these species, such as raking surveys for silvery legless lizard, pedestrian transect surveys for coast horned lizard and American badger dens, and minimum of 3 nights of trapping surveys for southern grasshopper mouse. If surveys determine that a special-status species is present, the species should be relocated to suitable habitat located outside of the project area, but in the immediate vicinity. The recipient area(s) should be identified prior to relocating any animals and should be approved by the CDFW. Anyone relocating a special-status species should have a valid CDFW Scientific Collection Permit.

- Prior to project implementation, a habitat assessment should be conducted by a qualified biologist to determine the potential for the Mohave ground squirrel to occur. If the habitat assessment determines that there is potential for occurrence within 300 feet of the construction zone, then the project applicant has two options:

    1) Assume the Mohave ground squirrel is present and mitigate for the loss of suitable habitat at a 2:1 ratio, or a ratio approved by the CDFW. Mitigation may be achieved by purchasing suitable habitat off site or through payment of fees to a mitigation bank or other established and approved program (e.g., in-lieu fee program). The location or payment structure should be determined and approved by CDFW prior to implementation of the project.

    2) Conduct surveys to determine presence or absence. Surveys which include trapping should be authorized by a Memorandum of Understanding (MOU) with the CDFW or by other permit as determined by the CDFW, and be undertaken only by a qualified biologist. Surveys should be conducted in accordance with the CDFW *Mohave Ground Squirrel Survey Guidelines* (January 2003; minor process and contact changes in July 2010). If no Mohave ground squirrels are trapped during the

protocol surveys, no more actions are required. However, if presence is determined, mitigation will include compensation of habitat loss as specified in Number 1 above.

- All steep-walled trenches or excavation pits used during construction should be covered at all times except when being actively utilized. Covers should be strong enough to prevent wildlife from falling through and should be designed to exclude small animals, including coast horned lizard and southern grasshopper mouse. If the trenches or excavations cannot be covered, exclusion fencing constructed of materials that would exclude both large and small wildlife species should be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife should be inspected a minimum of three times per day and immediately before backfilling. If present, construction should not occur until the animal has left the trench or been removed by a qualified biologist as feasible. Employees and contractors should look under vehicles and equipment for the presence of wildlife before movement. If wildlife is observed, no vehicles or equipment should be moved until the animal has left voluntarily or is removed by the biological monitor. No listed species should be handled.

- A Worker Environmental Awareness Program (WEAP) should be implemented to educate construction crews and contractors on sensitive biological resources that could occur on the project site. As part of the WEAP, special-status species with potential to occur on the project site would be reviewed along with relevant protection plans and avoidance measures to be implemented. The WEAP would be required for all associated personnel prior to the commencement of construction activities and a record of participation should be maintained.

7.3 Rare and Special-Status Plant Species

- The implementing agencies should have a qualified biologist conduct a pre-construction spring floristic inventory and rare plant survey to determine and map the location and extent of special-status plant species populations within the construction right-of-way. The project should minimize impacts on special-status plant species by reducing the construction right-of-way through areas with documented occurrences of special-status plant species if any are found.

- If special-status plant populations are identified within the construction right-of-way, the project applicant should stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status plants.

- If special-status plant populations are identified within the construction right-of-way, the project applicant should salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff for use in the restoration efforts.

- If special-status plant populations are identified within the construction right-of-way, the project applicant should prepare and implement a special-status species salvage and

replanting plan, for unavoidable temporary impacts on special-status plants. The salvage and replanting plan should include measures to salvage, replant, and monitor the construction zone until native vegetation is re-established under the direction of CDFW and USFWS.

7.4 Jurisdictional Resources

Prior to initiation of ground disturbing associated with Phase 5 of the project, the following should be done:

- The operating agencies should secure a 401 Water Quality Certification from the RWQCB. The application will include a Dredge and Fill fee, and impacts to water quality within Little Rock Wash will be mitigated based on measures adopted in the 401 Certification.

- Construction crews should avoid permanently altering streambeds and banks of Little Rock Wash and all features of the wash should be restored to previous conditions once construction is complete. The operating agencies should secure a SAA from the CDFW and impacts to the streambed of Little Rock Wash will be mitigated based on measures adopted in the SAA.

7.5 Wildlife Movement Corridors

- All night lighting should be directed downward to reduce the effects of light pollution on adjacent areas that may be used by wildlife.
- To reduce the attractiveness of the project site for wildlife, water should not be allowed to pond on the project site; and trash should be stored in a sealable, wildlife-proof container and removed from the project site each week.
- Speed limits on the project site should be 25 mph.

7.6 Protected Joshua Trees

- Efforts should be made to prevent permanent native vegetation loss to the greatest extent feasible. If removal of Joshua trees is deemed unavoidable, then the operating agencies must take one of the following actions to fulfill obligations under provisions of the City of Palmdale's Joshua Tree and Native Desert Vegetation Preservation Ordinance (Chapter 14.04 of Title 14 of the Palmdale Municipal Code):

    1. Obtain a desert vegetation removal permit from the City of Palmdale's landscape architect or his or her designee. The City currently maintains a minimum preservation standard of two (2) Joshua trees per gross acre, averaged for the gross site area covered by the development application. This standard can also be modified, as determined by the City, to reflect an appropriate preservation ratio as site conditions warrant. The City currently requires proponents for projects likely to impact Joshua trees to acquire off-site habitats of equal or superior quality at no less than a 2:1 ratio

within remaining habitat in the Antelope Valley. The terms, conditions, implementation, and location of these mitigation measures should be determined through consultation with relevant resource agencies, including the CDFW.

2. Secure an exemption from the provisions of Chapter 14.04 of the Code, under Subsection (F) of 14.04.090, which identifies an exemption as "Removal of street trees from within the public right-of-way, which in the opinion of the director of public works or his or her designee, will or may cause damage to public improvements."

7.7 SEATAC Biota Report

- To comply with Los Angeles County General Plan Open Space and Land Use elements, a Biota report should be prepared for Phase 5 of the project that is located within SEA No. 49. The report must be prepared by a qualified biologist and submitted to the Los Angeles County Planning Department for review and approval by the Significant Ecological Area Technical Advisory Committee (SEATAC) prior to the initiation of Phase 5 of the project. The Biota report must include an analysis of the project's consistency with SEA Conditional Use Permit compatibility criteria and a mitigation and monitoring plan must be included in the report that identified measures to reduce the project's impacts on SEA No. 49.

8. References

Bloom, P. H. 1980. The status of the Swainson's hawk in California, 1979. U.S. Dep. Inter., Bur. Land Manage., Sacramento. Proj. W-54-R-12, Job II-8. Final Rep. 42pp.

California Department of Fish and Game (CDFG). 2012. *Staff Report on Burrowing Owl Mitigation*.

California Department of Fish and Wildlife (CDFW 2014), California Natural Diversity Database. Records of Occurrence for Alpine Butte, Little Rock, Juniper Hills, Pacifico Mtn., Acton, Lancaster West, Lancaster East, Ritter Ridge, Hi Vista, Lovejoy Buttes, Valyermo, and Palmdale USGS quadrangle maps. Sacramento, CA: CDFW, Natural Heritage Division, 2014.

California Native Plant Society, On-Line Inventory of Rare, Threatened and Endangered Plants of California for Alpine Butte, Little Rock, Juniper Hills, Pacifico Mtn., Acton, Lancaster West, Lancaster East, Ritter Ridge, Hi Vista, Lovejoy Buttes, Valyermo, and Palmdale USGS quadrangle maps. Reviewed in July 2014, http://www.rareplants.cnps.org/.

City of Palmdale, *Palmdale Native Desert Vegetation Ordinance* (No. 952, Section 2), 1992. Excerpts available online at http://acwm.lacounty.gov/Template/Temp9/PDF/PalmdaleMC.pdf.

City of Palmdale, *City of Palmdale General Plan*, January 25, 1993.

Environmental Science Associates (ESA 2012). Biological Resources Technical Report for the Regional Recycled Water Project Phase II. Prepared for Los Angeles County Waterworks district 40, Antelope Valley.

Garrett, K., and J. Dunn. 1981. Birds of southern California. Los Angeles Audubon Soc. 408pp.

Grinnell, J., and A. H. Miller. 1944. The distribution of the birds of California. Pac. Coast Avifauna No. 27. 608pp.

Hickman, J.C. 2012. The Jepsen Manual: Vascular Plants of California – Second Edition. University of California Press.

PCR Services Corporation (PCR 2009). Biological Technical Report for the Recycled Water Master Plan. Prepared for Palmdale Water District.

Remson, J.V. 1978. Bird species of special concern in California. California Department of Fish and Game, Sacramento. Wildlife Management Administration Report No. 78-1.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition.

Western Bat Working Group (WBWG). Revised 2005a. Species Account for Pallid Bat. Accessed online at: http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/anpa.pdf

Western Bat Working Group (WBWG). Revised 2005b. Species Account for Townsend's Big-Eared Bat. Accessed online at: http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/coto.pdf

Western Regional Climate Center (WRCC). 2014. Period of Record Monthly Climate Summary for Palmdale, California (046624), http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6624. Accessed June 10, 2014.

Zarn, M. 1974a. Burrowing owl, Speotyto cunicularia hypugaea. U.S. Dep. Inter., Bur. Land Manage., Wash. DC. Tech. Note No. 250. 25pp.

APPENDIX C

DTSC Hazardous Waste and Substances Site List

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

HAZARDOUS WASTE AND SUBSTANCES SITE LIST

SEARCH CRITERIA:

514 RECORDS FOUND EXPORT TO EXCEL PAGE 6 OF 11

		SITE / FACILITY NAME	ESTOR / EPA ID	PROGRAM TYPE	STATUS	ADDRESS DESCRIPTION	CITY	ZIP	COUNTY
[REPORT]	[MAP]	DUTCH BOY #3	01390006	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	4825 SAN LEANDRO STREET	OAKLAND	94601	ALAMEDA
[REPORT]	[MAP]	HARRIS DRY CLEANERS	01720109	STATE RESPONSE	ACTIVE	2801 MARTIN LUTHER KING JR. WAY	OAKLAND	94609	ALAMEDA
[REPORT]	[MAP]	SOUTHERN PACIFIC -WEST OAKLAND RAIL YARD	01400010	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	CYPRESS CORRIDOR	OAKLAND	94607	ALAMEDA
[REPORT]	[MAP]	GENERAL ELECTRIC - OAKLAND	01360059	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	5441 EAST 14TH STREET	OAKLAND	94601	ALAMEDA
[REPORT]	[MAP]	COOK BATTERY (OAKLEY BATTERY)	07360035	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	139 HILL AVENUE	OAKLEY	94561	CONTRA COSTA
[REPORT]	[MAP]	CAMP PENDLETON MCB	37970009	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	125,000 ACRES; 35 MI NO OF SAN DIEGO, CA	OCEANSIDE	92055	SAN DIEGO
[REPORT]	[MAP]	TRI-CITY PLATING, INCORPORATED	37340034	STATE RESPONSE	ACTIVE	1307 SOUTH COAST HIGHWAY	OCEANSIDE	92054	SAN DIEGO
[REPORT]	[MAP]	GE ENGINE SERVICES TEST CELL FACILITY (AKA GE AIRCRAFT)	36370024	STATE RESPONSE	ACTIVE	2264 E. AVION PLACE	ONTARIO	91761	SAN BERNARDINO
[REPORT]	[MAP]	ORLAND CLEANERS	11720001	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	726 FIFTH STREET	ORLAND	95963	GLENN
[REPORT]	[MAP]	PARMENTER AND BRYAN	54070063	STATE RESPONSE	BACKLOG	13133 AVENUE 416	OROSI	93647	TULARE
[REPORT]	[MAP]	SIERRA PACIFIC OROVILLE	04240024	STATE RESPONSE	BACKLOG	1980 KUSEL ROAD	OROVILLE	95966	BUTTE
[REPORT]	[MAP]	KOPPERS INDUSTRIES INC (OROVILLE PLANT)	04240001	FEDERAL SUPERFUND - LISTED	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	BAGGETT-MARYSVILLE ROAD	OROVILLE	95965	BUTTE
[REPORT]	[MAP]	VEHICLE PREPARATION CENTER	56010004	STATE RESPONSE	BACKLOG	5601 EDISON DR	OXNARD	93033	VENTURA
[REPORT]	[MAP]	HALACO ENGINEERING COMPANY	56330002	FEDERAL SUPERFUND - PROPOSED	ACTIVE	6200 PERKINS ROAD	OXNARD	93033	VENTURA
[REPORT]	[MAP]	FORMER LANE METAL FINISHERS	60000594	STATE RESPONSE	ACTIVE	2942 SAN PABLO AVENUE	OAKLAND	94608	ALAMEDA
[REPORT]	[MAP]	NOR CAL RECYCLING	60000798	STATE RESPONSE	ACTIVE	1855 KUSEL ROAD	OROVILLE	95966	BUTTE
[REPORT]	[MAP]	HOLCHEM, INC.	19281213	STATE RESPONSE	ACTIVE	13546 DESMOND STREET	PACOIMA	91331	LOS ANGELES
[REPORT]	[MAP]	AIR FORCE PLANT #42, PALMDALE	19970004	STATE RESPONSE	ACTIVE	5832 ACRES; BETWN PALMDALE AND LANCASTER	PALMDALE	93550	LOS ANGELES
[REPORT]	[MAP]	LOCKHEED MISSILES AND SPACE CO BLDG 255	43280130	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3170 PORTER DRIVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	SYNTEX	43360114	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3300 HILLVIEW AVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	HEWLETT PACKARD BUILDING 15	43360078	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3215 PORTER DRIVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	AYDIN ENERGY	43360085	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE -	3180 HANOVER STREET	PALO ALTO	94304	SANTA CLARA

					LAND USE RESTRICTIONS				
[REPORT]	[MAP]	COHERENT INC	43360115	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3210 PORTER DR	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	SMITHKLINE AND FRENCH LABORATORIES	43360079	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3400 HILLVIEW AVENUE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	WATKINS JOHNSON COMPANY (SRP)	43360076	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3333 HILLVIEW AVENUE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	VARIAN	43360086	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	611 HANSEN WAY	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	HILLVIEW PORTER PLUME	43360077	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	HILLVIEW AVENUE AND PORTER DRIVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	TELEDYNE SINGER	43360073	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3176 PORTER DRIVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	TELEDYNE MEC	43360088	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3165 PORTER DR	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	HEWLETT PACKARD BUILDINGS 28A, B, AND C	43350089	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	CORNER OF PAGE MILL RD AND PORTER DRIVE	PALO ALTO	94304	SANTA CLARA
[REPORT]	[MAP]	PALOS VERDES SHELF	19460003	FEDERAL SUPERFUND LISTED	- ACTIVE	PACIFIC OCEAN - WHITE POINT OUTFALL	PALOS VERDES	90000	LOS ANGELES
[REPORT]	[MAP]	WORLD RADIATOR & AIR CONDITIONING	04750001	STATE RESPONSE	ACTIVE	8336 SKYWAY	PARADISE	95969	BUTTE
[REPORT]	[MAP]	JET PROPULSION LABORATORY	19970008	FEDERAL SUPERFUND LISTED	- ACTIVE	4800 OAK GROVE DRIVE	PASADENA	91109	LOS ANGELES
[REPORT]	[MAP]	NAVAL INFORMATION RESEARCH FOUNDATION	19970020	STATE RESPONSE	ACTIVE	3202 E FOOTHILL BLVD	PASADENA	91107	LOS ANGELES
[REPORT]	[MAP]	MARINE CORPS RESERVE CENTER, PICO RIVERA	19970022	STATE RESPONSE	ACTIVE	3551 SAN GABRIEL RIVER PARKWAY	PICO RIVERA	90660	LOS ANGELES
[REPORT]	[MAP]	ROSEN'S ELECTRICAL EQUIPMENT	19360068	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	8226 E. WHITTIER BLVD.	PICO RIVERA	90660	LOS ANGELES
[REPORT]	[MAP]	VENDO COMPANY, THE	10590001	STATE RESPONSE	ACTIVE	7209 NORTH INGRAM AVENUE	PINEDALE	93650	FRESNO
[REPORT]	[MAP]	DELTA AUTO WRECKER	07750026	STATE RESPONSE	ACTIVE	6 INDUSTRY ROAD	PITTSBURG	94565	CONTRA COSTA
[REPORT]	[MAP]	HARMON FIELD	54070051	STATE RESPONSE	ACTIVE	1494 SOUTH AIRPORT DRIVE	PIXLEY	93256	TULARE
[REPORT]	[MAP]	POINT ARENA AIR FORCE STATION	23970001	STATE RESPONSE	ACTIVE	EUREKA HILL ROAD; EA OF POINT ARENA, CA	POINT ARENA	95468	MENDOCINO
[REPORT]	[MAP]	POINT MUGU NAWS	56970001	STATE RESPONSE	ACTIVE	4500 ACRES; 50 MI NW OF LOS ANGELES, CA	POINT MUGU	93042	VENTURA
[REPORT]	[MAP]	POINT MUGU NAWS MMRP	60001864	STATE RESPONSE	ACTIVE	4500 ACRES; 50 MI NW OF LOS ANGELES	POINT MUGU	93042	VENTURA
[REPORT]	[MAP]	A Z DECASING COMPANY	19330371	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	1420 SOUTH SIGNAL DRIVE	POMONA	91766	LOS ANGELES
[REPORT]	[MAP]	NAVAL BASE VENTURA COUNTY, PORT HUENEME	56970002	STATE RESPONSE	ACTIVE	1000 23RD AVE	PORT HUENEME	93043	VENTURA
[REPORT]	[MAP]	NAVAL BASE VENTURA COUNTY, PORT HUENEME MMRP	60001865	STATE RESPONSE	ACTIVE	1000 23RD AVE	PORT HUENEME	93043	VENTURA
[REPORT]	[MAP]	SOUTHWEST MARINE TERMINAL ISLAND FACILITY	60000999	STATE RESPONSE	ACTIVE	985 SEASIDE AVENUE	PORT OF LOS ANGELES	90731	LOS ANGELES
[REPORT]	[MAP]	BECKMAN INSTRUMENTS, PORTERVILLE PLANT	54360008	FEDERAL SUPERFUND LISTED	- ACTIVE	167 WEST POPLAR AVENUE	PORTERVILLE	93257	TULARE
						12 MILES WEST			

[REPORT]	[MAP]	BUENA VISTA/KLAU MERCURY MINES	60000405	FEDERAL SUPERFUND LISTED	- ACTIVE	OF PASO ROBLES, SAN LUIS OBISPO COUNTY.	PASO ROBLES	93447	SAN LUIS OBISPO
[REPORT]	[MAP]	DRAKES BAY RANGE - (J09CA7289) MMRP	80001095	MILITARY EVALUATION	ACTIVE	1 BEAR VALLEY ROAD (POINT REYES NATIONAL SEASHORE)	POINT REYES STATION	94956	MARIN
[REPORT]	[MAP]	CALSOL INC.	60000137	STATE RESPONSE	ACTIVE	822 WEST COMMERCIAL	POMONA	91761	LOS ANGELES

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

AIR FORCE PLANT #42, PALMDALE (19970004)

SIGN UP FOR EMAIL ALERTS

5832 ACRES; BETWN PALMDALE AND LANCASTER
PALMDALE, CA 93550
LOS ANGELES COUNTY
SITE TYPE: OPEN BASE

PROJECT MANAGER: ANANTARAMAM PEDDADA
SUPERVISOR: ROBERT SENGA
OFFICE: CLEANUP CYPRESS

Site Information

CLEANUP STATUS
ACTIVE AS OF 7/1/1994

SITE TYPE: OPEN BASE
NATIONAL PRIORITIES LIST: NO
ACRES: 5832 ACRES
APN: NONE SPECIFIED
CLEANUP OVERSIGHT AGENCIES:
RWQCB 6V - LAHONTAN
DTSC - SITE CLEANUP PROGRAM - LEAD
ASSOCIATED GEOTRACKER PROJECTS

ENVIROSTOR ID: 19970004
SITE CODE: 300002
SPECIAL PROGRAM:
FUNDING: DERA
ASSEMBLY DISTRICT: 36
SENATE DISTRICT: 21

Regulatory Profile

PAST USE(S) THAT CAUSED CONTAMINATION
AEROSPACE MANUFACTURING/MAINTENANCE, AIRCRAFT MAINTENANCE, AIRFIELD OPERATIONS, BATTERY STORAGE, DEGREASING FACILITY, ENGINE TESTING/REPAIR, EQUIPMENT/INSTRUMENT REPAIR, FIRE TRAINING AREAS, FIRING RANGE - SMALL ARMS ETC..., FUEL - AIRCRAFT STORAGE/ REFUELING, FUEL TERMINALS, HAZARDOUS WASTE STORAGE - TANKS/CONTAINERS, ILLEGAL DUMPING, JET FUEL STORAGE/REFUELING, LANDFILL - DOMESTIC, METAL FINISHING, METAL PLATING - OTHER, OIL/WATER SEPARATORS, PAINT/DEPAINT FACILITY, PHOTOGRAPHIC PROCESSING, RAILROAD RIGHT OF WAY, RECYCLING - OTHER, RECYCLING - SCRAP METAL, RESEARCH - AEROSPACE, SAND BLASTING, HAZARDOUS MATERIAL - TRANSFER STATION, TRANSPORTATION - PIPELINE, WAREHOUSING, VEHICLE MAINTENANCE, WASTE - INDUSTRIAL TREATMENT FACILITY, WASTE - INDUSTRIAL WASTE LINE, WASTE WATER PONDS

POTENTIAL CONTAMINANTS OF CONCERN
DIOXIN (AS 2,3,7,8-TCDD TEQ)
METALS
ORGANOCHLORINE PESTICIDES (8081 OCPS)
PETROLEUM
POLYCHLORINATED BIPHENYLS (8082 PCBS)
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)
SEMI-VOLATILE ORGANICS (8270 SVOCS)
VOLATILE ORGANICS (8260B VOCS)

POTENTIAL MEDIA AFFECTED
INDOOR AIR, OTHER GROUNDWATER AFFECTED (USES OTHER THAN DRINKING WATER), SOIL, SOIL VAPOR

Site History

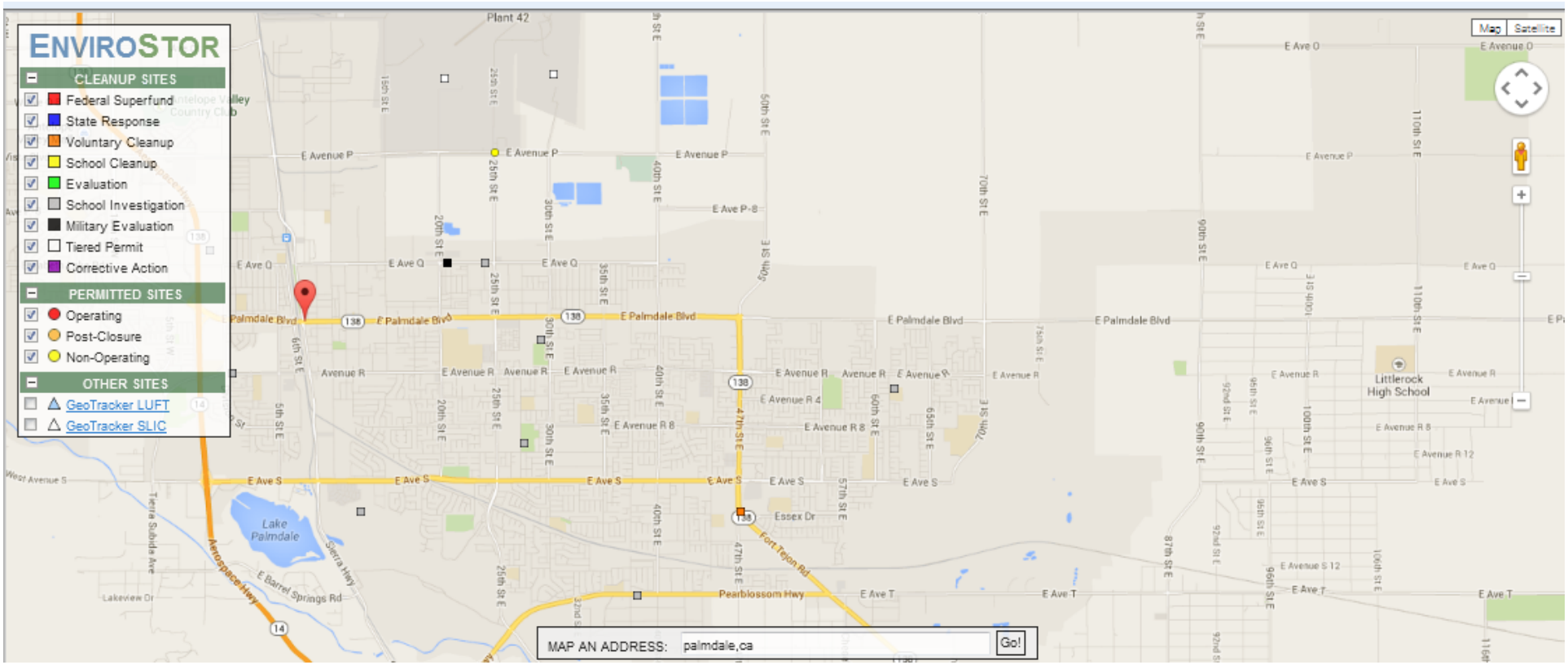
This site is an Air Force research and development facility. It is also known as U.S. Air Force Plant 42. Twenty-nine potentially contaminated areas were identified in the initial assessment phase. Potential contaminants are fuels, oils, solvents, paint, soil sludges, acids, heavy metals and polychlorinated biphenyls

(PCBs). The type and quantities of wastes released on the base pose a threat to groundwater and drinking water supplies. Groundwater contamination is detected in production wells onsite.

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ENVIROSTOR
CLEANUP SITES
Federal Superfund
State Response
Voluntary Cleanup
School Cleanup
Evaluation
School Investigation
Military Evaluation
Tiered Permit
Corrective Action
PERMITTED SITES
Operating
Post-Closure
Non-Operating
OTHER SITES
GeoTracker LUFT
GeoTracker SLIC
Map
Satellite
Plant 42
E Avenue P
E Avenue P-8
E Ave Q
E Palmdale Blvd
Palmdale Blvd
Avenue R
E Avenue R
E Avenue R 4
E Avenue R 8
E Avenue R 12
E Ave S
E Ave S 12
E Ave T
Lake Palmdale
Littlerock High School
Essex Dr
Pearblossom Hwy
Fort Tejon Rd
E Barrel Springs Rd
Aerospace Hwy
Sierra Hwy
MAP AN ADDRESS:
palmdale,ca
Go!

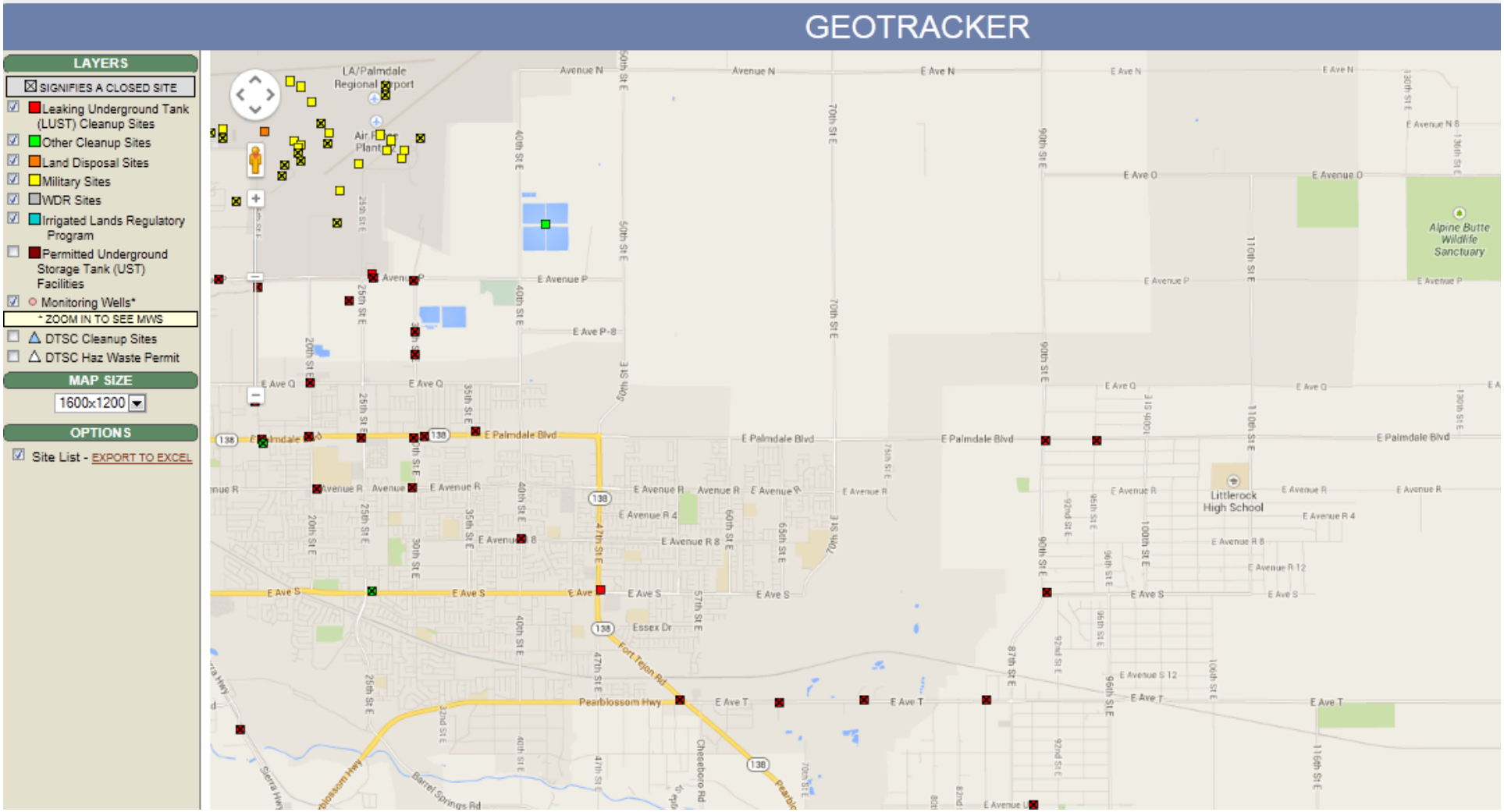


SHOW SITES WITHIN 5000 FEET OF THE FOLLOWING ADDRESS: palmdale,ca Go

SITES CURRENTLY VISIBLE ON MAP — 18 SITES LISTED

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
ANA VERDE ELEMENTARY	NO FURTHER ACTION	SCHOOL INVESTIGATION	DIVISION STREET/RAYBURN ROAD	PALMDALE
ANTELOPE VALLEY COMMUNITY DAY SCH. SOUTH	NO FURTHER ACTION	SCHOOL INVESTIGATION	AVENUE Q/22ND STREET EAST	PALMDALE
BOEING NORTH AMERICAN, INC., PALMDALE	REFER: OTHER AGENCY	TIERED PERMIT	2825 E. AVENUE P	PALMDALE
DESERT WILLOW SCHOOL	NO ACTION REQUIRED	SCHOOL INVESTIGATION	62ND STREET EAST/S-8 AVENUE	PALMDALE
EAST ELEMENTARY SCHOOL	NO ACTION REQUIRED	SCHOOL INVESTIGATION	AVENUE R-12/25TH STREET EAST	PALMDALE
GOLDEN POPPY SITE	NO ACTION REQUIRED	SCHOOL INVESTIGATION	ROCKIE LANE/BARCELONA DRIVE	PALMDALE
LOCKHEED MARTIN SKUNK WORKS	REFER: OTHER AGENCY	TIERED PERMIT	1011 LOCKHEED WAY	PALMDALE
MOUNTAIN VALLEY RANCH	NO FURTHER ACTION	VOLUNTARY CLEANUP	47TH STREET EAST & FORT TEJON ROAD (STATE ROUTE 138)	PALMDALE
NORTHROP CORPORATION AIRCRAFT DIV	PROTECTIVE FILER	NON-OPERATING	2503 E AVENUE P	PALMDALE
PALMDALE CANT AREA	INACTIVE - NEEDS EVALUATION	MILITARY EVALUATION		PALMDALE
PONDEROSA ELEMENTARY SCHOOL	NO FURTHER ACTION	SCHOOL INVESTIGATION	PEARBLOSSOM HIGHWAY/37TH STREET EAST	PALMDALE
PROPOSED ANTELOPE VALLEY ACADEMY	NO ACTION REQUIRED	SCHOOL INVESTIGATION	PALMDALE BLVD/30TH STREET EAST	PALMDALE
WEST INTERMEDIATE SCHOOL	NO FURTHER ACTION	SCHOOL INVESTIGATION	AVENUE Q/DIVISION STREET	PALMDALE

GEOTRACKER


LAYERS
SIGNIFIES A CLOSED SITE
Leaking Underground Tank (LUST) Cleanup Sites
Other Cleanup Sites
Land Disposal Sites
Military Sites
WDR Sites
Irrigated Lands Regulatory Program
Permitted Underground Storage Tank (UST) Facilities
Monitoring Wells*
* ZOOM IN TO SEE MWS
DTSC Cleanup Sites
DTSC Haz Waste Permit
MAP SIZE
1600x1200
OPTIONS
Site List - EXPORT TO EXCEL
LA/Palmdale Regional Airport
Air Force Plant 42
E Palmdale Blvd
Littlerock High School
Alpine Butte Wildlife Sanctuary
Pearblossom Hwy
Fort Tejon Rd
Essex Dr
Cheseboro Rd
Barrel Springs Rd
Sierra Hwy

GEOTRACKER ID	FACILITY ID	SITE NAME	CLEANUP STATUS	ADDRESS	CITY	LATITUDE	LONGITUD
DOD100000200		AIR FORCE PLANT 42 - FT017 - NEW FIRE TRAINING CIRCLE	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62782	-118.096
DOD100000300		AIR FORCE PLANT 42 - SITE 5, ABANDONED FIRE TRAINING CIRCLE	OPEN - REMEDIATION	2503 EAST AVENUE P	PALMDALE	34.62687	-118.094
DOD100000400		AIR FORCE PLANT 42 - FT006 - ORIGINAL FIRE TRAINING CIRCLE	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.61833	-118.086
DOD100000500		AIR FORCE PLANT 42 - SITE 27, WASTE PILES	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	2503 EAST AVENUE P	PALMDALE	34.62837	-118.097
DOD100002900		AIR FORCE PLANT 42 - DP021 - FUEL DISPOSAL AREA	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62085	-118.096
DOD100003100		AIR FORCE PLANT 42 - SITE 3 - SS003 - ENGINE RUN-UP AREA	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62261	-118.091
DOD100003200		AIR FORCE PLANT 42 - SS022 - ENGINE RUN-UP AREA	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.61448	-118.089
DOD100003300		AIR FORCE PLANT 42 - SD023 - BUILDING DITCH DISCHARGE AREA	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62325	-118.109
DOD100003400		AIR FORCE PLANT 42 - SD024 - WASHRACK AT FIRE STATION 1	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.61909	-118.079
DOD100003600		AIR FORCE PLANT 42 - ST026 - BATTERY SHOP UST	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62019	-118.081
DOD100003700		AIR FORCE PLANT 42 - ST004 - VEHICLE WASHRACK AND LEAKING UST	OPEN - VERIFICATION MONITORING	2503 EAST AVENUE P	PALMDALE	34.62072	-118.081
DOD100004000		AIR FORCE PLANT 42 - AOC 2 - FORMER FIRING RANGE AT BLDG 728	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	2503 EAST AVENUE P	PALMDALE	34.62138	-118.097
L10007240290		AIR FORCE PLANT 42 FFTF	OPEN	2503 E AVE P	PALMDALE	34.62283	-118.102
SL0603710027		QUALITY CLEANERS	COMPLETED - CASE CLOSED	2531 EAST AVENUE S SUITE	PALMDALE	34.55839	-118.084
SLT6V0073834		LOCKHEED MARTIN-RELATED WORK	COMPLETED - CASE CLOSED	1101 LOCKHEED WAY	PALMDALE	34.58485	-118.104
T0603700227		AIR FORCE PLANT 42 - SITE 7 BLDG 727	COMPLETED - CASE CLOSED	1011 LOCKHEED WAY BLDG	PALMDALE	34.61814	-118.099
T0603700228		AIR FORCE PLANT 42 - SITE 7, BLDG 722, UST T7-6, T7-7, T7-8	COMPLETED - CASE CLOSED	1011 LOCKHEED WAY B722	PALMDALE	34.61896	-118.097
T0603700231		PALMDALE REGIONAL AIRPORT	COMPLETED - CASE CLOSED	39441 N 25TH ST E	PALMDALE	34.59897	-118.088
T0603700233		PALMDALE/CALMAT	COMPLETED - CASE CLOSED	6851 AVE T E	LITTLEROCK	34.54277	-118.014
T0603700235		BLACK GOLD SERVICE STATION	OPEN - ELIGIBLE FOR CLOSURE	8157 PEARBLOSSOM HWY E	LITTLEROCK	34.52132	-117.984
T0603700251		PALMDALE HIGH SCHOOL	COMPLETED - CASE CLOSED	2137 AVE R E	PALMDALE	34.57273	-118.093
T0603700256		ROCKWELL INTERN'L CORP	COMPLETED - CASE CLOSED	2825 AVE P E	PALMDALE	34.60185	-118.077
T0603700258		TRI-COUNTY TRUCKING	COMPLETED - CASE CLOSED	7656 AVE T-8 E	LITTLEROCK	34.52115	-117.96
T0603700263		CHANDLER LUMBER CO	COMPLETED - CASE CLOSED	39531 15TH ST E	PALMDALE	34.60099	-118.103
T0603700267		JACOBS OIL CO	COMPLETED - CASE CLOSED	1518 PALMDALE BLVD E	PALMDALE	34.57961	-118.102
T0603700269		PALMDALE H20 RECLAMATION PLANT	COMPLETED - CASE CLOSED	39300 30TH ST E	PALMDALE	34.5948	-118.076
T0603700275		AIR FORCE PLANT 42 - SITE 5 FUEL FARM, UST T5-12, T5-13, T5-14, T5-15, AND T5-16	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.61294	-118.107
T0603700285		CHEVRON #9-2870	COMPLETED - CASE CLOSED	2850 PALMDALE BLVD E	PALMDALE	34.57988	-118.077
T0603700286		JILL R RATCLIFFE	COMPLETED - CASE CLOSED	36200 SIERRA HWY, N	PALMDALE	34.53893	-118.106
T0603700296		PALMDALE WATER DISTRICT	COMPLETED - CASE CLOSED	2005 AVE Q E	PALMDALE	34.58748	-118.094
T0603700303		CRYSTALAIRE FARMS	COMPLETED - CASE CLOSED	32907 165TH ST	LLANO	34.4861	-117.841
T0603700309		LLANO GOLF COURSE	COMPLETED - CASE CLOSED	31003 E CRYSTALAIRE DR	LLANO	34.46894	-117.843
T0603700312		THE CORNER STORE	COMPLETED - CASE CLOSED	37202 90TH ST E	LITTLEROCK	34.55814	-117.969
T0603700313		JERRY'S MINI MART	COMPLETED - CASE CLOSED	12515 PEARBLOSSOM HIGH	PEARBLOSSOM	34.50653	-117.907
T0603700324		ANTELOPE VALLEY AGGREGATE INC	COMPLETED - CASE CLOSED	7311 AVE T E	LITTLEROCK	34.54315	-118
T0603700327		7-11 #15127	COMPLETED - CASE CLOSED	02873 AVE R E	PALMDALE	34.57282	-118.077
T0603700328		INDUSTRIAL ASPHALT	COMPLETED - CASE CLOSED	7107 AVE T E	PALMDALE	34.54316	-117.979
T0603700345		AIR FORCE PLANT 42 - SITE 7 TANK 7-3 BLDG 740	COMPLETED - CASE CLOSED	2011 AVE P E	PALMDALE	34.61993	-118.096
T0603700346		AIR FORCE PLANT 42 - SITE 7 TANK 7-1 BLDG 752	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.62387	-118.092
T0603700357		PACIFIC BELL	COMPLETED - CASE CLOSED	9550 PEARBLOSSOM HWY	LITTLEROCK	34.52115	-117.96
T0603700359		VACANT	COMPLETED - CASE CLOSED	38350 90TH ST E	LITTLEROCK	34.57942	-117.969
T0603700361		RAU/SUZUKI PROPERTY	COMPLETED - CASE CLOSED	3505 PALMDALE BLVD E	PALMDALE	34.58084	-118.066
T0603700365		AIR FORCE PLANT 42 - SITE 7 TANK 7-2 BLDG 757	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.6211	-118.091

T0603700366	AIR FORCE PLANT 42 - SITE 7 TANK 7-4 BLDG 730	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.61866	-118.096
T0603700367	AIR FORCE PLANT 42 - SITE 7 TANK 7-5/C7-10/C7-14 BLDG 722	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.61914	-118.097
T0603700375	FAA DEPT OF TRANSPORTATION	COMPLETED - CASE CLOSED	2555 AVE P E	PALMDALE	34.6023	-118.083
T0603700379	LA CO FIRE STATION #92	COMPLETED - CASE CLOSED	8905 AVE U E	LITTLEROCK	34.52841	-117.971
T0603700384	CA DWR	COMPLETED - CASE CLOSED	34534 116TH ST N	PEARBLOSSOM	34.50657	-117.923
T0603700393	PEP BOYS # 772	COMPLETED - CASE CLOSED	3054 PALMDALE BLVD E	PALMDALE	34.57997	-118.075
T0603700398	AIR FORCE PLANT 42 - SITE 5 UST T5-1 & T5-2	COMPLETED - CASE CLOSED	PLANT SITE 5 BLDG 531	PALMDALE	34.6099	-118.09
T0603704277	ANGELES NATIONAL FOREST	COMPLETED - CASE CLOSED	TANBARK STATION RD	TANBARK FLAT	34.46549	-117.888
T0603731628	SHELL SERVICE STATION	OPEN - ELIGIBLE FOR CLOSURE	37204 E. 47TH STREET	PALMDALE	34.55852	-118.045
T0603731985	ANTELOPE HILL CENTER	OPEN - ELIGIBLE FOR CLOSURE	13100 PEARBLOSSOM HWY	PEARBLOSSOM	34.50646	-117.897
T0603774842	LA COUNTY SANITATION DISTRICTS PALMDALE WRP	COMPLETED - CASE CLOSED	39300 30TH STREET EAST	PALMDALE	34.59144	-118.076
T0603781670	MOBIL/LIQUOR KING	COMPLETED - CASE CLOSED	5564 FORT TEJON ROAD	PALMDALE	34.54311	-118.031
T0603783297	SHELL SERVICE STATION	COMPLETED - CASE CLOSED	1853 PALMDALE BOULEVAR	PALMDALE	34.58005	-118.095
T0603784586	BOEING GRAY BUTTE FACILITY	COMPLETED - CASE CLOSED	25000 EAST AVENUE R-8	PALMDALE	34.56564	-118.058
T0603789190	ARCO PRODUCTS #05265	COMPLETED - CASE CLOSED	2353 E PALMDALE BLVD	PALMDALE	34.58053	-118.086
T0603789329	PALMDALE CAR WASH	COMPLETED - CASE CLOSED	1520 E. PALMDALE BLVD	PALMDALE	34.57913	-118.102
T0603799273	ARCO #9636	COMPLETED - CASE CLOSED	2354 E PALMDALE BLVD	PALMDALE	34.5798	-118.086
T10000000154	A V MALL SHELL #135730	COMPLETED - CASE CLOSED	1127 RANCHO VISTA	PALMDALE	34.60198	-118.11
T10000000524	FAA PALMDALE ARTCC	OPEN - ELIGIBLE FOR CLOSURE	2555 E AVENUE P	PALMDALE	34.60274	-118.084
T10000000631	LITTLEROCK MINI & GAS	OPEN - SITE ASSESSMENT	7225 E PEARBLOSSOM HWY	LITTLEROCK	34.52134	-118.001
T10000002738	AIR FORCE PLANT 42 - SITE 5 T5-21, T5-22, & T5-23	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.62163	-118.077
T10000002756	AIR FORCE PLANT 42 - SITE 5 UST T5-3 & T5-5	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.62922	-118.081
T10000002757	AIR FORCE PLANT 42 - SITE 5 UST T5-4	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.62802	-118.083
T10000002759	AIR FORCE PLANT 42 - SITE 5 UST T5-6, T5-7, T5-8, T5-9, T5-10, T5-11, T5-18, T5-19	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.62781	-118.081
T10000002766	AIR FORCE PLANT 42 - SITE 5 UST T5-17	COMPLETED - CASE CLOSED	2501 AVE P E	PALMDALE	34.62184	-118.076
T10000002769	AIR FORCE PLANT 42 - SITE 7 UST T7-15	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.61803	-118.099
T10000002770	AIR FORCE PLANT 42 - SITE 7 UST T7-16	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.61654	-118.099
T10000002771	AIR FORCE PLANT 42 - SITE 8 UST T8-1 & T8-3	COMPLETED - CASE CLOSED	2001 AVE P E	PALMDALE	34.62191	-118.109
T10000002905	AIR FORCE PLANT 42 - SITE 5 UST T5-20	OPEN - SITE ASSESSMENT	2501 AVENUE P EAST	PALMDALE	34.62007	-118.078
T10000002907	AIR FORCE PLANT 42 - SITE 5 UST T5-24 (BLDG 531)	OPEN - SITE ASSESSMENT	2501 AVENUE P EAST	PALMDALE	34.62014	-118.081
T10000002908	AIR FORCE PLANT 42 - SITE 7 UST T7-11 (BLDG 723)	COMPLETED - CASE CLOSED	2501 AVENUE P EAST	PALMDALE	34.61963	-118.096
T10000002909	AIR FORCE PLANT 42 - SITE 7 UST 7-12 (BLDG 723)	COMPLETED - CASE CLOSED	2501 AVENUE P EAST	PALMDALE	34.61968	-118.096
T10000002910	AIR FORCE PLANT 42 - SITE 7 UST 7-13 (BLDG 779)	OPEN - SITE ASSESSMENT	2501 AVENUE P EAST	PALMDALE	34.62043	-118.096
T10000002911	AIR FORCE PLANT 42 - SITE 8 UST T8-2 (BLDG 870)	COMPLETED - CASE CLOSED	2501 AVENUE P EAST	PALMDALE	34.6225	-118.111
T10000003116	VILLAGE CENTER MARKET	COMPLETED - CASE CLOSED	9508 PALMDALE BLVD EAST	PALMDALE	34.57941	-117.96
T10000004967	PALMDALE WATER RECLAMATION PLANT	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	39300 30TH STREET EAST	PALMDALE	34.6097	-118.054

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