APPENDIX A

AQ-GHG Analysis Technical Memorandum

ALBERT A. WEBB ASSOCIATES

Technical Memorandum

To: Ted Beckwith, Director of Engineering

From: Eliza Laws, Senior Environmental Analyst
Noemi Avila, Assistant Environmental Analyst

Date: February 7, 2024

Re: Air Quality/Greenhouse Gas Analysis for the Rubidoux Community Services District (RCSD) Well 25 Project

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of construction and operation of the proposed Project would cause exceedances of the South Coast Air Quality Management District's (SCAQMD) thresholds for air quality in the Project area. The greenhouse gas (GHG) assessment was prepared to evaluate whether the Project would generate a significant amount of GHG emissions as a result of construction and operation of the proposed Project would exceed the SCAQMD draft screening significance thresholds. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the *CEQA Air Quality Handbook* prepared by the SCAQMD for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, the **Cal**ifornia **E**missions **E**stimator **Mod**el® version 2022.1 (CalEEMod) was used to quantify Project-related emissions.

The analysis herein evaluates the Well 25 Project ("Project") located near Mission Boulevard south of State Route 60 (SR-60), west of the Santa Ana River, in the City of Jurupa Valley, Riverside County. The Project consists of the construction and operation of a new groundwater well with a target production capacity of 1,500 gallons per minute (GPM) to replace an existing well, water piping, and water treatment facility. The well will be located on a 1-acre site near the intersection of Mission Boulevard and Daly Avenue and includes a 400 square foot building to house the well and appurtenances. Well 25 would be equipped with a 75 to 150 horsepower (hp) electric motor. Approximately 2,640 linear feet of raw water pipeline is proposed along Mission Boulevard, Daly Avenue, and 34th Street. The proposed water treatment facility will be an expansion of two existing facilities: the Leland J Thompson Water Treatment Facility (referred to as the Thompson Facility) and the La Verne Mahnke Manganese Treatment Facility (referred to as the Mahnke Facility). The Thompson Facility is located at 5245 34th Street and the Mahnke Facility is located at the southwest corner of 34th Street/Crestmore Road. The Project site also includes a vacant parcel identified as the Potential Thompson Expansion Site. The Potential Thompson Expansion Site is an approximately 1.4-acre vacant parcel located east of the Thompson Facility.

▪ Regional Significance Thresholds

The thresholds contained in the *SCAQMD CEQA Air Quality Handbook*[1] (SCAQMD 1993) and posted in a supplemental table as mass daily thresholds on SCAQMD's website[2] are considered regional thresholds and are shown in **Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds**, below. These regional thresholds were developed based on the SCAQMD's treatment of a major stationary source.

Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds

Emission Threshold	Units	VOC	NO_X	CO	SO_X	PM-10	PM-2.5
Construction	lbs/day	75	100	550	150	150	55
Operation	lbs/day	55	55	550	150	150	55

Air quality impacts can be described in a short- and long-term perspective. Short-term impacts occur during site grading and Project construction and consist of fugitive dust and other particulate matter, as well as exhaust emissions generated by construction-related vehicles. Long-term air quality impacts occur once the Project is in operation. Operational emissions sources are limited because the well pumps are electric. The primary source of operational emissions is the routine visits by vehicles driven by maintenance personnel and are considered negligible.

The Project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as the application of water or chemical stabilizers to disturbed soils, reducing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 or more acres or more of soil, or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of this Project's disturbance area (approximately 3.19 acres total), a Fugitive Dust Control Plan or a Large Operation Notification Form would not be required.

Short-Term Analysis

Short-term emissions from Project construction were evaluated using the CalEEMod program. The estimated construction period for the proposed Project is approximately 14 months, as identified below. The default parameters within CalEEMod were used, except as identified below, and these default values generally reflect a worst-case scenario, which means that Project emissions are expected to be equal to or less than the estimated emissions. In addition to the default values used (shown in the CalEEMod output Attachment to this memo), assumptions for the Project relevant to model inputs for short-term construction emission estimates used are:

- Construction is anticipated to begin no sooner than July 2024. The modeled construction schedule for the Project is shown below:

[1] South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)

[2] Air Quality Analysis Handbook (aqmd.gov)

Construction Activity	Start Date	End Date	Total Working Days
Well Drilling	July 1, 2024	July 31, 2024	23 days
Well Testing	August 1, 2024	August 31, 2024	22 days
Well Installation/Construction	September 1, 2024	August 31, 2025	260 days
Well Site Architectural Coating	August 25, 2025	August 31, 2025	5 days
Well Site Paving	August 25, 2025	August 31, 2025	5 days
Water Treatment Construction	September 1, 2024	May 31, 2025	195 days
Waterline Trenching	September 1, 2024	October 18, 2024	35 days
Waterline Repaving	October 19, 2024	October 25, 2024	5 days

- The off-road equipment to be used for each activity during the construction of the Project is shown below and based on engineering estimates. The engine tier for each piece of equipment is calculated using CalEEMod defaults for the statewide fleet average emissions factors:

Construction Activity	Off-Road Equipment	Unit Amount	Hours per Days
Well Drilling	Bore/Drill Rig[1]	1	24
	Air Compressor	1	8
Well Testing	Other Const Equipment[2] (temporary diesel pump engine)	1	24
	Air Compressor	1	8
Well Construction/Grading	Crane	1	8
	Grader	1	8
	Rubber Tired Dozer	1	8
	Welder	1	8
	Tractor/Loader/Backhoe	2	8
Well Site Paving	Pavers	1	8
	Paving Equipment	1	8
	Roller	1	8
Well Site Architectural Coating	Air Compressor	1	8
Water Treatment Construction	Crane	1	8
	Tractor/Loader/Backhoe	1	8
Waterline Trenching	Excavator	1	8
	Rubber Tired Loader	1	8
	Tractor/Loader/Backhoe	2	8
Waterline Re-Pavement	Pavers	1	8
	Paving Equipment	1	8
	Roller	1	8

Notes:[1] Bore/Drill Rig is only anticipated to be used for one month but modeled conservatively for the entire duration of the construction activity.

[2] The Other Construction Equipment represents a 200 hp diesel pump.

- To evaluate Project compliance with SCAQMD Rule 403 for fugitive dust control, the Project utilized the option of watering the Project site three times daily which achieves a control efficiency of 74 percent for PM-10 and PM-2.5 emissions. Two (2) one-way vendor trips per day were added to the well drilling, well construction and paving activities to account for water truck trips.

- Four (4) one-way vendor trips per day added to each construction activity except for well drilling, well testing and well site architectural coating for material delivery/hauling.

- The waterline length is approximately 2,640 LF and assumed a disturbance width of 12 feet. The entire waterline disturbance area of approximately 0.73 acres is assumed to be re-paved.
- The approximately 1.40-acre water treatment site is conservatively assumed to be paved with asphalt.
- The approximately 1.06-acre well site includes a 400 square foot building and assumes approximately 0.25 acres are used as a basin and the remaining 0.81 acres will be paved.
- The CalEEMod default for worker trips for well testing, well site architectural coating and water treatment construction were zero because typical building construction is not proposed. Therefore, worker trips for the well testing, well site architectural coating and water treatment construction were estimated at a rate of 1.25 workers per piece of off-road equipment, which is the CalEEMod default rate for other construction activities (i.e., grading) contained in the User Guide Appendix C.

The results of this analysis are summarized below in **Table 2**.

Table 2 – Unmitigated Estimated Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO_X	CO	SO_2	PM-10	PM-2.5
SCAQMD Daily Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
2024	4.47	**32.70**	**36.40**	**0.07**	**3.81**	**2.33**
Well 25	2.35	21.90	22.00	0.04	3.06	1.84
Water Treatment Facilities[1]	2.12	10.80	14.40	0.03	0.75	0.49
2025	**7.65**	29.80	33.78	0.06	3.64	2.18
Well 25	7.14	24.80	28.30	0.05	3.33	1.97
Water Treatment Facilities[1]	0.51	5.00	5.48	0.01	0.31	0.21
Maximum[2]	**7.65**	**32.70**	**36.40**	**0.07**	**3.81**	**2.33**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: [1] Water Treatment Facilities emissions include the maximum emissions from construction of either the water treatment construction or the water pipeline.

[2] To be conservative, the maximum emissions are the greater of either construction in 2024 or 2025 and the emissions for each year are the sum of both well 25 and water treatment facilities because some of these activities overlap in each year. See the detailed model output reports attached herewith. Numbers are the maximum of summer or winter emissions each year. Emissions may not match due to rounding within the model.

As shown in **Table 2**, above, the emissions from construction of the Project are below the SCAQMD daily construction thresholds for all the criteria pollutants.

Long-Term Analysis

Long-term air quality impacts occur once the Project is in operation. Operational emissions refer to a full range of activities that can or may generate pollutant emissions when a project is functioning in its intended use, and typically include vehicle emissions, area source emissions that include stationary combustion of natural gas used for space and water heating, landscape maintenance, use of consumer products, and energy use.

Operational emissions related to the new well and water treatment facilities would be primarily from the electric well pump and from the routine visits by vehicles driven by maintenance personnel and are considered negligible because this Project site is in close proximity to other existing facilities. As such, the proposed Project is not anticipated to increase the frequency of ongoing maintenance routines.

▪ Localized Significance Threshold Analysis

Background

As part of the SCAQMD's environmental justice program, attention has been focused on localized effects of air quality. Staff at SCAQMD has developed localized significance threshold (LST) methodology[3] that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts (both short- and long-term). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The Project is located in SRA 23.

Short-Term Analysis

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO_2, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables[4] to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or smaller. The LST tables can be used as a screening tool to determine if dispersion modeling would be necessary. If project-related emissions are below the LST table emissions, no further analysis is necessary.

The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds is used to determine the maximum site acreage that is actively disturbed.[5] Based on this SCAQMD guidance, the Project will disturb approximately one acres per day during grading . Therefore, the one-acre LST was used to compare the on-site emissions estimated by CalEEMod.

The LST thresholds are estimated using the maximum daily disturbed area (in acres) and the distance of the Project to the nearest sensitive receptors (in meters). The nearest sensitive receptors are residential properties adjacent to the southwest boundary of the Well 25 site, along the proposed water pipeline alignment, and the water treatment facility sites. According to LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters. Therefore, a receptor distance of 25 meters (85 feet) was used to ensure a conservative analysis. The results are summarized below **Table 3**.

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[3] South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. (Available at http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds, accessed February 2024.)

[4] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds

[5] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2

Table 3 –Unmitigated LST Results for Daily Construction Emissions

Pollutant	Peak Daily Emissions (lb/day)			
	NO_x	CO	PM-10	PM-2.5
LST for 1-acre at 25 meters	**118**	**602**	**4**	**3**
Well Drilling (2024)	5.50	8.72	0.20	0.19
Well Testing (2024)	12.00	11.60	0.47	0.44
Well Installation/Construction (2024)	**21.60**	**20.70**	**2.81**	**1.78**
Well Installation/Construction (2025)	19.30	19.80	2.68	1.67
Well Site Architectural Coating (2025)	1.18	1.52	0.04	0.03
Well Site Paving (2025)	3.73	4.99	0.17	0.16
Water Treatment Construction (2024)	**5.20**	**5.07**	**0.21**	**0.20**
Water Treatment Construction (2025)	4.76	5.03	0.19	0.18
Waterline Trenching (2024)	**5.06**	**7.98**	**0.23**	**0.21**
Waterline Repaving (2024)	3.91	5.01	0.19	0.18
Maximum[1]	**31.86**	**33.75**	**3.25**	**2.19**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Note: [1] Maximum emissions are greater of either: 1) well drilling alone; 2) well testing alone; 3) the sum of well construction, water treatment construction, and waterline trenching in 2024; 4) the sum of well construction, water treatment construction and waterline repaving in 2024; 5) the sum of well construction and water treatment construction in 2025; or 6) the sum of well construction, well site architectural coating, and well site paving in 2025 since these activities overlap. Maximum emissions are shown in bold.

As shown in **Table 3,** emissions from construction of the Project are below the most conservative LST established by SCAQMD.

Long-Term Analysis

The Project involves construction of new well site, the installation of water pipeline and construction of additional water treatment facilities. The long-term emissions from the Project, as discussed previously, are primarily from the pump and in the form of mobile source emissions, with no stationary sources of emissions present. The new pumps are electric powered. The well site will also have a diesel-powered emergency generator. According to the LST methodology, LSTs only apply to the operational phase if a project includes stationary sources or on-site mobile equipment generating on-site emissions. Because the emergency generator will only be used during emergency power outages and routine testing, emissions would be negligible. The RCSD will be required to obtain an SCAQMD permit to install and operate the emergency generator. The SCAQMD permitting process would ensure that the Project meets regulatory requirements through the application review process and by placing specific operating conditions on the permit such as operating hour limits. As such, no further analysis of the emergency generator was prepared.

▪ Greenhouse Gas Analysis

Greenhouse gases (GHG) are not presented in lbs/day like criteria pollutants; they are typically evaluated on an annual basis using the metric system. Several agencies, at various levels, have proposed draft GHG significance thresholds for use in CEQA documents. One of those agencies is the SCAQMD, which was working on GHG thresholds for development projects. In December 2008, the SCAQMD adopted a threshold of 10,000 metric tonnes per year of carbon dioxide equivalents ($MTCO_2E/yr$) for stationary source projects where SCAQMD is the lead agency. The most recent draft proposal was in September 2010[6] and included screening significance thresholds for residential, commercial, and mixed-use projects at 3,500, 1,400, and 3,000 $MTCO_2E/yr$, respectively. Alternatively, a lead agency has the option to use

[6] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2

3,000 $MTCO_2E$/yr as a threshold for all non-industrial projects. Although both options are recommended by SCAQMD, a lead agency is advised to use only one option and to use it consistently. The SCAQMD significance thresholds also evaluate construction emissions by amortizing them over an expected project life of 30 years.

Short-Term Analysis

Construction-Related Emissions

The CalEEMod model calculates GHG emissions from fuel usage by construction equipment and construction-related activities, like construction worker trips, for the Project. CalEEMod also calculates the indirect GHG emissions related to electricity consumption (CalEEMod Version 2022.1 User's Guide, p. 2). The CalEEMod output results for construction-related GHG emissions provide for CO_2, methane (CH_4), nitrous oxide (N_2O), refrigerants (R), and CO_2E[7] as shown on **Table 4**.

Table 4 – Project Construction Equipment GHG Emissions

Year	Metric Tons per year (MT/yr)				
	Total CO_2	Total CH_4	Total N_2O	Total R	Total CO_2E
2024	308.50	0.01	0.01	0.05	310.30
2025	400.90	0.01	0.01	0.07	403.50
Total	**709.40**	**0.02**	**0.02**	**0.12**	**713.80**
				Amortized[1]	**23.79**

Note: [1]Construction emissions were amortized over a 30-year period, as recommended by SCAQMD.

Results indicate that an estimated 713.80 $MTCO_2E$ will occur from Project construction equipment over the course of the estimated approximately 14-month construction period, which is approximately 23.79 $MTCO_2E$ amortized for a project lifetime of 30 years.

Long-Term Analysis

Energy-Related Emissions

GHG emissions from the operation of the electric pumps for the proposed well were calculated outside of CalEEMod using the estimated annual electricity consumption from the new well and the 2025 Southern California Edison (SCE) carbon intensity data from CalEEMod (351 pounds of CO_2E per megawatt-hour (MWh)). The proposed Project will operate a pump on the Well site. The total energy consumption is estimated to be approximately 981 MWh per year.[8] Therefore, the estimated GHG emissions from operation of the proposed Project will be approximately 156.03 $MTCO_2E$ per year. There will be limited lighting on the Project site. However, the GHG emissions from electricity usage will be negligible.

Due to the estimated amount of emissions from Project construction and pump electricity usage during operations as well as the nominal emissions from routine maintenance, site lighting and electricity use, the proposed Project will not generate a substantial amount of GHG emissions.

▪ Conclusion

The conclusion of this analysis indicates that construction of the proposed Project will not exceed criteria pollutant thresholds established by SCAQMD on a regional or localized level. The Project will also not generate a substantial amount of GHG emissions. No mitigation is required.

Should you have any questions, please contact me at (951) 686-1070.

[7] CO_2E is the sum of CO_2 emissions estimated plus the sum of CH_4, N_2O and refrigerant emissions estimated multiplied by their respective global warming potential (GWP).

[8] 981 MWh per year is an engineering estimate.

CalEEMod Output Files

RCSD Well 25 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	RCSD Well 25
Construction Start Date	7/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	14.2
Location	33.99277372504372, -117.39905362656276
County	Riverside-South Coast
City	Jurupa Valley
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5427
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Asphalt Surfaces	35.1	1000sqft	0.81	0.00	—	—	—	—

Other Non-Asphalt Surfaces	10.9	1000sqft	0.25	0.00	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.33	7.14	24.8	28.3	0.05	1.06	2.27	3.33	0.98	1.00	1.97	—	5,378	5,378	0.21	0.11	2.34	5,417
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.79	2.35	21.9	21.7	0.04	0.97	2.09	3.06	0.89	0.95	1.84	—	4,109	4,109	0.16	0.07	0.04	4,133
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.24	1.10	9.41	9.97	0.02	0.41	0.99	1.40	0.37	0.45	0.83	—	1,969	1,969	0.08	0.03	0.27	1,981
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.20	1.72	1.82	< 0.005	0.07	0.18	0.26	0.07	0.08	0.15	—	326	326	0.01	0.01	0.05	328

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	2.80	2.35	21.8	22.0	0.04	0.97	2.09	3.06	0.89	0.95	1.84	—	4,369	4,369	0.18	0.07	1.38	4,385
2025	3.33	7.14	24.8	28.3	0.05	1.06	2.27	3.33	0.98	1.00	1.97	—	5,378	5,378	0.21	0.11	2.34	5,417
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	2.79	2.35	21.9	21.7	0.04	0.97	2.09	3.06	0.89	0.95	1.84	—	4,109	4,109	0.16	0.07	0.04	4,133
2025	2.58	2.16	19.6	20.7	0.04	0.85	2.09	2.93	0.78	0.95	1.73	—	4,103	4,103	0.16	0.07	0.03	4,127
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.84	0.70	6.30	6.49	0.01	0.27	0.51	0.78	0.25	0.23	0.48	—	1,336	1,336	0.05	0.02	0.16	1,343
2025	1.24	1.10	9.41	9.97	0.02	0.41	0.99	1.40	0.37	0.45	0.83	—	1,969	1,969	0.08	0.03	0.27	1,981
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.15	0.13	1.15	1.18	< 0.005	0.05	0.09	0.14	0.05	0.04	0.09	—	221	221	0.01	< 0.005	0.03	222
2025	0.23	0.20	1.72	1.82	< 0.005	0.07	0.18	0.26	0.07	0.08	0.15	—	326	326	0.01	0.01	0.05	328

3. Construction Emissions Details

3.1. Well Installation/Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.70	2.27	21.6	20.7	0.04	0.97	—	0.97	0.89	—	0.89	—	3,724	3,724	0.15	0.03	—	3,737

Dust From Material Movement	—	—	—	—	—	—	1.84	1.84	—	0.89	0.89	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.70	2.27	21.6	20.7	0.04	0.97	—	0.97	0.89	—	0.89	—	3,724	3,724	0.15	0.03	—	3,737
Dust From Material Movement	—	—	—	—	—	—	1.84	1.84	—	0.89	0.89	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.54	5.15	4.95	0.01	0.23	—	0.23	0.21	—	0.21	—	889	889	0.04	0.01	—	892
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.21	0.21	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.94	0.90	< 0.005	0.04	—	0.04	0.04	—	0.04	—	147	147	0.01	< 0.005	—	148
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.07	1.25	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	216	216	0.01	0.01	0.86	219
Vendor	0.01	0.01	0.21	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.52	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.09	0.95	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	0.01	0.01	0.02	201
Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.0	48.0	< 0.005	< 0.005	0.09	48.7
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44.5	44.5	< 0.005	0.01	0.05	46.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.94	7.94	< 0.005	< 0.005	0.01	8.05
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.37	7.37	< 0.005	< 0.005	0.01	7.71
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Well Installation/Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.50	2.10	19.3	19.8	0.04	0.84	—	0.84	0.78	—	0.78	—	3,725	3,725	0.15	0.03	—	3,738
Dust From Material Movement	—	—	—	—	—	—	1.84	1.84	—	0.89	0.89	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.50	2.10	19.3	19.8	0.04	0.84	—	0.84	0.78	—	0.78	—	3,725	3,725	0.15	0.03	—	3,738
Dust From Material Movement	—	—	—	—	—	—	1.84	1.84	—	0.89	0.89	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.19	1.00	9.20	9.40	0.02	0.40	—	0.40	0.37	—	0.37	—	1,771	1,771	0.07	0.01	—	1,777
Dust From Material Movement	—	—	—	—	—	—	0.88	0.88	—	0.42	0.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.18	1.68	1.72	< 0.005	0.07	—	0.07	0.07	—	0.07	—	293	293	0.01	< 0.005	—	294
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.16	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	211	211	0.01	0.01	0.78	215
Vendor	0.01	< 0.005	0.20	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.52	193
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197
Vendor	0.01	< 0.005	0.21	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.01	192
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.04	0.44	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	93.6	93.6	< 0.005	< 0.005	0.16	94.9
Vendor	< 0.005	< 0.005	0.10	0.03	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	87.3	87.3	< 0.005	0.01	0.11	91.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.03	15.7
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Well Testing (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.12	1.78	12.0	11.6	0.04	0.47	—	0.47	0.44	—	0.44	—	4,297	4,297	0.17	0.03	—	4,312
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.72	0.70	< 0.005	0.03	—	0.03	0.03	—	0.03	—	259	259	0.01	< 0.005	—	260
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.13	0.13	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	42.9	42.9	< 0.005	< 0.005	—	43.0
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.42	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	72.0	72.0	< 0.005	< 0.005	0.29	73.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.04	4.04	< 0.005	< 0.005	0.01	4.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.40	3.73	4.99	0.01	0.17	—	0.17	0.16	—	0.16	—	756	756	0.03	0.01	—	758
Paving	—	0.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.4	10.4	< 0.005	< 0.005	—	10.4
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.71	1.71	< 0.005	< 0.005	—	1.72
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.58	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	106	106	< 0.005	< 0.005	0.39	107
Vendor	0.01	< 0.005	0.20	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.52	193
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.35	1.35	< 0.005	< 0.005	< 0.005	1.37
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.52	2.52	< 0.005	< 0.005	< 0.005	2.63
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.22	0.22	< 0.005	< 0.005	< 0.005	0.23
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.42	0.42	< 0.005	< 0.005	< 0.005	0.44
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.18	1.52	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	—	3.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.44	2.44	< 0.005	< 0.005	—	2.45
Architectural Coatings	—	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.40	0.40	< 0.005	< 0.005	—	0.41
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.19	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	35.2	35.2	< 0.005	< 0.005	0.13	35.8

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.45	0.45	< 0.005	< 0.005	< 0.005	0.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.08
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Well Drilling (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.54	5.50	8.72	0.01	0.20	—	0.20	0.19	—	0.19	—	1,323	1,323	0.05	0.01	—	1,328
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.04	0.03	0.35	0.55	< 0.005	0.01	—	0.01	0.01	—	0.01	—	83.4	83.4	< 0.005	< 0.005	—	83.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.8	13.8	< 0.005	< 0.005	—	13.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.42	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	72.0	72.0	< 0.005	< 0.005	0.29	73.1
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.1	62.1	< 0.005	0.01	0.17	65.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.22	4.22	< 0.005	< 0.005	0.01	4.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.91	3.91	< 0.005	< 0.005	< 0.005	4.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.68
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Well Installation/Construction	Grading	09/01/2024	8/31/2025	5.00	260	—
Well Testing	Building Construction	8/1/2024	8/31/2024	5.00	22.0	—
Paving	Paving	08/25/2025	8/31/2025	5.00	5.00	—
Architectural Coating	Architectural Coating	08/25/2025	8/31/2025	5.00	5.00	—
Well Drilling	Trenching	7/01/2024	7/31/2024	5.00	23.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Well Installation/Construction	Graders	Diesel	Average	1.00	8.00	148	0.41
Well Installation/Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Well Installation/Construction	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Well Installation/Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Well Installation/Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Well Testing	Off-Highway Trucks	Diesel	Average	1.00	24.0	200	0.74
Well Testing	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Well Drilling	Bore/Drill Rigs	Diesel	Average	1.00	24.0	83.0	0.50
Well Drilling	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Well Drilling	—	—	—	—
Well Drilling	Worker	5.00	18.5	LDA,LDT1,LDT2
Well Drilling	Vendor	2.00	10.2	HHDT,MHDT
Well Drilling	Hauling	0.00	20.0	HHDT
Well Drilling	Onsite truck	—	—	HHDT
Well Installation/Construction	—	—	—	—
Well Installation/Construction	Worker	15.0	18.5	LDA,LDT1,LDT2
Well Installation/Construction	Vendor	6.00	10.2	HHDT,MHDT
Well Installation/Construction	Hauling	0.00	20.0	HHDT
Well Installation/Construction	Onsite truck	—	—	HHDT
Well Testing	—	—	—	—

Well Testing	Worker	5.00	18.5	LDA,LDT1,LDT2
Well Testing	Vendor	0.00	10.2	HHDT,MHDT
Well Testing	Hauling	0.00	20.0	HHDT
Well Testing	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	7.50	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	2.50	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	600	200	3,437

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Well Installation/Construction	—	—	260	0.00	—
Paving	0.00	0.00	0.00	0.00	1.06

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Asphalt Surfaces	0.81	100%
Other Non-Asphalt Surfaces	0.25	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	532	0.03	< 0.005
2025	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	25.6	annual days of extreme heat
Extreme Precipitation	2.20	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	1.19	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	97.0
AQ-PM	94.2
AQ-DPM	81.3
Drinking Water	61.5
Lead Risk Housing	88.3
Pesticides	0.00
Toxic Releases	69.1
Traffic	44.1
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	47.4
Haz Waste Facilities/Generators	16.6
Impaired Water Bodies	33.2
Solid Waste	0.00
Sensitive Population	—
Asthma	65.9
Cardio-vascular	77.0

Low Birth Weights	76.0
Socioeconomic Factor Indicators	—
Education	95.3
Housing	84.6
Linguistic	77.6
Poverty	93.4
Unemployment	97.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	15.51392275
Employed	27.51186963
Median HI	18.63210574
Education	—
Bachelor's or higher	7.237264211
High school enrollment	19.96663673
Preschool enrollment	18.15732067
Transportation	—
Auto Access	34.2871808
Active commuting	50.30155268
Social	—
2-parent households	48.38958039
Voting	0.487617092
Neighborhood	—
Alcohol availability	32.67034518

Park access	36.50712178
Retail density	54.92108302
Supermarket access	74.87488772
Tree canopy	16.88694983
Housing	—
Homeownership	34.36417298
Housing habitability	19.85114847
Low-inc homeowner severe housing cost burden	26.21583472
Low-inc renter severe housing cost burden	56.05030155
Uncrowded housing	6.03105351
Health Outcomes	—
Insured adults	5.812909021
Arthritis	0.0
Asthma ER Admissions	35.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	14.7
Cognitively Disabled	68.5
Physically Disabled	80.2
Heart Attack ER Admissions	10.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	52.3
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	6.8
Elderly	93.7
English Speaking	4.6
Foreign-born	80.6
Outdoor Workers	6.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	56.7
Traffic Density	23.7
Traffic Access	23.0
Other Indices	—
Hardship	95.0
Other Decision Support	—
2016 Voting	10.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	91.0

Healthy Places Index Score for Project Location (b)	9.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Per Engineering Estimates
Construction: Off-Road Equipment	Per Engineer Estimates
Construction: Trips and VMT	Two (2) daily vendor trips added for water trucks each activity except well testing and painting. Four (4) daily truck trips are assumed for material delivery/hauling during each activity except Well Drilling, Well Testing, and Well Site Architectural Coating. Worker trips added for Well Testing and Well Site Architectural Coating because no defaults were generated by model. Worker trips estimated per CalEEMod User Guide Section 4.6.1 default for workers based on equipment list.
Construction: Architectural Coatings	Well Building area to be painted estimated per CalEEMod User Guide for nonresidential use

RCSD Water Pipeline and WTPF Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	RCSD Water Pipeline and WTPF
Construction Start Date	9/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	14.2
Location	33.99496649252481, -117.3979505806767
County	Riverside-South Coast
City	Jurupa Valley
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5427
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Asphalt Surfaces	92.7	1000sqft	2.13	0.00	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.39	1.17	10.8	14.4	0.03	0.45	0.30	0.75	0.42	0.07	0.49	—	3,093	3,093	0.12	0.08	1.91	3,123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.39	2.12	10.8	14.1	0.03	0.45	0.30	0.75	0.42	0.07	0.49	—	3,076	3,076	0.12	0.08	0.05	3,104
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.21	1.87	2.22	< 0.005	0.08	0.05	0.12	0.07	0.01	0.08	—	529	529	0.02	0.01	0.13	534
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.04	0.04	0.34	0.40	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.02	—	87.5	87.5	< 0.005	< 0.005	0.02	88.3

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2024	1.39	1.17	10.8	14.4	0.03	0.45	0.30	0.75	0.42	0.07	0.49	—	3,093	3,093	0.12	0.08	1.91	3,123
2025	0.61	0.51	4.98	5.48	0.01	0.19	0.12	0.31	0.18	0.03	0.21	—	1,535	1,535	0.06	0.04	0.78	1,549
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.39	2.12	10.8	14.1	0.03	0.45	0.30	0.75	0.42	0.07	0.49	—	3,076	3,076	0.12	0.08	0.05	3,104
2025	0.61	0.51	5.00	5.39	0.01	0.19	0.12	0.31	0.18	0.03	0.21	—	1,529	1,529	0.06	0.04	0.02	1,543
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.23	0.21	1.87	2.22	< 0.005	0.08	0.05	0.12	0.07	0.01	0.08	—	529	529	0.02	0.01	0.13	534
2025	0.18	0.15	1.48	1.60	< 0.005	0.06	0.03	0.09	0.05	0.01	0.06	—	452	452	0.02	0.01	0.10	456
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.04	0.04	0.34	0.40	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.02	—	87.5	87.5	< 0.005	< 0.005	0.02	88.3
2025	0.03	0.03	0.27	0.29	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.01	—	74.9	74.9	< 0.005	< 0.005	0.02	75.5

3. Construction Emissions Details

3.1. WTP Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	0.51	5.20	5.07	0.01	0.21	—	0.21	0.20	—	0.20	—	1,281	1,281	0.05	0.01	—	1,285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	0.51	5.20	5.07	0.01	0.21	—	0.21	0.20	—	0.20	—	1,281	1,281	0.05	0.01	—	1,285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	1.24	1.21	< 0.005	0.05	—	0.05	0.05	—	0.05	—	306	306	0.01	< 0.005	—	307
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.23	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	50.6	50.6	< 0.005	< 0.005	—	50.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.42	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	72.0	72.0	< 0.005	< 0.005	0.29	73.1
Vendor	0.01	0.01	0.21	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.52	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.03	0.32	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	66.1	66.1	< 0.005	< 0.005	0.01	67.0
Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.0	16.0	< 0.005	< 0.005	0.03	16.2
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44.5	44.5	< 0.005	0.01	0.05	46.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.68
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.37	7.37	< 0.005	< 0.005	0.01	7.71
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. WTP Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	0.48	4.76	5.03	0.01	0.19	—	0.19	0.18	—	0.18	—	1,281	1,281	0.05	0.01	—	1,285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	0.48	4.76	5.03	0.01	0.19	—	0.19	0.18	—	0.18	—	1,281	1,281	0.05	0.01	—	1,285
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.41	1.49	< 0.005	0.06	—	0.06	0.05	—	0.05	—	378	378	0.02	< 0.005	—	380

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	62.7	62.7	< 0.005	< 0.005	—	62.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.39	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	70.5	70.5	< 0.005	< 0.005	0.26	71.5
Vendor	0.01	< 0.005	0.20	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.52	193
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	64.8	64.8	< 0.005	< 0.005	0.01	65.6
Vendor	0.01	< 0.005	0.21	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.01	192
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19.4	19.4	< 0.005	< 0.005	0.03	19.7
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	54.3	54.3	< 0.005	0.01	0.07	56.8
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.21	3.21	< 0.005	< 0.005	0.01	3.25
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.98	8.98	< 0.005	< 0.005	0.01	9.41
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Waterline Repaving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	0.43	3.91	5.01	0.01	0.19	—	0.19	0.18	—	0.18	—	756	756	0.03	0.01	—	758
Paving	—	1.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.4	10.4	< 0.005	< 0.005	—	10.4
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.71	1.71	< 0.005	< 0.005	—	1.72
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.2	99.2	< 0.005	< 0.005	0.01	100
Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.38	1.38	< 0.005	< 0.005	< 0.005	1.40
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.55	2.55	< 0.005	< 0.005	< 0.005	2.67
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.23	0.23	< 0.005	< 0.005	< 0.005	0.23
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.42	0.42	< 0.005	< 0.005	< 0.005	0.44
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Waterline Trenching (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.68	0.57	5.06	7.98	0.01	0.23	—	0.23	0.21	—	0.21	—	1,224	1,224	0.05	0.01	—	1,228
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.68	0.57	5.06	7.98	0.01	0.23	—	0.23	0.21	—	0.21	—	1,224	1,224	0.05	0.01	—	1,228
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.05	0.49	0.77	< 0.005	0.02	—	0.02	0.02	—	0.02	—	117	117	< 0.005	< 0.005	—	118
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.4	19.4	< 0.005	< 0.005	—	19.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.83	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	144	144	0.01	< 0.005	0.57	146
Vendor	0.01	0.01	0.21	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.52	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.06	0.63	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	132	132	0.01	< 0.005	0.01	134
Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.01	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.02	13.0
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	17.9	17.9	< 0.005	< 0.005	0.02	18.7

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.13	2.13	< 0.005	< 0.005	< 0.005	2.16
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.96	2.96	< 0.005	< 0.005	< 0.005	3.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
WTP Construction	Building Construction	09/01/2024	5/31/2025	5.00	195	—
Waterline Repaving	Paving	10/19/2024	10/25/2024	5.00	5.00	—
Waterline Trenching	Trenching	09/01/2024	10/18/2024	5.00	35.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
WTP Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
WTP Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Waterline Repaving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Waterline Repaving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Waterline Repaving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Waterline Trenching	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Waterline Trenching	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Waterline Trenching	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Waterline Trenching	—	—	—	—
Waterline Trenching	Worker	10.0	18.5	LDA,LDT1,LDT2
Waterline Trenching	Vendor	6.00	10.2	HHDT,MHDT
Waterline Trenching	Hauling	0.00	20.0	HHDT
Waterline Trenching	Onsite truck	—	—	HHDT
WTP Construction	—	—	—	—
WTP Construction	Worker	5.00	18.5	LDA,LDT1,LDT2
WTP Construction	Vendor	6.00	10.2	HHDT,MHDT
WTP Construction	Hauling	0.00	20.0	HHDT
WTP Construction	Onsite truck	—	—	HHDT
Waterline Repaving	—	—	—	—
Waterline Repaving	Worker	7.50	18.5	LDA,LDT1,LDT2

Waterline Repaving	Vendor	6.00	10.2	HHDT,MHDT
Waterline Repaving	Hauling	0.00	20.0	HHDT
Waterline Repaving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Waterline Repaving	0.00	0.00	0.00	0.00	2.13

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Asphalt Surfaces	2.13	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	532	0.03	< 0.005
2025	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	25.6	annual days of extreme heat
Extreme Precipitation	2.20	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	1.19	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	97.0
AQ-PM	94.2
AQ-DPM	96.8

Drinking Water	61.5
Lead Risk Housing	93.6
Pesticides	0.00
Toxic Releases	74.9
Traffic	76.6
Effect Indicators	—
CleanUp Sites	40.8
Groundwater	47.6
Haz Waste Facilities/Generators	1.80
Impaired Water Bodies	33.2
Solid Waste	37.6
Sensitive Population	—
Asthma	65.9
Cardio-vascular	77.0
Low Birth Weights	70.0
Socioeconomic Factor Indicators	—
Education	95.8
Housing	83.1
Linguistic	78.5
Poverty	84.7
Unemployment	87.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	8.777107661

Employed	26.40831515
Median HI	17.91351213
Education	—
Bachelor's or higher	2.746054151
High school enrollment	100
Preschool enrollment	46.47760811
Transportation	—
Auto Access	41.51161299
Active commuting	44.77094829
Social	—
2-parent households	23.5724368
Voting	0.526113178
Neighborhood	—
Alcohol availability	30.59155653
Park access	9.854998075
Retail density	46.61876043
Supermarket access	77.32580521
Tree canopy	7.712049275
Housing	—
Homeownership	31.77210317
Housing habitability	14.33337611
Low-inc homeowner severe housing cost burden	18.23431284
Low-inc renter severe housing cost burden	27.26806108
Uncrowded housing	4.645194405
Health Outcomes	—
Insured adults	14.28204799
Arthritis	0.0

Asthma ER Admissions	35.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	37.2
Cognitively Disabled	76.7
Physically Disabled	54.0
Heart Attack ER Admissions	10.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	5.3
Elderly	97.5
English Speaking	33.6

Foreign-born	63.6
Outdoor Workers	14.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	67.8
Traffic Density	84.6
Traffic Access	23.0
Other Indices	—
Hardship	90.3
Other Decision Support	—
2016 Voting	5.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	96.0
Healthy Places Index Score for Project Location (b)	9.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Per Engineering Estimates
Construction: Off-Road Equipment	Per Engineering Estimates
Construction: Trips and VMT	Two (2) daily vendor trips added for water trucks each activity except well testing and painting. Four (4) daily truck trips are assumed for material delivery/hauling during each activity. Worker trips added for WTP Construction because no defaults were generated by model. Worker trips estimated per CalEEMod User Guide Section 4.6.1 default for workers based on equipment list.

APPENDIX B

NEPA Biological Resources Technical Memorandum

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MEMORANDUM

To:	Melissa Matlock, Water Resources Specialist, Western Municipal Water District
From:	Kimberly Narel, Dudek Biologist
Subject:	Riverside County Sanitation District – Jurupa Valley Well 25 and Treatment Site Project – NEPA Biological Resources Technical Memorandum
Date:	October 18, 2023
cc:	Laura Masterson, Dudek Project Manager Tommy Molioo, Dudek Senior Biologist
Attachments:	Figures 1 and 2 A – Species Compendium B – Photo Log C – USFWS IPAC Species Lists D – NWI Wetlands Map E – USFWS Critical Habitat Map

Western Municipal Water District (WMWD) was recently awarded a grant for the Building Groundwater Reliability and Resiliency: Regional Well Installation and Water Quality Treatment Project (project). The project includes a joint regional effort between WMWD, Riverside Highland Water Company, and Rubidoux Community Services District (RCSD). The purpose and need of the proposed project are to provide regional drought resiliency. The project has undergone National Environmental Policy Act (NEPA) review per U.S. Bureau of Reclamation requirements for federal drought resiliency grant funding, which requires that the project is reviewed for potential impacts to federal species and designated critical habitats protected by the federal Endangered Species Act (FESA).

This Biological Resources Technical Memorandum (memorandum) documents the results of Dudek's biological reconnaissance and desktop research conducted for WMWD to identify potential federal biological resources constraints for two proposed site locations in Jurupa Valley. The first site location is "Well 25," a vacant lot at 5292 Mission Boulevard in the City of Jurupa Valley, Riverside County, California. The second site location is a proposed treatment plant (Treatment Site) located five blocks north of the Well 25 site, on an irregularly shaped parcel on the western corner of Crestmore Road and 34th Street in Jurupa Valley. This memorandum documents the existing conditions associated with the Well 25 and Treatment Site locations (project site) and immediately adjacent areas, as well as evaluates the potential for federally protected biological resources to occur on or immediately adjacent to the project site. Federally protected resources considered for this analysis include any federally listed species, federally protected waters and wetlands, and applicable federal laws and policies (e.g., NEPA and Migratory Bird Treaty Act) that could be affected by implementing the proposed project.

1 Well 25 Project Location

The approximately 1.0-acre Well 25 project site is located on Assessor's Parcel Numbers (APNs) 181-120-014 and 181-120-015 in the eastern portion of the City of Jurupa Valley, which is located in the northern region of Western Riverside County (Figure 1, Project Location). The project site and 100-foot buffer (study area) totals approximately 2.7 acres. The project is located west of the Santa Ana River, south of Mission Boulevard, east of Wallace Street, and south of a residential development. Specifically, the Well 25 site is located at 5292 Mission Boulevard in the City of Jurupa Valley, in Section 15, Township 2 South, Range 5 West, as depicted on the northeastern portion of the Riverside West, California, U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map. The study area accounts for potential indirect project impacts to federally protected biological resources immediately adjacent to the project site.

2 Well 25 Project Description

The proposed Well 25 development consists of the development of a new potable groundwater well. The new well will produce 1,500 acre-feet per year with a 200-horsepower motor. The project is currently in design. However, the proposed scope includes drilling of a well and outfitting with a pump and 200-horsepower motor. The water supply well will be drilled approximately 150 feet in depth and will pump directly to RCSD's pressure zone 1066' via a proposed operating pump with associated piping.. The project would increase local potable water supply by 4,286 acre-feet of water per year.

3 Treatment Site Project Location

The approximately 1.4-acre Treatment Site project site is located on the southern portion of APN 179-270-017 in the eastern portion of the City of Jurupa Valley, which is located in the northern region of Riverside County (Figure 1). The study area totals approximately 3.6 acres. The Treatment Site is located west of Crestmore Road, north of 34th Street, east of residential development, and south of disced non-native grassland. Specifically, the Treatment Site is located on the western corner of 34th Street and Crestmore Road in the City of Jurupa Valley, in Section 15, Township 2 South, Range 5 West, as depicted on the northeastern portion of the Riverside West, California, USGS 7.5-minute topographic quadrangle map.

4 Treatment Site Project Description

The proposed Treatment Site development consists of the development a small-scale water treatment facility with water pipelines and treatment systems to treat for contaminants including nitrates, iron manganese, arsenic, per- and polyfluoroalkyl substances, and 1,2,3-trichloropropane removal. Treatment of the impaired groundwater will be for potable, urban water use. The project is currently in design. The design of the treatment system and water quality results at Well 25 will determine if granular activated carbon or ion exchange (resin media) filtration will be implemented.

5 Federal Regulatory Setting

5.1 Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS) for most plant and animal species, and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing the extinction of plants and wildlife. The FESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Candidate species are plants and animals for which USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the FESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Under the FESA, it is unlawful to "take" any listed species; "take" is defined as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

5.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. The MBTA protects more than 800 species of birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

The MBTA (16 USC 703 et seq.), as amended, prohibits the intentional take of any migratory bird or any part, nest, or eggs of any such bird. Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a Memorandum of Understanding. USFWS reviews actions that might affect these species.

5.3 Clean Water Act

The Clean Water Act provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator for a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the Clean Water Act. The Regional Water Quality Control Board administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. USACE implementing regulations are found at

33 Code of Federal Regulations (CFR) 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

5.4 Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. USACE exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as that portion that falls within the limits of the ordinary high water mark. Typically, the ordinary high water mark corresponds to the 2-year flood event.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by USACE 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" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (USACE 1987).

6 Methods

6.1 Database and Literature Review

Prior to conducting a biological reconnaissance of the study areas, Dudek reviewed USFWS species occurrence data from the USFWS Information for Planning and Consultation (IPaC) (USFWS 2023a), USFWS critical habitat data (USFWS 2023b), and National Wetlands Inventory (NWI) data (USFWS 2023c) prior to conducting the reconnaissance-level site visits to identify any special-status species and resources that are known to occur or may potentially occur in the vicinity of the study areas. Potential and/or historic drainages and aquatic features were investigated based on a review of USGS topographic maps (1:24,000-scale), aerial photographs, and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023a). Any observable special-status species including flowering annual plants, shrubs and trees, and conspicuous wildlife (i.e., birds and some reptiles) considered sensitive by USFWS were also mapped.

Data regarding biological resources present within the Well 25 and Treatment Site study areas (Figure 2, Biological Resources) were obtained through a review of pertinent literature and field reconnaissance, which are described in detail in this section. For purposes of this report, special-status plant and wildlife species are those designated as either rare, threatened, or endangered by USFWS and are protected under the FESA (16 USC 1531 et seq.), as well as species that are candidate species being considered or proposed for listing under the FESA. Special-status vegetation communities and designated critical habitats are those that provide habitat essential to support recovery of special-status listed species. Note that while the proposed Well 25 and Treatment Site project occurs within the

boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), because the WMWD is a Special District, the project is not required to comply with state or regional regulations such as the Western Riverside County MSHCP.

6.2 Field Reconnaissance and Land Cover Mapping

Dudek biologist Kimberly Narel conducted reconnaissance-level field surveys of the Well 25 and Treatment Site study areas to document existing biological resources and vegetation communities on September 8 and 9, 2023, from 1100 hours to 1300 hours. The biological reconnaissance surveys were conducted during the daytime to maximize the detection of most wildlife. Limitations of the survey include a diurnal bias, as many species of reptiles, amphibians, and small mammals are secretive in their habitats or are nocturnal and are difficult to observe during the day.

Dudek used the California Department of Fish and Wildlife (CDFW) Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2018) and the California Natural Communities List (CDFW 2023), also referred to as the Natural Communities List, based on the Manual of California Vegetation, second edition (Sawyer et al. 2009), to map the study areas. These classification systems focus on a quantified, hierarchical approach that includes both floristic (plant species) and physiognomic (community structure and form) factors as currently observed. Vegetation communities and land covers were delineated to the vegetation alliance level and, where appropriate, the association level. Some modifications, such as the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986), were incorporated to accommodate the lack of conformity of the observed communities to those included in these references.

Vegetation mapping was conducted on foot to visually cover 100% of the project site. Vegetation communities were classified based on site factors, descriptions, distribution, and characteristic species present within an area. Information was recorded, including dominant species and associated cover classes, aspect, canopy height, and visible disturbance factors. Minimum mapping units were established at 0.25 acres. Dudek GIS analysts digitized the vegetation boundaries as delineated by the field biologist and created a GIS coverage for vegetation communities on the study areas.

6.3 Flora

Latin and common names for plant species follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2023) and common names follow the USDA NRCS Plant Database (USDA 2023b). Plant species observed within the study area are provided in Attachment A, Species Compendium.

6.4 Fauna

All wildlife species detected during the biological reconnaissance by site, vocalizations, burrows, tracks, scat, and other signs were recorded. Latin and common names of animals follow the American Ornithological Society (AOS) checklist (2023) for birds, and Wilson and Reeder (2005) for mammals. Wildlife species expected to occur within the study area include common avian species typically observed in disturbed settings and urban environments such

as mourning dove (*Zenaida macroura*), house finch (*Haemorhous mexicanus*), and American crow (*Corvus brachyrhynchos*). Wildlife species observed within the study areas are provided in Attachment A.

7 Results

7.1 Existing Site Conditions

Well 25

The Well 25 project site currently consists of a vacant, graded, and compacted lot characterized as disturbed habitat and non-native grassland. The study area buffer is predominantly developed and consists of a parking lot, Mission Boulevard, and residential and commercial development (Attachment B, Photo Log). The study area is relatively flat with elevation ranges between 770 and 780 feet above mean sea level (amsl). The site is located approximately 0.23 miles east of the Santa Ana River, which discharges into the Pacific Ocean. The Santa Ana River is designated as Critical Habitat for Santa Ana sucker (*Catostomus santaanae*), and is mapped on the NWI as a freshwater forested wetland and riverine feature (Attachment D) (USFWS 2023b, 2023c). Access to the site is gained via the adjacent parking lot along Mission Boulevard.

Treatment Site

The study area consists of a developed junkyard on the southern portion, with non-native grassland on the northern half of the study area. A circular patch of disturbed habitat from a horse training ring occurs in the center of the site. Access to the study area is gained via 34th Street. The site occurs approximately 1,000 feet east of the Santa Ana River, which discharges into the Pacific Ocean. The Santa Ana River is designated as Critical Habitat for Santa Ana sucker, and is mapped on the NWI as a freshwater forested wetland and riverine feature (USFWS 2023b, 2023c).

7.2 Soils

Well 25

According to the USDA NRCS Web Soil Survey, two soil types are mapped within the Well 25 study area: Delhi fine sand, 2–15% slopes, wind-eroded, and Grangeville loamy fine sand, drained, 0–5% slopes (USDA 2023a). These two soil types are described in further detail herein. However, due to the previously graded nature of the project site and location within an urban setting, these soil types are remnants as they have been significantly altered from their natural condition due to the grading and compaction of surface soils.

Delhi Series. The Delhi soil series consists of very deep, somewhat excessively drained soils that formed in wind-modified material weathered from granitic rock sources. Delhi sands are on floodplains, alluvial fans, and terraces from 0 to 15% at elevations ranging from 25 to 1,400 feet amsl. Delhi fine sands have a depth to water table greater than 80 inches and a depth to restrictive layer greater than 80 inches. Delhi soils are associated with the federally endangered Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*), which is native to the inland empire of Southern California. It feeds on nectar from flowers and feeds, mates, and lay eggs in the Delhi sand dunes from July through September. There are about a dozen populations of this species in Riverside and

San Bernardino Counties. Note that no dunes occur on the Well 25 study area that are capable of supporting Delhi Sands flower-loving fly.

Grangeville Series. The Grangeville series consists of very deep, somewhat poorly drained soils that formed in moderate coarse-textured alluvium dominantly from granitic rock sources. Grangeville soils are on alluvial fans and floodplains and have slopes ranging from 0 to 2% at elevations between 0 and 1,800 feet amsl. Some areas are saline and saline-sodic affected. Grangeville loamy fine sand, drained, has a surface water table and a restrictive layer at greater than 80 inches.

Treatment Site

According to the USDA NRCS Web Soil Survey, one soil type is mapped within the Treatment Site study area: Grangeville loamy fine sand, drained, 0–5% slopes. Note that the southern portion of the study area is developed by 34th Street and residential development, which have significantly altered the natural condition of surface soils. The Grangeville soil series is described above.

7.3 Vegetation Communities and Land Covers

A total of three vegetation communities and/or land covers were observed on the Well 25 and Treatment Site study areas (Figure 2). No sensitive or native vegetation communities were observed. The three observed vegetation communities and/or land covers are described herein. Figure 2 depicts soils and mapped vegetation communities/land covers within the study areas.

Well 25

Non-Native Grassland. The project site is dominated by ruderal forbs and grasses characteristic of non-native grassland. Non-native grassland is not recognized by the Natural Communities List (CDFW 2023) but is described by Oberbauer et al. (2008). The quality of non-native grassland on the project site has been negatively affected by trampling, vehicles, illegal dumping, and surface compaction from prior grading. Characteristic species observed on the project site include Bermuda grass (*Cynodon dactylon*), ripgut brome (*Bromus diandrus*), slender oat (*Avena barbata*), puncture vine (*Tribulus terrestris*), flax-leaf fleabane (*Erigeron bonariensis*), spotted spurge (*Euphorbia maculata*), southern Russian thistle (*Salsola tragus*), shortpod mustard (*Hirschfeldia incana*), stinknet (*Oncosiphon pilulifer*), common lambsquarters (*Chenopodium album*), cheeseweed mallow (*Malva parviflora*), cowpen daisy (*Verbesina encelioides*), and prickly lettuce (*Lactuca serriola*). A limited number of annual native herbs were observed within the non-native grassland, specifically annual burweed (*Ambrosia acanthicarpa*) and slender sunflower (*Helianthus gracilentus*).

Disturbed Habitat. A dirt path bisects the project site from the residential development to the south and terminates at Mission Boulevard. Multiple tire and pedestrian tracks were observed on the dirt path, which is characterized as disturbed habitat. The Disturbed Habitat mapping unit is not recognized by the Natural Communities List (CDFW 2023) but is described by Oberbauer et al. (2008). Disturbed habitat is described as areas that have been physically disturbed by previous human activity and are no longer recognizable as native or naturalized vegetation, but continue to retain a soil substrate. Vegetation, if present, is nearly exclusively composed of non-native ornamentals or ruderal exotic species that take advantage of disturbance. Examples of disturbed land include areas that have been graded or have experienced repeated use that prevents natural revegetation (Oberbauer et al. 2008).

Urban/Developed Land . The surrounding study area buffer consists of developed land. The Urban/Developed land cover mapping unit is not recognized by the Natural Communities List (CDFW 2023) but is described by Holland (1986). Urban/developed land refers to areas that have been constructed upon or disturbed so severely that native vegetation is no longer supported (Holland 1986). Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials (Holland 1986). Developed areas are generally graded and compacted, sometimes covered with gravel road base or built, and have little to no vegetation present. Developed land on the study area consists of Mission Boulevard, residential and commercial development, and a parking lot. These areas support limited natural ecological processes, native vegetation, or habitat for wildlife species, and thus are not considered sensitive by federal agencies.

Ornamental vegetation was observed within portions of the Urban/Developed mapped areas. Specifically, ornamental vegetation occurs along Mission Boulevard, immediately north of the Well 25 project site. Ornamental vegetation observed along Mission Boulevard included palm trees (*Washingtonia filifera*), tree of heaven (*Ailanthus altissima*), and ornamental shrubs, which may provide suitable nesting and foraging habitat for a number of common resident and migratory bird species protected under the MBTA. Suitable nesting habitat for common species such as American crow and house sparrow (*Passer domesticus*) occurs within ornamental vegetation on the study area.

Treatment Site

Non-Native Grassland. The project site consists of ruderal forbs and grasses characteristic of non-native grassland on the northern half of the project site, with recently disced non-native grassland in the northern study area buffer. Non-native grassland is not recognized by the Natural Communities List (CDFW 2023) but is described by Oberbauer et al. (2008). The quality of non-native grassland on the project site has been negatively affected by horse trampling, refuse, and vehicles. Characteristic forbs and grasses observed include Bermuda grass, ripgut brome, puncture vine, shortpod mustard, southern Russian thistle, cheeseweed mallow, cowpen daisy, common fiddleneck (*Amsinckia intermedia* var. *menziesii*), and foxtail barley (*Hordeum murinum*). Some native herbs were observed within the non-native grassland, including jimsonweed (*Datura wrightii*) and Palmer's amaranth (*Amaranthus palmeri*). Non-native trees, including tree tobacco (*Nicotiana glauca*) and tree of heaven, bordered the fence line between non-native grassland and developed land on the project site.

Disturbed Habitat. A circular patch of disturbed habitat occurs in the center of the project site. The Disturbed Habitat mapping unit is not recognized by the Natural Communities List (CDFW 2023) but is described by Oberbauer et al. (2008). The circular patch of disturbed habitat consists of loose, upturned soil and horse manure from an active horse training ring.

Urban/Developed Land. The southern half of the project site consists of developed land characterized by a fenced vehicle junkyard. The western and southern study area buffers consist of a paved road (34th Street) and residential development.

7.4 Special-Status Species

7.4.1 Special-Status Wildlife

No special-status wildlife species were observed within the Well 25 and Treatment Site study areas during the biological reconnaissance. A total of 24 plant species (6 native and 18 introduced) and 5 wildlife species (4 native and 1 introduced) were observed. Attachment A details all observed species within the Well 25 and Treatment Site study areas.

According to USFWS's IPaC, six federally listed threatened or endangered wildlife species and one federal candidate wildlife species are known to occur within the immediate vicinity of the Well 25 and Treatment Site study areas: Stephens' kangaroo rat (*Dipodomys stephensi*), coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus),* southwestern willow flycatcher (*Empidonax traillii extimus*), Santa Ana sucker, Delhi Sands flower-loving fly, and monarch butterfly (*Danaus plexippus*) (Attachment C). These species and their potential to occur within the study areas are described in further detail below.

Stephens' Kangaroo Rat. This small, nocturnal mammal is listed as threatened under the FESA and is endemic to Southern California. It is a fossorial rodent that inhabits warm, arid environments, generally open grasslands and sparsely vegetated scrub, where it eats seeds. They construct and live in underground burrow systems used for shelter, protection from predators, food storage, and nesting, preferring gravelly soils. Breeding activity is higher in winter and spring. Populations of Stephens' kangaroo rat occur in three geographic regions of Southern California: western Riverside County, and western and central San Diego County.

Although sparsely vegetated non-native grassland occurs on both the Well 25 and Treatment Site study areas, no small animal burrows were observed to support Stephens' kangaroo rat. Additionally, surface soils at Well 25 have been compacted and graded, making it difficult for fossorial species to dig burrows. Further, although loose upturned soils on disturbed habitat and non-native grassland on the Treatment Site study area are slightly more capable of supporting foraging and burrowing habitat for Stephens' kangaroo rat, frequent use by horses from adjacent residential development has prevented fossorial species from burrowing on the study area. Finally, the nearest occurrence records on the California Natural Diversity Database for this species are separated from the study areas by the Santa Ana River, and Stephens' kangaroo rat is not known to occur within Jurupa Valley. Therefore, this species is not expected to occur on the study areas.

Coastal California Gnatcatcher. The federally threatened coastal California gnatcatcher is a blue-gray songbird that inhabits several distinctive sub-associations of the coastal sage scrub plant community, especially those dominated by *Artemisia californica*. It generally avoids crossing even small areas of unsuitable habitat, preferring dry coastal slopes, washes, and mesas with areas of low plant growth (about 1 meter high).

Both Well 25 and Treatment Site study areas are devoid of native coastal sage scrub vegetation capable of supporting the coastal California gnatcatcher. As such, the lack of suitable habitat and native vegetation communities observed at both study areas eliminate the potential for this species to occur.

Least Bell's Vireo. This federally threatened songbird is endemic to California. It inhabits dense brush consisting of mesquite (*Prosopis* sp.), willow/cottonwood (*Salix/Populus*) forest, riparian areas, streamside thickets, and scrub oak (*Quercus berberidifolia*), in arid regions but often near water. It prefers open woodland and brush in winter.

This species nests in shrubs or low trees, usually averaging about 1 meter above ground, often willow or other dense shrubbery such as mulefat (*Baccharis salicifolia*) and California rose bush (*Rosa californica*).

The study areas are located between 0.10 and 0.23 miles east of the Santa Ana River, which contains potentially suitable riparian habitat for this species. However, the Santa Ana River is separated from both study areas by urban development. Additionally, the lack of suitable native dense willow/cottonwood habitat and natural wetland habitat on the study areas would prevent this species from using either study area as a stopover or nesting site. As such, this species has no potential to occur.

Southwestern Willow Flycatcher. The federally endangered southwestern willow flycatcher is a summer breeder within dense riparian vegetation near surface water or saturated soils in the southwest United States. Nesting for this neotropical migrant begins in late May and early June with fledging from late June to mid-August. For nesting, it requires dense riparian habitats with cottonwood/willow or tamarisk vegetation. Saturated soils, standing water, or nearby streams are a component of nesting. Habitat not suitable for nesting may be used for migration and foraging. The southwestern willow flycatcher primarily eats flying insects. This species is typically found below 8,500 feet amsl.

The study areas are located between 0.10 and 0.23 miles east of the Santa Ana River, which contains potentially suitable riparian habitat for this species. However, the Santa Ana River is separated from both study areas by urban development. Additionally, the lack of suitable native dense willow/cottonwood habitat and natural wetland habitat at the study areas would prevent this species from using the area as a stopover or nesting site. As such, this species has no potential to occur.

Santa Ana Sucker. This federally threatened freshwater fish is endemic to California, historically occupying upper watershed areas of the San Gabriel and San Bernardino Mountains down to the Pacific Ocean. At present, the Santa Ana sucker is found in three disjunct populations that occupy portion of the San Gabriel, Los Angeles, and Santa Ana River basins in Southern California. Santa Ana suckers rely on perennial flows with suitable water quality and substrate to support breeding, feeding, and sheltering. Over different life history stages, it depends on a variety of coarse substrate types such as gravel, cobble, or mixtures of both with sand, and a variety of riverine features, predominantly in the shallow portions of rivers and streams.

Both study areas are devoid of aquatic habitat capable of supporting this species. However, the Santa Ana River is located approximately 0.10 miles from the proposed Treatment Site, and 0.23 miles from the Well 25 site. The lower and middle Santa Ana River is designated critical habitat for the Santa Ana sucker (Attachment E). However, the study areas do not contain suitable aquatic habitat capable of supporting this species. Further, the Santa Ana River is separated by urban development from the study areas. As such, this species is not expected to occur at or within the immediate vicinity of the study areas.

Delhi Sands Flower-Loving Fly. This federally endangered fly is found in the sandy foothills of the San Gabriel and San Bernardino Mountains. It spends about 95% of its life underground within Delhi sand dunes from July through September. They are active during the hottest part of the day; the females lay their eggs below the sand, where larvae pupate and emerge from the soil as adults in the early summer. Adults appear to feed exclusively on nectar from the blooms of California buckwheat (*Eriogonum fasciculatum*).

No Delhi sands or natural dunes occur on the Treatment Site study area. However, the southern portion of the Well 25 study area is mapped as Delhi fine sands. Although suitable soils for Delhi Sands flower-loving fly are mapped on the Well 25 study area, prior compaction and grading have significantly altered surface soils, and no natural dunes are present on the study area. Further, no known food plants for this species, such as California buckwheat, were observed on either study area. As such, Delhi Sands flower-loving fly is not expected to occur on either study area.

Monarch Butterfly. This federal candidate is an herbivorous invertebrate that breeds in patches of milkweed throughout the United States. It overwinters in coastal California conifer or Eucalyptus groves. Coastal regions are important flyways and migratory stopovers where floral nectar from wild plants or gardens are an important resource. As the California overwintering population of monarch butterfly is a candidate species, it is a species that USFWS finds warrants a proposal to list as endangered or threatened, but listing is precluded by higher priority listing activities. Candidate species receive no statutory protection under the FESA. USFWS encourages cooperative voluntary conservation efforts for candidate species, such as formal Candidate Conservation Agreements between USFWS and the participating party, because they are, by definition, species that may warrant future protection under the FESA. Both study areas contain limited suitable ruderal and ornamental vegetation with floral nectar resources (cowpen daisy, tree tobacco, jimsonweed, wild gourd) capable of supporting this species. As such, there is a low potential for this species to opportunistically forage on the Well 25 and Treatment Site study areas within the non-native grassland and ornamental vegetation.

All the above federally listed or candidate wildlife special-status species are not expected to occur or have a low potential to occur and are not discussed further.

7.4.2 Special-Status Plants

According to the USFWS IPaC occurrence records, four federally listed threatened or endangered plant species are known to occur at or within the immediate vicinity of the Well 25 and Treatment Site study areas: Nevin's barberry (*Berberis nevinii*), San Diego ambrosia (*Ambrosia pumila*), Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), and slender-horned spineflower (*Dodecahema leptoceras*). These species and their potential to occur within the study areas are described in further detail below.

Nevin's Barberry. This federally endangered evergreen shrub is endemic to California and found in Los Angeles, San Bernardino, Riverside, and possibly San Diego Counties. It inhabits a variety of different topographical conditions ranging from nearly flat sandy washes, terraces, and canyon floors to ridges and mountain summits. This plant is also associated with mesic habitats and plant communities such as alluvial scrub, chamise chaparral, coastal sage scrub, oak woodland, and riparian scrub or woodland.

No suitable topography, mesic or native habitat is present on either study area to support Nevin's barberry. As such, this species is not expected to occur on the study areas.

San Diego Ambrosia. This federally endangered clonal, monoecious perennial herb is endemic to Southern California. It flowers from May through October at elevations below 1,600 feet and generally occurs in floodplain terraces and watershed margins of vernal pools and alkali playas, as well as open grasslands and upland areas on clay slopes.

No clay or alkali soils are mapped on the Well 25 and Treatment Site study areas. In addition, no floodplains, riparian habitats, wetlands, or vernal pool habitats are present. The study areas are relatively flat and no uplands occur on or in the immediate vicinity. Note that one native ambrosia species, annual burweed, was observed within non-native grassland on the Well 25 Site. No other ambrosia species were observed on either study area. Although open non-native grassland is present on both Well 25 and Treatment Site study areas, there are no wetlands, mesic habitats, or suitable substrates capable of supporting San Diego ambrosia on site. As such, this species is not expected to occur on either study area.

Santa Ana River Woolly-Star. The federally endangered Santa Ana River woolly-star is endemic to the Santa Ana River drainage in Southern California, in Riversidian alluvial fan sage scrub communities. It thrives in open areas that receive a lot of sun and where there are infrequent flood events that contribute to seed dispersal. It grows in sandy areas and is a pioneer subshrub that flowers between May and August, and fruits from July to October. Most occurrence records are in San Bernardino and Riverside Counties.

The Santa Ana River occurs approximately 0.23 miles east from the Well 25 study area and 1,000 feet east from the Treatment Site study area. However, no Riversidian alluvial fan sage scrub vegetation occurs on either study area, and the Santa Ana River is separated from both study areas by urban development. No wetlands occur on either study area. As such, Santa Ana River woolly-star is not expected to occur on the study areas.

Slender-Horned Spineflower. The federally endangered slender-horned spineflower is an annual plant endemic to southwestern California. It is found in silt-rich floodplains and washes in alluvial fan sage scrub and areas prone to drought. Specifically, slender-horned spineflower occurs in the floodplains surrounding the Santa Ana and San Jacinto Rivers.

No alluvial fans, alluvial sage scrub, or silt-rich floodplains occur on either study area to support slender-horned spineflower. Although this species is present within alluvial fan scrub along the Santa Ana River, which lies approximately 0.20 miles east from the study areas, it is separated from the Well 25 and Treatment site study areas by urban development. Therefore, slender-horned spineflower is not expected to occur on the study areas.

7.5 Designated Critical Habitat

According to the USFWS online Critical Habitat Mapper, the Well 25 and Treatment Site study areas are not located within designated critical habitat for any federally listed species. Designated critical habitat is defined as specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features essential to conservation of the species and that may require special management considerations or protection (USFWS 2023b).

Note that designated critical habitat for the Santa Ana sucker occurs approximately 0.2 miles east of the Well 25 study area and 1,000 feet east from the Treatment Site study area (Attachment E). Essential physical habitat or biological features for the Santa Ana sucker (e.g., Santa Ana River) are not present at or within the immediate vicinity of either study area. Additionally, no primary constituent elements (aquatic resources) of the designated critical habitat occur within the study areas. Project activities will not encroach into this designated critical habitat and, as such, direct and indirect impacts to Santa Ana sucker critical habitat are not anticipated to occur due to Well 25 and Treatment Site project implementation.

7.6 National Wetlands Inventory

While the Well 25 and Treatment Site study areas do not contain any mapped wetlands, the Santa Ana River flows north–south approximately 0.2 miles east of the Well 25 study area and 1,000 feet east from the Treatment Site study area (USFWS 2023c). The Santa Ana River is mapped as a riverine and freshwater forested/shrub and emergent wetland that is separated from the study areas by urban development (USFWS 2023c). No project activities are proposed to encroach into the Santa Ana River. As such, implementation of the proposed project is not anticipated to have a direct or indirect impact on mapped wetlands located within the immediate vicinity of the study areas.

8 Impacts

Due to the urban setting surrounding Well 25 and Treatment Site study areas, no special-status species or sensitive habitats were observed during the biological reconnaissance. Construction of the proposed project would not encroach into any native habitats or sensitive biological areas such as the Santa Ana River to the east. Therefore, the project would have no effect on federally listed species or federally protected waters and wetlands, would not remove any potentially suitable habitat for federally listed species, nor would it affect any USFWS-designated critical habitat.

However, the project may likely affect migratory bird species protected by the MBTA that may nest within the ornamental vegetation on the Well 25 and Treatment Site study areas, particularly if vegetation removal occurs during the avian nesting season of February through August. To reduce potential project-related effects to nesting birds, pre-construction clearance surveys are recommended below.

9 Recommendations

Nesting Bird Avoidance and Minimization Measures. To avoid potential indirect impacts to nesting birds protected by the MBTA, project activities should avoid the avian nesting season of February through August. If this season cannot be avoided, then a pre-construction clearance survey should be conducted within 3 days prior to vegetation removal to determine the presence/absence of any nesting bird species within 500 feet of the project sites. If a nesting bird is found, an avoidance buffer will be established around the nest, based on the species' sensitivity to disturbance and proximity to impact areas. The buffer will remain in place as long as the nest is considered active, as determined by a qualified on-site biologist. No encroachment into the buffer may occur as long as a nest is still active.

10 References

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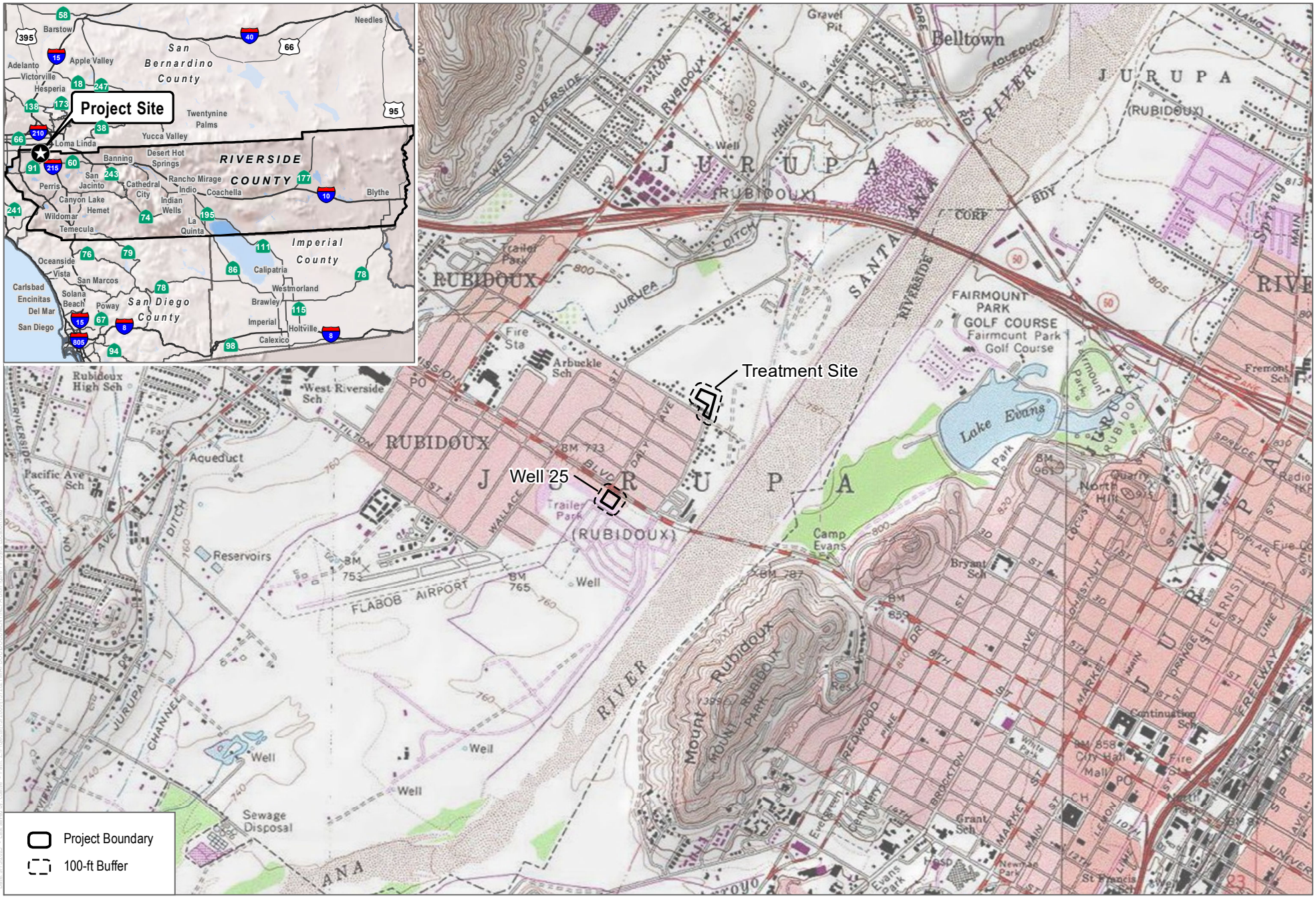

SOURCE: USGS 2023

DUDEK

FIGURE 1

Project Location

WMWD Jurupa Valley Project

SOURCE: ESRI 2023

DUDEK

0 250 500 Feet

FIGURE 2

Biological Resources

WMWD Jurupa Valley Project

Attachment A

Species Compendium

Plant Species

Angiosperms (Dicots)

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – tumbleweed
  Amaranthus palmeri – Palmer's amaranth

ASTERACEAE – SUNFLOWER FAMILY

  Ambrosia acanthicarpa – annual burweed
* *Erigeron bonariensis* – flax-leaved horseweed
  Helianthus gracilentus – slender sunflower
* *Lactuca serriola* – prickly lettuce
* *Oncosiphon pilulifer* – stinket
* *Verbesina encelioides* – cowpen daisy

BORAGINACEAE – BORAGE FAMILY

  Amsinckia intermedia var. *menziesii* – rancher's fireweed, common fiddleneck

BRASSICACEAE – MUSTARD FAMILY

* *Hirschfeldia incana* – short-pod mustard

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Salsola tragus* – southern Russian thistle

CUCURBITACEAE – GOURD FAMILY

  Cucurbita foetidissima – wild gourd

EUPHORBIACEAE – SPURGE FAMILY

* *Euphorbia maculata* – spotted spurge

MALVACEAE – MALLOW FAMILY

* *Malva parviflora – cheeseweed mallow*

PORTULACEAE – PURSLANE FAMILY

* *Portulaca oleracea* – common purslane

SIMAROUBACEAE – PARADISE TREE FAMILY

* *Ailanthus altissima* – tree of heaven
  Datura wrightii – jimsonweed

SOLANACEAE – NIGHTSHADE FAMILY

* *Nicotiana glauca* – tree tobacco

ZYGOPHYLLACEAE – CALTROP FAMILY

* *Tribulus terrestris* – puncture vine

Angiosperms (Monocots)

ARECACEAE – PALMS

* *Washingtonia robusta* – Mexican fan palm

POACEAE – GRASSES

* *Avena barbata* – slender oat
* *Bromus diandrus* – ripgut brome
* *Cynodon dactylon* – Bermuda grass
* *Hordeum murinum* – foxtail barley

Wildlife Species – Vertebrates

Birds

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

CORVIDAE – JAYS AND CROWS

Corvus brachyrhynchos – American crow

FRINGILLIDAE – FINCHES

Carpodacus mexicanus – house finch

Mammals

DIDELPHIDAE – OPOSSUMS

* *Didelphis virginiana* – opossum

Reptiles

PHRYNOSOMATIDAE – SIDE BLOTCHED LIZARDS

Uta stansburiana – common side-blotched lizard

* signifies introduced (non-native) species

Attachment B

Photo Log

1. Overview of Well 25 Project Site, facing south

2. Well 25 Project Site, facing east

3. Well 25 Project Site, facing west

4. Well 25 Project Site, facing north

5. View of Treatment Site, facing south

6. View of Treatment Site, facing east

7. View of Treatment Site, facing north

8. View of Treatment Site, facing west

Attachment C

USFWS IPAC Species Lists

Attachment C1

Well 25 Site

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To:
Project Code: 2023-0126641
Project Name: Jurupa Valley Well 25

September 08, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A biological assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a biological assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a biological assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found at the Fish and Wildlife Service's Endangered Species Consultation website at:

https://www.fws.gov/service/esa-section-7-consultation

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2023-0126641
Project Name: Jurupa Valley Well 25
Project Type: Commercial Development
Project Description: WMND development for HUD EA
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.9924616,-117.39927812712568,14z

Counties: Riverside County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Stephens' Kangaroo Rat *Dipodomys stephensi (incl. D. cascus)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3495	Threatened

BIRDS

NAME	STATUS
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

FISHES

NAME	STATUS
Santa Ana Sucker *Catostomus santaanae* Population: 3 CA river basins There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3785	Threatened

INSECTS

NAME	STATUS
Delhi Sands Flower-loving Fly *Rhaphiomidas terminatus abdominalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1540	Endangered
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Nevin's Barberry *Berberis nevinii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8025	Endangered
San Diego Ambrosia *Ambrosia pumila* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8287	Endangered
Santa Ana River Woolly-star *Eriastrum densifolium ssp. sanctorum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6575	Endangered
Slender-horned Spineflower *Dodecahema leptoceras* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4007	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: County of Riverside
Name: Kimberly Narel
Address: 27372 Calle Arroyo
City: San Juan Capistrano
State: CA
Zip: 92675
Email knarel@dudek.com
Phone: 9495085745

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Housing and Urban Development

Attachment C2

Treatment Site

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To:
Project Code: 2023-0126677
Project Name: Jurupa Valley treatment site

September 08, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

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Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2023-0126677
Project Name: Jurupa Valley treatment site
Project Type: Commercial Development
Project Description: WMND development - HUD EA
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.9966748,-117.39441995265861,14z

Counties: Riverside County, California

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Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

FISHES

NAME	STATUS
Santa Ana Sucker *Catostomus santaanae* Population: 3 CA river basins There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3785	Threatened

INSECTS

NAME	STATUS
Delhi Sands Flower-loving Fly *Rhaphiomidas terminatus abdominalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1540	Endangered
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Nevin's Barberry *Berberis nevinii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8025	Endangered
San Diego Ambrosia *Ambrosia pumila* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8287	Endangered
Santa Ana River Woolly-star *Eriastrum densifolium ssp. sanctorum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6575	Endangered
Slender-horned Spineflower *Dodecahema leptoceras* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4007	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: County of Riverside
Name: Kimberly Narel
Address: 27372 Calle Arroyo
City: San Juan Capistrano
State: CA
Zip: 92675
Email knarel@dudek.com
Phone: 9495085745

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Housing and Urban Development

Attachment D

NWI Wetlands Map

U.S. Fish and Wildlife Service

National Wetlands Inventory

Jurupa Valley

September 11, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Attachment E

USFWS Critical Habitat Map

Critical Habitat for Threatened & Endangered Species [USFWS]

A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

APPENDIX C

Cultural Resources Inventory Report

Cultural Resources Inventory Report

Rubidoux Community Services District Well 25 Project, City of Jurupa Valley, Riverside County, California

NOVEMBER 2023

Prepared for:

WESTERN MUNICIPAL WATER DISTRICT
14205 Meridian Parkway
Riverside, California 92518
Contact: Melissa Matlock, PhD

Prepared by:

Roshanne Bakhtiary, MA
Makalya Murillo, BA
Micah Hale, PhD, RPA

DUDEK

605 Third Street
Encinitas, California 92024

Printed on 30% post-consumer recycled material.

National Archaeological Database Information

Authors:	Roshanne Bakhtiary, MA; Makayla Murillo, BA; and Micah Hale, PhD, RPA
Firm:	Dudek
Project Proponent:	Western Municipal Water District
Report Date:	November 2023
Report Title:	Cultural Resources Inventory for the Rubidoux Community Services District Well 25 Project, City of Jurupa Valley, Riverside County, California
Type of Study:	Phase I Cultural Resources Inventory
New Resources:	None
Updated Sites:	None
USGS Quads:	Riverside West and Fontana 7.5', T2S and R5W, Jurupa Rancho Land Grant
Acreage:	Approximately 2.4-acres
Permit Numbers:	N/A
Keywords:	Intensive Pedestrian Survey; City of Jurupa Valley; Riverside County; Rubidoux Community Services District; Negative Survey; No Historic Properties Affected

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Executive Summary

This report presents the results of Dudek's Phase I cultural resources inventory conducted for the Rubidoux Community Services District Well 25 Project (Project), located within the City of Jurupa Valley, Riverside County, California. The proposed Project involves the construction of a new well (Well 25) on a vacant lot located 0.1 miles northwest of the intersection of Mission Boulevard (Blvd) and Crestmore Road (Rd), and the construction of an associated treatment plant (Treatment Plant) approximately five blocks north of the proposed Well 25 location, at the western corner of the intersection of 34th Street and Crestmore Rd. The Project area is located in Township 2 South and Range 5 West of the Riverside West, California U.S. Geological Survey 7.5-minute series quadrangle map (Figure 1, Project Location). This study included a records search, an archival information and literature review, correspondence with the Native American Heritage Commission, a cultural resources pedestrian survey of Project APE, and the preparation of this cultural resources technical report.

Rubidoux Community Services District (District) is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA). Per funding conditions of the WaterSMART Drought Response Program (WaterSMART), all work and reporting were completed in compliance with Section 106 of the National Historic Preservation Act (NHPA). The United States Bureau of Reclamation (Reclamation) administers WaterSMART, and issuance of WaterSMART funds by Reclamation is considered equivalent to a federal action, thereby necessitating compliance with Section 106. In accordance with CEQA, local regulations, and Section 106 of the NHPA, Dudek conducted a Phase I cultural resources inventory for the entire Project area of potential effects (APE). The Project APE consists of both proposed Project locations (Well 25 APE and Treatment Plant APE) totaling approximately 2.4-acres. The vertical APE for Well 25, as represented by the maximum depth of drilling required to ensure water supply to the well, will be approximately 170 feet (ft) below ground surface. To date, the vertical APE for the Treatment Plant is assumed to be approximately 5 ft below ground surface (Figure 2, Area of Potential Effects Map).

Dudek conducted a records search of the Project APE and the surrounding one-mile radius at the Eastern Information Center (EIC). The records search did not identify any previously recorded cultural resources within the Project APE, though 96 previously recorded cultural resources were identified within one mile of the Project APE. The large majority (85) of these resources are historic-era built environment resources associated with the development of Riverside County over the 20th century. Additionally, a Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search was requested, and results were positive for Native American cultural resources within one mile of the Project APE, though the NAHC did not provide details on what the resource(s) are or where they are located.

Dudek archaeologist Roshanne Bakhtiary conducted an intensive-level pedestrian survey of the Project APE on September 12, 2023. A small portion of the Treatment Plant APE was not surveyed due access issues (approximately 20%). No prehistoric or historic-era cultural resources were identified within the Project APE as part of this field effort. Additionally, a review of historic topographic maps and aerial imagery indicate the entire Project APE has been disturbed by past development, grading and clearing, and overland vehicle travel.

Based on the available archival information indicating disturbances within the Project APE, the nature of the historic-era built environment resources within one-mile of the Project APE, and in consideration of the lack of prehistoric archaeological resources adjacent to the Project APE; there is low potential for the inadvertent discovery of cultural resources during earthmoving activities. No cultural resources are likely to be impacted (No Historic Properties Affected) by the Project. In consideration of the negative results of the EIC records search, archival research, and

intensive-level pedestrian survey, no further archaeological efforts or mitigation, including cultural resources construction monitoring, are recommended to be necessary in support of Project implementation.

In the unlikely event that archaeological resources are encountered during the exposure of subsurface soils within the Project APE, ground-disturbing work should be immediately halted, and a qualified archaeologist should be retained to evaluate the resource(s). Management recommendations to reduce potential impacts to unanticipated archaeological resources and human remains during construction activities are in Section 5 of this report.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
amsl	above mean sea level
APE	Area of potential effects
APN	Assessor Parcel Number
Blvd	Boulevard
Reclamation	United States Bureau of Reclamation
ca.	circa
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
District	Rubidoux Community Services District
DPR	Department of Parks and Recreation
EIC	Eastern Information Center
ft	feet
HP	horsepower
HRP	Historic Resources Board
MLD	most likely descendant
NAHC	Native American Heritage Commission
NPS	National Park Service
NRHP	National Register of Historic Places
PFAS	Perfluoroalkyl and Polyfluoroalkyl
PRC	California Public Resources Code
Project	Rubidoux Community Services District Well 25
Project partners	Rubidoux Community Services District, Western Municipal Water District, and Riverside Highland Water Company
SLF	Sacred Lands File
St	Street
TCP	Trichloropropane
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WaterSMART	WaterSMART Drought Response Program

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1 Introduction

Dudek conducted a Phase I cultural resources inventory for the Rubidoux Community Services District Well 25 Project (Project), located in the City of Jurupa Valley, Riverside County, California. Rubidoux Community Services District (District) is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA). Per funding conditions of the WaterSMART Drought Response Program (WaterSMART), all work and reporting were completed in compliance with Section 106 of the National Historic Preservation Act (NHPA). The United States Bureau of Reclamation (Reclamation) administers WaterSMART, and issuance of WaterSMART funds by Reclamation is considered equivalent to a federal action, thereby necessitating compliance with Section 106. In accordance with CEQA, local regulations, and Section 106 of the NHPA, Dudek conducted a Phase I cultural resources inventory for the entire Project area of potential effects (APE). This study included a records search, an archival information and literature review, correspondence with the Native American Heritage Commission, a cultural resources pedestrian survey of Project APE, and the preparation of this cultural resources technical report.

1.1 Project Location

The proposed Project involves the construction of a new well (Well 25) on a vacant lot located 0.1 miles northwest of the intersection of Mission Blvd and Crestmore Rd, and the construction of an associated treatment plant (Treatment Plant) approximately five blocks north of the proposed Well 25 location, at the western corner of the intersection of 34th Street and Crestmore Rd, in the City of Jurupa Valley, California. The Project area is located in Township 2 South and Range 5 West of the Riverside West, California U.S. Geological Survey 7.5-minute series quadrangle map and encompasses Assessor Parcel Number (APN) 181-120-014 and the southern portion of APN 179-270-017 (Figure 1, Project Location). The Project APE consists of the Well 25 APE, which is approximately 1 acre in size, and the Treatment Plant APE, which is approximately 1.4 acres in size (Figure 2, Area of Potential Effects Map). The vertical APE for Well 25, as represented by the maximum depth of drilling required to ensure water supply to the well, will be approximately 170 feet (ft) below ground surface. The vertical APE for the Treatment Plant is assumed to be approximately 5 ft below ground surface.

1.2 Project Description

The District, along with Western Municipal Water District and Riverside Highland Water Company (Project partners) propose the construction of a series of water infrastructure projects that will increase potable water supply to Riverside County and reduce the demand on the drought-stressed imported water supplies from the Bay-Area Delta in Northern California and the Colorado River, while also increasing drought resiliency. Specifically, the proposed Project involves the construction of a new well (Well 25) and a treatment plant (Treatment Plant) to treat for Per- and Polyfluoroalkyl Substances (PFAS) and 1, 2, 3 Trichloropropane (TCP) removal. This includes the drilling of a well and outfitting it with a pump and 200 horsepower (HP) motor. The well will be drilled approximately 170 ft in depth and will pump directly to the District's pressure zone 1066'. The proposed Project also includes the development of a treatment plant for the well. The design of the treatment system and water quality results at Well 25 will determine if granular activated carbon or ion exchange (resin media) filtration will be implemented.

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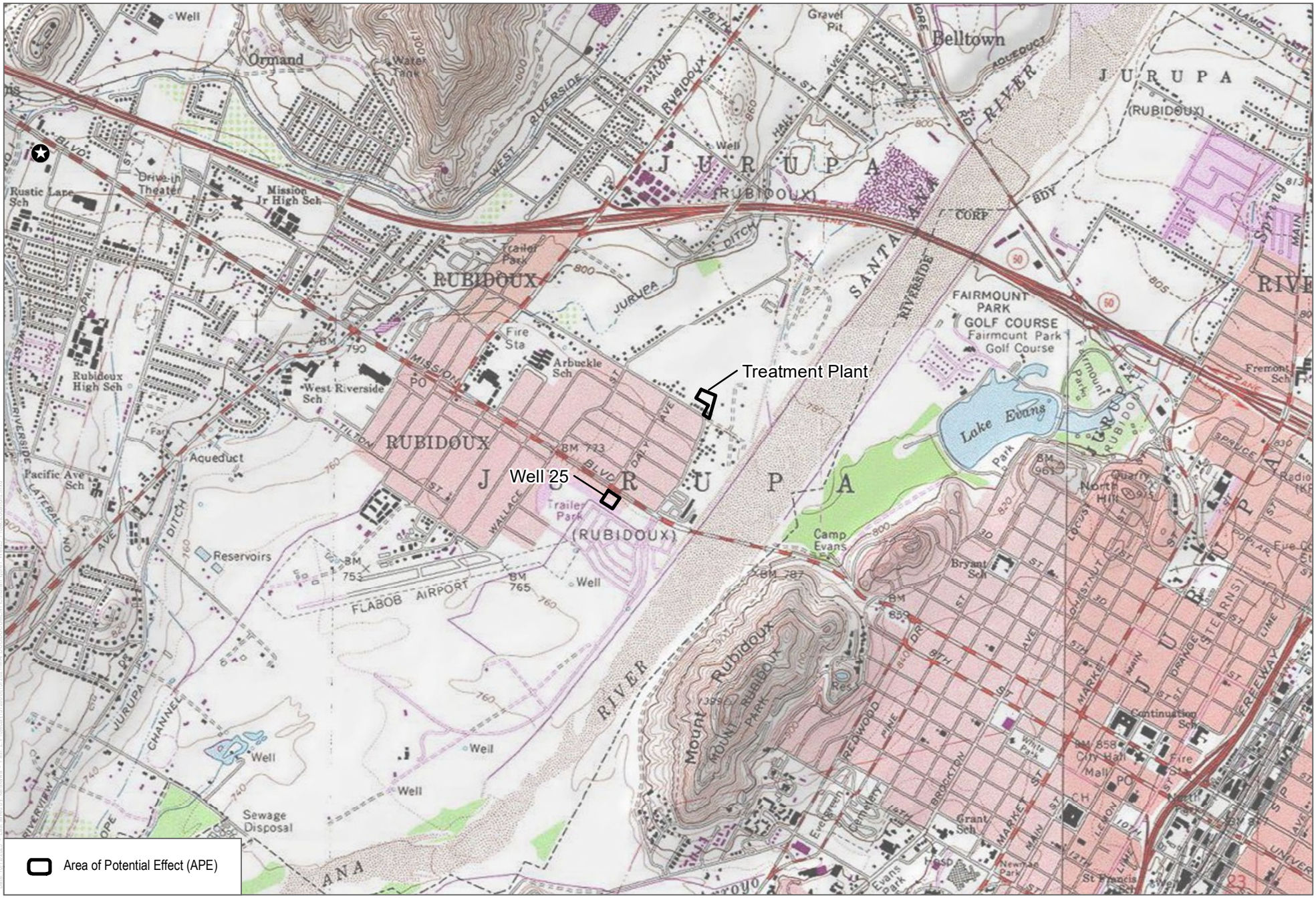

SOURCE: USGS 7.5-Minute Series Murrieta Quadrangle
Township 2S/ Range 5W/ Section 15

DUDEK

0 1,000 2,000 Feet
0 285 570 Meters

FIGURE 1

Well 25 Project Location Map

WMWD Jurupa Valley Project

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SOURCE: USGS 7.5-Minute Series Murrieta Quadrangle
Township 2S/ Range 5W/ Section 15

0 125 250 Feet
0 35 70 Meters

DUDEK

FIGURE 2-1

Well 25 APE Map

WMWD Jurupa Valley Project

SOURCE: USGS 7.5-Minute Series Murrieta Quadrangle
Township 2S/ Range 5W/ Section 15

0 125 250 Feet
0 35 70 Meters

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FIGURE 2-2

Well 25 APE Map

WMWD Jurupa Valley Project

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2 Regulatory Setting

The following section provides a summary of the applicable regulations, policies, and guidelines relating to the proper management of cultural resources.

2.1 Federal Regulations

National Historic Preservation Act of 1966

Enacted in 1966, the NHPA declared a national policy of historic preservation and instituted a multifaceted program, administered by the National Parks Service, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the National Register of Historic Places (NRHP), established the position of State Historic Preservation Officer and provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP, and that the ACHP must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings. The Project will be coordinating with US Army Corps of Engineers and any other federal permitting entities to ensure that permit processing is completed in accordance with the requirements of Section 106.

The National Register of Historic Places

The NHPA established the National Register of Historic Places (NRHP) and the President's Advisory Council on Historic Preservation (ACHP) and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs the following:

> [T]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Section 106 of the NHPA also affords the ACHP a reasonable opportunity to comment on the undertaking (16 USC 470[f]).

Title 36 of the Code of Federal Regulations (CFR), Part 800, implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes, to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and to establish the process for eliminating, reducing, or mitigating the adverse effects.

The content of 36 CFR, Part 60.4, defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association.

The National Park Service (NPS) has established guidelines for considering NRHP eligibility for a district, site, building, structure, or object (NPS 1997, 2000). To be individually eligible for the NRHP, a property must be significant within a historic context and retain integrity of those features that convey significance. The significance of a resource within its historic context must relate to one or more of the following criteria (Criteria A–D):

A. Associated with events that have made a significant contribution to the broad patterns of our history.
B. Associated with the lives of persons significant in our past (i.e., persons whose activities are demonstrably important within a local, state, or national context).
C. Embodies the distinctive characteristics of a type, period, or method of construction, or represents the works of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction (i.e., are part of a district). Discrete features, a particular building for example, may best be documented under this criterion, though collections of resources may also have significance under Criterion C for architecture or engineering association.
D. Yielded, or has the potential to yield, information important in history. To be eligible under Criterion D, the property must have, or have had, information to contribute to our understanding of human history and that information must be considered "important." Most commonly applied to archaeological sites, buildings, structures, and objects may be eligible under Criterion D if they are the principal source of information (NPS 1997:21).

In addition to these basic evaluation criteria, the NRHP outlines further criteria considerations for significance. Moved properties; birthplaces; cemeteries; reconstructed buildings, structures, or objects; commemorative properties; and properties that have achieved significance within the past 50 years are generally not eligible for the NRHP. The criteria considerations are exceptions to these rules, and they allow for the following types of resources to be NRHP eligible:

A. a religious property deriving primary significance from architectural or artistic distinction or historical importance;
B. a building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event;
C. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life;
D. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events;
E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived;
F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
G. a property achieving significance within the past 50 years if it is of exceptional importance.

Once the significance of a resource has been determined, the resource then must be assessed for integrity. Integrity is 1) the ability of a property to illustrate history and 2) possession of the physical features necessary to convey the aspect of history with which it is associated (NPS 1997:44). The evaluation of integrity is grounded in an understanding of a property's physical features and how they relate to the property's significance. Historic properties either retain integrity (that is, convey their significance) or they do not. To retain integrity, a property will always possess several, and usually most, of the seven aspects of integrity (NPS 1997:44–45, 2000:35–36):

1. *Location* is the place where the historic property was constructed or the place where the historic event occurred.
2. *Design* is the combination of elements that create the form, plan, space, structure, and style of a property.
3. *Setting* is the physical environment of a historic property.
4. *Materials* are the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property.
5. *Workmanship* is the physical evidence of crafts of a particular culture or people during any given period in history or prehistory.
6. *Feeling* is the property's expression of the aesthetic or historic sense of a particular period.
7. *Association* is the direct link between an important historic event or person and a historic property.

The 1992 amendments to the NHPA enhance the recognition of tribal governments' roles in the national historic preservation program, including adding a member of a Native American tribe or Native Hawaiian organization to the ACHP.

The NHPA amendments accomplish the following:

1. Clarify that properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register.
2. Reinforce the provisions of the Council's regulations that require the federal agency to consult on properties of religious and cultural importance.

The 1992 amendments also specify that the ACHP can enter into agreements with tribes that permit undertakings on tribal land and that are reviewed under tribal regulations governing Section 106 of the NHPA. Regulations implementing the NHPA state that a federal agency must consult with any Native American tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.

National Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation.

2.2 State Regulations

California Register of Historical Resources

In California, the term "historical resource" includes, but is not limited to, "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC Section 5020.1[j]). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for listing resources in the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the National Register of Historic Place (NRHP), enumerated as follows: According to California Public Resources Code (PRC) Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity" and (ii) meets at least one of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

The following CEQA statutes (PRC Section 21000 et seq.) and CEQA Guidelines (14 CCR 15000 et seq.) are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- PRC Section 21083.2(g) defines "unique archaeological resource."
- PRC Section 21084.1 and CEQA Guidelines Section 15064.5(a) defines "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource"; it also defines the circumstances when a project would materially impair the significance of a historical resource.

- PRC Section 21074(a) defines "tribal cultural resources."
- PRC Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated cemetery.
- PRC Sections 21083.2(b) and 21083.2(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures. Preservation in place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context and may help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (PRC Section 21084.1; 14-CCR 15064.5[b]).

A "substantial adverse change in the significance of an historical resource," reflecting a significant effect under CEQA, means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (14- CCR 15064.5[b][1]; PRC Section 5020.1[q]). In turn, the significance of a historical resource is materially impaired when a project does any of the following (14 CCR 15064.5[b][2]):

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register [CRHR]; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any historical resources, then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance would be materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (PRC Sections 21083.2[a]–[c]).

PRC Section 21083.2(g) defines a *unique archaeological resource* as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC Section 21083.2[g]):

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts on non-unique archaeological resources are generally not considered a significant environmental impact (PRC Section 21083.2[a]; 14 CCR 15064.5[c][4]). However, if a non-unique archaeological resource qualifies as a tribal cultural resource (PRC Sections 21074[c] and 21083.2[h]), further consideration of significant impacts is required.

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed in PRC Section 5097.98.

Native American Historical Cultural Sites (California Public Resources Code Section 5097 et. Seq.)

State law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the Native American Heritage Commission (NAHC) to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to 1 year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (California Repatriation Act), enacted in 2001, required all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The California Repatriation Act also provides a process for the identification and repatriation of these items to the appropriate tribes.

California State Assembly Bill 52

Assembly Bill (AB) 52 of 2014 amended PRC Section 5097.94 and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA and also provided for additional Native American consultation requirements for the lead agency. Section 21074 describes a tribal cultural resource as a site, feature, place, cultural landscape, sacred place, or object that is considered of cultural value to a California Native American tribe and that is either:

- On or determined to be eligible for the California Register of Historical Resources or a local historic register; or
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1.

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project site, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Section 1(a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on tribal cultural resources should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3[a]).

California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, the procedures are detailed in California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98.

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (California Health and Safety Code Section 7050.5[b]). PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the California NAHC within 24 hours (California Health and Safety Code Section 7050.5[c]). In accordance with California Public Resources Code Section 5097.98(a), the NAHC will notify the Most Likely Descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. Within 48 hours of being granted access to the site, the MLD may recommend means of treatment or disposition, with appropriate dignity, of the human remains and associated grave goods.

Guidelines for Determining Significance

According to CEQA (Section 15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change:

> Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.

The significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

- When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
- If a lead agency determines that the archaeological site is a historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, and this section, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
- If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c–f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
- If an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or Environmental Impact Report (EIR), if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

> When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials

with the appropriate Native Americans as identified by the Native American Heritage Commission. Action implementing such an agreement is exempt from:

1. The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5); and
2. The requirement of CEQA and the Coastal Act.

Under CEQA, an EIR is required to evaluate any impacts on unique archaeological resources (PRC Section 21083.2). A "unique archaeological resource" is defined as (PRC Section 21083.2(g)):

> [A]n archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> 1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
> 2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
> 3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

An impact to a non-unique archaeological resource is not considered a significant environmental impact and such non-unique resources need not be further addressed in the EIR (Public Resources Code Section 21083.2(a); CEQA Guidelines Section 15064.5(c)(4)).

As stated above, CEQA contains rules for mitigation of "unique archeological resources." For example (PRC Section 21083.2(b)(1)-(4)), "[i]f it can be demonstrated that a project will cause damage to a unique archeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to, any of the following:"

1. "Planning construction to avoid archeological sites."
2. "Deeding archeological sites into permanent conservation easements."
3. "Capping or covering archeological sites with a layer of soil before building on the sites."
4. "Planning parks, greenspace, or other open space to incorporate archeological sites."

PRC Section 21083.2(d) states that "[e]xcavation as mitigation shall be restricted to those parts of the unique archeological resource that would be damaged or destroyed by the project. Excavation as mitigation shall not be required for a unique archeological resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the resource, if this determination is documented in the environmental impact report."

The rules for mitigating impacts to archeological resources to qualify as "historic resources" are slightly different. According to CEQA Guidelines Section 15126.4(b), "[p]ublic agencies should, whenever feasible, seek to avoid damaging effects on any historic resource of an archeological nature. The following factors shall be considered and discussed in an EIR for a project involving such an archeological site:

A. Preservation in place is the preferred manner of mitigating impacts to archeological sites. Preservation in place maintains the relationship between artifacts and the archeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.
B. Preservation in place may be accomplished by, but is not limited to, the following:
    1. Planning construction to avoid archeological sites;
    2. Incorporation of sites within parks, greenspace, or other open space;
    3. Covering the archeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site [; and]
    4. Deeding the site into a permanent conservation easement.

Thus, although Section 21083.2 of the Public Resources Code, in addressing "unique archeological sites," provides for specific mitigation options "in no order of preference," CEQA Guidelines Section 15126.4(b), in addressing "historical resources of an archeological nature," provides that "[p]reservation in place is the preferred manner of mitigating impacts to archeological sites."

Under CEQA, "[w]hen data recovery through excavation is the only feasible mitigation," the lead agency may cause to be prepared and adopt a "data recovery plan," prior to any excavation being undertaken. The data recovery plan must make "provision for adequately recovering the scientifically consequential information from and about the historic resource" (CEQA Guidelines Section 15126.4(b)(3)(C)). The data recovery plan also "must be deposited with the California Historical Resources Regional Information Center" (CEQA Guidelines Section 15126.4(b)(3)(C)). Further, "[i]f an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation" (CEQA Guidelines Section 15126.4(b)(3)(C)).

However, "[d]ata recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archeological or historic resource, provided that determination is documented in the EIR and that the studies are deposited with the California Historical Resources Regional Information Center" (CEQA Guidelines Section 15126.4(b)(3)(D)).

2.3 Local Regulations

City of Jurupa Valley General Plan

The Conservation and Open Space Element of the City of Jurupa Valley's General Plan, adopted in 2017, details the City's plan for the conservation, protection, and management of its cultural and paleontological resources. The City's policies and programs relating to cultural and paleontological resources are outlined below (City of Jurupa Valley 2017).

Policies:

COS 7.1. Preservation of Significant Cultural Resources. Identify, protect, and, where necessary, archive significant paleontological, archaeological, and historical resources.

COS 7.2. Public Information. Encourage programs that provide public information on the City's history and cultural heritage, and participate with other agencies to help educate students about the City's rich natural and man-made environment.

COS 7.3. Development Review. Evaluate project sites for archaeological sensitivity and for a project's potential to uncover or disturb cultural resources as part of development review.

COS 7.4. Site Confidentiality. Protect the confidentiality and prevent inappropriate public exposure or release of information on locations or contents of paleontological and archaeological resource sites.

COS 7.5. Native American Consultation. Refer development projects for Native American tribal review and consultation as part of the environmental review process, in compliance with state law.

COS 7.6. Non-Development Activities. Prohibit activities that could disturb or destroy cultural resource sites, such as off-road vehicle use, site excavation or fill, mining, or other activities on or adjacent to known sites, or the unauthorized collection of artifacts.

COS 7.7. Qualified archaeologist present. Cease construction or grading activities in and around sites where archaeological resources are discovered until a qualified archaeologist knowledgeable in Native American cultures can determine the significance of the resource and recommend alternative mitigation measures.

COS 7.8. Native American Monitoring. Include Native American participation in the City's guidelines for resource assessment and impact mitigation. Native American representatives should be present during archaeological excavation and during construction in an area likely to contain cultural resources. The Native American community shall be consulted as knowledge of cultural resources expands and as the City considers updates or significant changes to its General Plan.

COS 7.9. Archaeological Resources Mitigation. Require a mitigation plan to protect resources when a preliminary site survey finds substantial archaeological resources before permitting construction. Possible mitigation measures include presence of a qualified professional during initial grading or trenching; project redesign; covering with a layer of fill; and excavation, removal and curation in an appropriate facility under the direction of a qualified professional.

COS 7.10. Historically significant buildings. Prohibit the demolition or substantial alteration of historically significant buildings and structures unless the City Council determines that demolition is necessary to remove an imminent threat to health and safety and other means to eliminate or reduce the threat to acceptable levels are physically infeasible (see Table 4.1 below). Additional unlisted historic resources may also be present and must be evaluated and protected, pursuant to CEQA requirements.

Programs:

COS 7.1.1. Historic Survey of Resources, Districts, and Neighborhoods. Conduct a survey to identify historic resources, districts and neighborhoods, such as the historic city areas or Rubidoux, Glen Avon, and Pedley with the Historic Resources Overlay and protect and, where possible, enhance their historic character through appropriate district signage, public improvements, and development incentives.

COS 7.1.2. Historical Preservation Incentives. Consider offering preservation incentives, such as the Mills Act Tax Reduction program to encourage maintenance and restoration of historic properties.

COS 7.1.3. Construction in Historic Districts. Prepare (or update, where guidelines already exist) architectural design guidelines to provide specific guidance on the construction of new buildings and public improvements within areas designated in the General Plan with the Historic Resource Overlay, such as town centers, historic districts, and historic neighborhoods.

COS 7.1.4. Public Information Programs. Foster public awareness and appreciation of cultural resources by sponsoring educational programs or by collaborating with agencies, nonprofit organizations, and citizens groups to provide public information on cultural resources and display artifacts that illuminate the City's history. The City will encourage private development to include historical and archaeological displays where feasible and appropriate.

COS 7.1.5. Cultural Resource Program. Develop a cultural resource program, describing eligible cultural resources, listing criteria, "sensitive and effective" listing procedures, noticing requirements, benefits of listing (e.g., Mills Act, flexible development standards) and historic plaques and district signage.

3 Setting

3.1 Environmental Setting

The proposed Project is in the City of Jurupa Valley, within a commercial/residential district associated with the previously unincorporated census-designated place of Rubidoux, Riverside County, California. Currently, the Treatment Plant APE is partially used as a vehicle storage and dump yard. Land uses adjacent to the Well 25 APE include a trailer park to the south; and varied commercial uses to the east, west, and north. Land uses adjacent to the Treatment Plant APE include single family housing to the south and east; a District water treatment facility to the west; and a vehicular recreation area to the north. Prior to the development of the community of Rubidoux, the Project APE was contained within the larger floodplains of the Santa Ana River, which currently runs to the east of the Project APE.

3.2 Cultural Setting

Evidence for continuous human occupation in Southern California spans the last 12,000 years. Various attempts to parse out variability in archaeological assemblages over this broad period have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions, in more or less detail, describes essentially similar trends in assemblage composition. However, given the direction of research and differential timing of archaeological study following intensive development in Riverside and San Bernardino Counties, chronology building in the Inland Empire must rely on data from neighboring regions to fill the gaps. To be more inclusive, this research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC to AD 500), Late Prehistoric (AD 500 to 1769), and Ethnohistoric (post-AD 1769).

Paleoindian Period (pre-5500 BC)

Evidence for Paleoindian occupation in the region is tenuous. Our knowledge of associated cultural patterns is informed by a relatively sparse body of data that has been collected from within an area extending from coastal San Diego through the Mojave Desert and beyond. One of the earliest dated archaeological assemblages in coastal Southern California (excluding the Channel Islands) derives from SDI-4669/W-12 in La Jolla. A human burial from SDI-4669 was radiocarbon dated to 9,920 to 9,590 years before the present (95.4% probability) (Hector 2006). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of ground stone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of ground stone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on Naval Air Weapons Station China Lake near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679), a multi-component fluted point site, and MNO-680, a single-component Great Basin stemmed point site (see Basgall et al. 2002). At MNO-679 and MNO-680, ground stone tools were rare, while finely made projectile points were common.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the San Diego region that possibly dates between 10,365 and 8200 BC. Termed *San Dieguit*o (see also Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in the San Diego region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (see also Warren 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos's interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools, at the Harris site complex is very different than nearly all other assemblages throughout the San Diego region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key Early Holocene sites. The production of finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

San Dieguito sites are rare in the inland valleys, with one possible candidate, RIV-2798/H, located on the shore of Lake Elsinore. Excavations at Locus B at RIV-2798/H produced a toolkit consisting predominantly of flaked stone tools, including crescents, points, and bifaces, and lesser amounts of ground stone tools, among other items (Grenda 1997). A calibrated and reservoir-corrected radiocarbon date from a shell produced a date of 6630 BC. Grenda suggested this site represents seasonal exploitation of lacustrine resources and small game and resembles coastal San Dieguito assemblages and spatial patterning.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in Southern California deserts, where hunting-related tools were replaced by processing tools during the Early Holocene (see Basgall and Hall 1990).

Archaic Period (8000 BC to AD 500)

The more than 2,500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in Southern California. If San Dieguito is the only recognized Paleoindian component in coastal Southern California, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the region (see Hale 2001, 2009).

The Archaic pattern, which has also been termed the Milling Stone Horizon (among others), is relatively easy to define, with assemblages that consist primarily of processing tools, such as milling stones, hand stones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in

all environments across the region with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (see Basgall and Hall 1990; Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurred until the bow and arrow was adopted around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remained low. After the bow was adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped milling stones and hand stones decreased in proportion relative to expedient, unshaped ground stone tools (Hale 2009). Thus, the terminus of the Archaic period is equally hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complemented only by the addition of the bow and arrow and ceramics.

Late Prehistoric Period (AD 500 to 1769)

The period following the Archaic and before the Ethnohistoric (AD 1769) is commonly referred to as the Late Prehistoric (Rogers 1945; Wallace 1955; Warren et al. 2004); however, several other subdivisions continue to be used to describe various shifts in assemblage composition. In general, this period is defined by the addition of arrow points and ceramics, as well as the widespread use of bedrock mortars. The fundamental Late Prehistoric assemblage is very similar to the Archaic pattern but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred before AD 1400. In Riverside County and the surrounding region, milling stones and hand stones persisted in higher frequencies than mortars and pestles until the last 500 years (Basgall and Hall 1990); even then, weighing the economic significance of milling stone–hand stone versus mortar–pestle technology is tenuous due to incomplete information on archaeological assemblages.

3.3 Ethnographic Overview

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, although these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Bean and Shipek 1978; Boscana 1846; Harrington 1934; Laylander 2000; Sparkman 1908; White 1963). The principal intent of these researchers was to record the precontact and culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as “salvage ethnography,” was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his “memory culture” approach (Lightfoot 2005, p. 32) by recording languages and oral histories within the region.

Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities.

It is important to note that even though there were many informants for these early ethnographies who were able to provide information from personal experiences about native life before the Europeans, a significantly large proportion of these informants were born after 1850 (Heizer and Nissen 1973); therefore, the documentation of precontact aboriginal culture was being increasingly supplied by individuals born in California after considerable contact with Europeans. As Heizer (1978) stated, this is an important issue to note when examining these ethnographies, because considerable culture change had undoubtedly occurred by 1850 among the Native American survivors of California.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006, p. 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007).

Golla contended that one can interpret the amount of variability within specific language groups as being associated with the relative "time depth" of the speaking populations (Golla 2007, p. 80). A large amount of variation within the language of a group represents a greater time depth than a group's language with less internal diversity. One method that Golla has employed involves drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla observed that the "absolute chronology of the internal diversification within a language family" can be correlated with archaeological dates (Golla 2007, p. 71). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

The tribes of this area have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007, p. 74). These groups include the Gabrielino, Cahuilla, Luiseño, and Serrano. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010).

Gabrielino

Based on evidence presented through past archaeological investigations, the Gabrielino appear to have arrived in the Los Angeles Basin around 500 B.C. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

The names by which Native Americans identified themselves have, for the most part, been lost and replaced by those derived by the Spanish people administering the local Missions. These names were not necessarily representative of a specific ethnic or tribal group, and traditional tribal names are unknown in the post-Contact period. The name "Gabrielino" was first established by the Spanish from the San Gabriel Mission and included people from the established Gabrielino area as well as other social groups (Bean and Smith 1978; Kroeber 1925). Many modern Native Americans commonly referred to as Gabrielino identify themselves as descendants of the indigenous people

living across the plains of the Los Angeles Basin and refer to themselves as the Tongva (King 1994). This term is used here in reference to the pre-Contact inhabitants of the Los Angeles Basin and their descendants.

The Tongva established large, permanent villages along rivers and streams, and lived in sheltered areas along the coast. Tongva lands included the greater Los Angeles Basin and three Channel Islands, San Clemente, San Nicolas, and Santa Catalina and stretched from the foothills of the San Gabriel Mountains to the Pacific Ocean. Tribal population has been estimated to be at least 5,000 (Bean and Smith 1978), but recent ethnohistoric work suggests a much larger population, approaching 10,000 (O'Neil 2002). Archaeological sites composed of villages with various sized structures have been identified through the Los Angeles Basin. Within the permanent village sites, the Tongva constructed large, circular, domed houses made of willow poles thatched with tule, each of which could hold upwards of 50 people (Bean and Smith 1978). Other structures constructed throughout the villages probably served as sweathouses, menstrual huts, ceremonial enclosures, and communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996).

The environment surrounding the Tongva included mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like most native Californians, acorns (the processing of which was established by the early Intermediate Period) were the staple food source. Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978:546; Kroeber 1925; McCawley 1996).

Tools and implements used by the Tongva to gather and collect food resources included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Trade between the mainland and the Channel Islands Groups was conducted using plank canoes as well as tule balsa canoes. These canoes were also used for general fishing and travel (McCawley 1996).

The collected food resources were processed food with hammerstones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925; McCawley 1996).

Luiseño

The Luiseño language belongs to the Cupan group of the Takic language branch of the Uto-Aztecan language family. Luiseño is a term given to Native Americans under the administration of Mission San Luis Rey, and later applied specifically to the Payomkawichum ethnic nation who were present in the region where the mission was founded. Meaning the "western people," the name Payomkawichum can also be applied to the closely related coastal Luiseño who lived north of the mission.

Luiseño territory was situated in the north half of San Diego County and the western edge of Riverside County. Their lands encompassed the southern Santa Margarita Mountains and the Palomar Mountains, and their foothills to the Pacific Ocean. The territory extended eastward into the San Jacinto Valley and the western foothills of the San Jacinto Mountains. Their neighbors to the were the Juaneño (Acjachemen) who spoke a Luiseño dialect; the Cahuilla and Cupeño to the east who spoke other Takic Cupan languages; and the Ipai (Kumeyaay) to the south who spoke a California-Delta Yuman language.

The Luiseño resided in permanent villages and associated seasonal camps. Village population ranged from 50-400 with social structure based on lineages and clans. A single lineage was generally represented in smaller villages, while multiple lineages and a dominant clan presided in larger villages. Each clan/village owned a resource territory and was politically independent, yet maintained ties to others through economic, religious, and social networks in the immediate region. There were contact period villages in the vicinity of this segment, near the towns of Vista, San Marcos, and Escondido, but researchers have been unable to place rancheria names from the mission registers with these locations.

Like other Indigenous California groups, the primary food staple was the acorn (Bean and Shipek 1978), supplemented by other plant resources, fish, shellfish, waterfowl, and marine and terrestrial mammals. Villages were situated near reliable sources of water, needed for the daily leaching of milled acorn flour. Other plant foods included pine nuts and grass seeds, manzanita, sunflower, sage, chia, lemonade berry, wild rose, holly-leaf cherry, prickly pear, and lamb's quarter. Large and small prey included deer, antelope, rabbit, jackrabbit, wood rat, mice, and ground squirrel, as well as quail, ducks, and other birds. Fish, such as trout, were caught in rivers and creeks.

The first direct European contact with the Luiseño occurred in July 1769 with the Spanish expedition led by Gaspar de Portolá. During the next six years, eight missions and forts were founded north and south of Luiseño territory. In 1776, Mission San Juan Capistrano was founded less than 10 miles north, and the populations of five northern Luiseño villages had been halved within 15 years. In 1798, Mission San Luis Rey was established within Luiseño territory, and the proselytizing among the Payomkawichum began in earnest.

Several Luiseño leaders signed the statewide 1852 treaty, locally known as the Treaty of Temecula (an interior Luiseño village), but the U.S. Congress never ratified it. By 1875, however, reservations for the Luiseño were established in the Palomar Mountains and nearby valleys, including Pala, Pauma, Rincon, Pechanga, and La Jolla.

Cahuilla

The name "Cahuilla" is possibly derived from a native word meaning a "master, boss" (Bean 1978: 575). *'Ivi'lyu'atam* is the traditional term for the linguistically and culturally defined Cahuilla cultural nationality, and "refers to persons speaking the Cahuilla language and recognizing a commonly shared cultural heritage" (Bean 1972: 85). Some scholars (e.g. Moratto 1984: 559) suggest that the Cahuilla migrated to southern California about 2,000 to 3,000 years ago, most likely from southern Sierra Nevada ranges of east–central California with other related socio-linguistic groups (i.e., the Takic speakers). The Cahuilla then settled in a territory that extended west to east from the present-day City of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from Lake Elsinore to the San Bernardino Mountains. While 60% of Cahuilla territory was located in the Lower Sonoran Desert environment, 75% of their diet from plant resources was acquired in the Upper Sonoran and Transition environmental zones (Bean 1978: 576).

The Cahuilla had three primary levels of socio-political organization (Bean 1978). The highest level was the cultural nationality, encompassing everyone speaking a common language. Next were the two patrimoieties of the Wildcats (*tuktum*) and the Coyotes (*'istam*). Every clan of the Cahuilla fell into one or the other of these moieties. The third basic level consisted of the numerous political–ritual–corporate units called sibs, or patrilineal clans (Bean 1978). While anthropologists have designated groups of Cahuilla clans by their geographical location into Pass, Desert, and Mountain, suggesting dialectic and ceremonial differences between these groupings, these social and linguistic areas were more a result of proximity than actual social connections. In reality, there was a continuum of minor

differences from one clan to the next. Lineages within a clan cooperated in defense, in community subsistence activities, and in religious ceremonies. While most lineages owned their own village site and particular resource area, much of the territory was open to all Cahuilla people.

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water, such as springs or where large wells could be dug. Each family and lineage had their houses (*kish*) and granaries for the storage of food, and ramadas for work and cooking. There would often be sweat houses and song houses (for non-religious music). Each community also had a separate house for the lineage or clan leader. There was a ceremonial house, or *kíš ʔámnawet*, associated with the clan leader, where major religious ceremonies were held. Houses and ancillary structures were often spaced apart, and a "village" could spread out over a mile or two.

A wide variety of tools and implements were employed by the Cahuilla to gather and collect food resources. For the hunt, these included the bow and arrow, traps, nets, slings and blinds for hunting land mammals and birds, and nets for fish in Holocene-epoch Lake Cahuilla. Rabbits and hares were commonly taken with the throwing stick, but communal hunts for these animals utilized tremendously large nets and clubs for mass-capture. Foods were processed with a variety of tools, including portable stone mortars, bedrock mortars and pestles, basket hopper mortars, manos and metates, bedrock grinding slicks, hammerstones and anvils, woven strainers and winnowers, leaching baskets and bowls, woven parching trays, knives, bone saws, and wooden drying racks. Food was consumed from a number of woven and carved wood vessels and pottery vessels. The ground meal and unprocessed hard seeds were stored in large finely woven baskets, and the unprocessed mesquite beans were stored in large granaries woven of willow branches and raised off the ground on platforms to keep it from vermin. Pottery vessels were made by the Cahuilla, and also traded from the Yuman-speaking groups across the Colorado River and to the south.

By 1819, several Spanish mission outposts, known as *asistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto, but interaction with Europeans was not as intense in the interior Cahuilla region as it was for coastal groups. The topography and lack of water also made the area less attractive to colonists than the coastal valley regions. By the 1820s, however, the Pass Cahuilla were experiencing consistent contact with the ranchos of Mission San Gabriel, while the individuals and families of the Mountain branch of the Cahuilla were frequently employed by private rancheros and were also recruited to Mission San Luis Rey.

By the 1830s, Mexican ranchos were located near Cahuilla territory along the upper Santa Ana and San Jacinto rivers, thus introducing the Cahuilla to ranching and an extension of traditional agricultural techniques. The Bradshaw Trail was established in 1862 and was the first major east–west stage and freight route through the Coachella Valley. Traversing San Gorgonio Pass, the trail connected gold mines on the Colorado River with the coast. Bradshaw based his trail on the Cocomaricopa Trail, with maps and guidance provided by local Native Americans. Journals by early travelers along the Bradshaw Trail told of encountering Cahuilla villages and walk-in wells during their journey through the Coachella Valley.

The continuing expansion of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic in 1862–63. By 1891, only 1,160 Cahuilla remained in their traditional territory, down from a population of 6,000–10,000 (Bean 1978). By 1974, approximately 900 people claimed Cahuilla descent, most living on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla within their territory (Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez). Four of the reservations are shared with other groups, including the Chemehuevi, Cupeño, and Serrano (Bean 1978).

Serrano

The Project is also located of the ethnographically known territory occupied by the Serrano Native American group. The Serrano language is part of the Serrano division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 1999). The Serrano language was originally spoken by a relatively small group located within the San Bernardino and Sierra Madre Mountains, and the term *Serrano* has come to be ethnically defined as the name of the people in the San Bernardino Mountains (Kroeber 1925). The traditional territory for the Serrano centered in the San Bernardino Mountains and extended northeast into parts of the Mojave River area and southeast to the Tejon Creek area (Bean and Smith 1978). Their territory extended west along the northern slopes of the San Gabriel Mountains, east as far as Twentynine Palms, north along the Mojave River, and south to the Yucaipa Valley. The Vanyume, who lived along the Mojave River and associated Mojave Desert areas and are also referred to as the Desert Serrano, spoke either a dialect of Serrano or a closely related language (Mithun 1999).

The Serrano were mainly hunters and gatherers who occasionally fished. A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (Bean and Smith 1978). Game that was hunted included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, piñon nuts, bulbs and tubers, shoots and roots, berries, mesquite, barrel cacti, and Joshua tree (Bean and Smith 1978).

Settlement locations were determined by water availability, and most Serranos lived in small villages near water sources. Houses and ramadas were round and constructed of poles covered with bark and tule mats (Kroeber 1925). Most Serrano villages also had a ceremonial house used as a religious center. Other structures within the village might include granaries and sweathouses (Bean and Smith 1978). The Serrano were loosely organized along patrilineal lines and associated themselves with either the Tukum (wildcat) or the Wahilyam (coyote) moiety. Individual bands of Serrano constituted political groups (Kroeber 1925). Partly due to their mountainous inland territory, contact between Serrano and European- Americans was minimal prior to the early 1800s. In 1819, an asistencia (mission outpost) was established near present-day Redlands and was used to help relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (Bean and Smith 1978).

3.4 Historic Period Overview

Post-Contact history for the State of California is generally divided into three periods: the Spanish Period (1769–1821), Mexican Period (1821–1848), and American Period (1846–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning

of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769–1821)

Spanish explorers made sailing expeditions along the coast of southern California between the mid-1500s and mid-1700s. In search of the legendary Northwest Passage, Juan Rodríquez Cabrillo stopped in 1542 at present-day San Diego Bay. With his crew, Cabrillo explored the shorelines of present Catalina Island as well as San Pedro and Santa Monica Bays. Much of the present California and Oregon coastline was mapped and recorded during the next half-century by Spanish naval officer Sebastián Vizcaíno. Vizcaíno's crew also landed on Santa Catalina Island and at San Pedro and Santa Monica Bays, giving each location the names we use today. The Spanish crown laid claim to California based on the surveys conducted by Cabríllo and Vizcaíno (Bancroft 1885; Gumprecht 1999).

More than 200 years passed before Spain began the colonization and inland exploration of Alta California. The 1769 overland expedition by Captain Gaspar de Portolá marks the beginning of California's Historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonial matters in assigned territories of the Americas. With a band of 64 soldiers, missionaries, Baja California Native Americans, and Mexican civilians, Portolá established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, while Portolá was exploring southern California, Franciscan Friar Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823.

Included in the 21 missions is the Mission San Luis Rey de Francia at the Luiseño village of Temecula. In 1819, the Mission granted land to Leandro Serrano, the highest locally appointed official (or "mayordomo") of San Antonio de Pala Asistencia, for the Mission of San Luis Rey for Rancho Temescal. From around 1819 until his death in 1852, Serrano built and occupied three separate adobe residences in the county. In 1828, Leandro was elected as the mayordomo of Mission San Juan Capistrano. Serrano's family resided in the third adobe residence until around 1898 (Elderbee 1918).

Mexican Period (1821–1848)

It was in the early 1820s that Spain's grip on its expansive subjugated territories began to unravel, which greatly affected the political and national identity of the Southern California territory. Mexico established its independence from Spain in 1821, secured California as a Mexican territory in 1822, and became a federal republic in 1824. After the Mexican independence and the 1833 confiscation of former Mission lands, Juan B. Alvarado became governor of the territory. In 1836, Alvarado began the process of subdividing the County of Riverside into large ranchos: Rancho Jurupa in 1838; El Rincon in 1839; Rancho San Jacinto Viejo in 1842; Rancho San Jacinto y San Gorgonio in 1843; Ranchos La Laguna, Pauba, and Temecula in 1844; Ranchos Little Temecula and Potreros de San Juan Capistrano in 1845; and Ranchos San Jacinto Sobrante, La Sierra (Sepulveda), La Sierra (Yorba), Santa Rosa, and San Jacinto Nuevo y Potrero in 1846 (Brown and Boyd 1922; Fitch 1993). While these ranchos were established in documentation, the cultural and commercial developments of the Ranchos were punctuated and generally slow with little oversight or assistance from the government in Mexico. On May 22, 1840, Governor Alvarado granted the "11-league" Rancho Jurupa to Don Juan Bandini (Stonehouse 1965).

In 1843, La Placita de los Trujillos, or "La Placita" (also known as "San Salvador" and regionally nicknamed "Spanish Town"), was established in Riverside County and has been since recognized as one of the first non-native settlements in

the San Bernardino Valley (Brown and Boyd 1922). A group of genízaro colonists from Abiquiú, New Mexico, arrived in the area in the early 1840s (Nostrand 1996). Don Juan Bandini donated a portion of Rancho Jurupa to them on the condition that they would assist in protecting his livestock from Indian raids. Lorenzo Trujillo led 10 of the colonist families to 2,000 acres on the "Bandini Donation" on the southeast bank of the Santa Ana River and formed the village of La Placita. In 1852, the same year that Leandro Serrano died, the Los Angeles County Board of Supervisors established a town called "San Salvador" encompassing a number of small, growing communities in the area initially known as "La Placita." San Salvador was mainly a community of agriculture and animal husbandry until around the late 1860s with the occurrence of "the Great Flood of 1862" and a second flood later in 1886, causing the local population to abandon the immediate area, which had been largely a ghost town until the recent modern introduction of waste transferal and recycling facilities to the area (Elderbee 1918).

American Period (1848–Present)

In the late 1840s and early 1850s, after the arrival of a growing European-descended American and other foreign populations and the conclusion of the Mexican-American war with the Treaty of Guadalupe Hidalgo, issues concerning the land rights immediately ensued with results that often largely favored newly introduced American interests (Starr 2007; Hale 1888). The California Gold Rush was in full steam with a heavy influx of new immigrants from not only across the United States but international travelers many from Asian and Latin American countries changing the dynamics of the local populations. Growth in the region's population was inevitable with the major shifts in the popular social perceptions of potential economic opportunities that California had to offer during the 1850s. The local population growth was further facilitated by the creation of the Temescal Station of the Butterfield Overland Mail Route in 1857 and the organization of the first Temescal School District (Elderbee 1918).

3.5 Historical Overview of Riverside County

For a brief time, tin mining was a source of local development in the Los Angeles Basin. Tin mining had been initiated in the 1850s by Able Stearns but proved largely unsuccessful and was stagnant for years due to litigation disputes that were not settled until 1888 by the U.S. Supreme Court. After the dispute settlement, miners converged on the region, swelling the immediate population while the tin mine enjoyed a 2-year run of operations, closing down for good in 1892 (Elderbee 1918). The growth of the area increased steadily as the region's economic focus shifted from ranching/animal husbandry to a more fruit orchard/agricultural lifestyle greatly influenced by the idyllic Mediterranean climate and the introduction of large numbers of honeybees and hives (Elderbee 1918).

In March of 1870, John Wesley North issued a circular entitled "A Colony for California" to promote the idea of founding an agriculture-based colony in California. Prospective investors met in Chicago on May 18, and the interest expressed led to formation of the Southern California Colony Association. This success prompted North to head to Los Angeles. North arrived on May 26, initially intending to settle the colony there. However, the association directors decided on the Jurupa rancho along the banks of the Santa Ana River, purchasing it from the California Silk Association in August of that same year. North then took up residence on site for the purpose of surveying and developing the colony. He envisioned small-scale farmers growing fruits appropriate to paradise: oranges, lemons, figs, walnuts, olives, almonds, grapes, sweet potatoes, sorghum, and sugar beets (Stonehouse 1965). The community was originally called "Yurupa" but the name was changed to "Riverside" in December of 1870 (Stonehouse 1965; Patterson 1971; Wlodarski 1993). The citrus industry increased dramatically during the 1880s, with promotion of the area shifting to focus on the potential wealth to be had through agriculture (California Department of Transportation 2007).

Of particular note is the introduction of the navel orange to the budding California citrus industry. Two navel orange trees from Brazil's Bahia Province were gifted to Eliza Tibbets by William Saunders, horticulturalist at the U. S. Department of Agriculture. Eliza and her husband, Luther, brought the trees to the Riverside colony and planted them in 1873. These parent trees produced sweet-tasting seedless fruits, sparking the interest of local farmers and becoming so popular that the fruits from these trees eventually became known as "Riverside Navel." The fruit's popularity helped establish Riverside as a national leader in cultivating oranges. One of the two original parent Washington navel orange trees is still extant, growing near the intersection of Arlington and Magnolia Avenue, and is "mother to millions of navel orange trees the world over;" the tree is designated as California Historical Landmark No. 20 (Hurt 2014).

In the later-nineteenth century, the railroad industry began to connect vast swaths of the county with a rail-line transportation system that had previously required extremely slow travel and often with dangerous travel conditions. The initial rail line developed in the region around 1882 was the California Southern railroad, which then connected with the Santa Fe transcontinental line in 1885. In 1887, C.W. Smith and Fred Ferris of the California Southern Railroad and J.A. Green incorporated the Valley Railway to serve the region. The San Jacinto Valley Railroad was constructed the next year, in 1888; it traveled southeast from Perris, then east across the valley, gradually curving northeast to its terminus at San Jacinto (George and Hamilton 2009). With the combination of rail transportation, the packing industry, and cold storage facilities, Riverside was able to yield over one-half million boxes of oranges by 1890 (Wlodarski 1993).

3.6 Historical Overview of Rubidoux, California

The Project APE is within the community of Rubidoux, a once unincorporated area of Riverside County that lays directly west, over the Santa Ana River, from the county seat of the City of Riverside. This area was historically a part of the Rancho Jurupa Land Grant owned by Mission San Gabriel. It wasn't until 1847, when Louis Robidoux purchased 6,700-acres of the 32,000-acre Rancho Jurupa, that the area was named Robidoux Rancho, only to be renamed to "West Riverside" after the founding (1870) of the town of Riverside that lay directly across the Santa Ana River from the Rancho. By the 1950s, the community was finally given the name "Rubidoux", likely to distinguish itself from the City of Riverside and its incorporated communities, of which Rubidoux was not one (Johnson 2007).

The early history of Rubidoux was inextricably tied to the whims of the Santa Ana River. Before levees were developed to control seasonal flooding, the river's floodplains reached across a much wider area and into the Robidoux Rancho, causing a series of great floods that effected the productivity of the farmland in the area. Robidoux slowly began to sell off portions of his rancho at the turn of the century, usually in 50 to 100-acre segments at a time. The town of Rubidoux dates back to the 1920s when these first subdivisions were developed by landowners like Cornelius Boy Jensen and Arthur Parks. Some of the earliest commercial buildings first appeared on Mission Blvd, and included markets, hardware stores, a five-and-dime, a dress shop, restaurants, and other typical stores found in small-town commercial districts of the 1940s and 1950s. Businesses in the commercial district began to dwindle and shutter starting in the 1960s, as middle-class families moved away from Rubidoux and into other housing tracts with larger homes in surrounding communities (Johnson 2007).

The Riverside County communities of Jurupa Hills, Mira Loma, Glen Avon, Pedley, Indian Hills, Belltown, Sunnyslope, Crestmore Heights, and Rubidoux were incorporated into the City of Jurupa Valley on July 1, 2011. The City covers a 44-square mile area and boarders San Bernardino County to the north, Riverside to the south and east, and

Eastvale and San Bernardino County to the west. Today, the City is a mix of high and low-density residential development, rural farming and agricultural lands, and commercial retail and industrial activity (City of Jurupa Valley 2023). Although the community of Rubidoux has experienced some form of revitalization with its incorporation into the City of Jurupa Valley (lower crime, improvements in civil works and infrastructure), the community is still predominantly characterized as a rural residential district with Mission Blvd remaining the center of commerce (Johnson 2007).

4 Methods and Results

4.1 Records Search

Dudek archaeologist Roshanne Bakhtiary conducted a records search of the California Historical Resources Information System (CHRIS) on September 7, 2023 at the Eastern Information Center (EIC) located on the campus of the University of California, Riverside. The records search encompassed the entire proposed Project APE and a one-mile search radius. The purpose of the records search is to identify any previously recorded cultural resources that may be located in or adjacent to the Project APE and to identify previous studies in the Project vicinity. In addition to a review of previously prepared site records and reports, the records search also included a review of historical maps of the project area, ethnographies, the NRHP, the CRHR, the California Historic Property Data File, and the lists of California State Historical Landmarks, California Points of Historical Interest, and Archaeological Determinations of Eligibility.

Previously Conducted Cultural Resources Studies

The EIC records search indicates that 34 previous cultural resources technical studies have been conducted within one mile of the proposed Project APE between 1988 and 2020 (Table 1). Of the 34 studies, two intersect the Project APE. These include one archaeological and paleontological assessment report (RI-8061) and an historic properties inventory and evaluation report (RI-8402). Based on previous studies, approximately 50% of the Project APE has been subject to prior cultural resources investigations. See Appendix A for the complete EIC records search results and associated documentation.

Table 1. Previously Conducted Cultural Resources Studies within 1-Mile of Project APE

Report No.	Date	Author	Title
Intersects Project APE			
RI-08061	2004	Gust, Sherri, Alice Orton and Victoria Avalos	Archaeological and Paleontological Assessment Report and Mitigation Plan for the EMR Project
RI-08402	2010	Tang, Bai “Tom”, and Michael Hogan	Identification and Evaluation of Historic Properties Well Nos. 18 and No. 18 Iron and Manganese Removal Facility
Outside the Project APE			
RI-02307	1988	Hampson, R. Paul, Jerrel Sorensen, Suasan K. Goldberg, Mark T. Swanson, and Jeanne E. Arnold	Cultural Resources Survey, Upper Santa Ana River, California
RI-02371	2003	White, Laurie S. and Robert S. White	Results of an Emergency Archaeology Monitoring Program for A Water Line Repair Project, Jensen-Alvarado Ranch, Rubidoux, Riverside County
RI-02619	1989	Drover, Christopher E.	An Archaeological Assessment of The River Terrace Complex, Riverside, California.

Table 1. Previously Conducted Cultural Resources Studies within 1-Mile of Project APE

Report No.	Date	Author	Title
RI-02750	1990	Swope, Karen	Archaeological Assessment of APN 207-033-018 Located on Mount Rubidoux in The City of Riverside, Riverside County, California
RI-02751	1991	Love, Bruce	Letter Report: Purchase Order No. 75306, Lakehill Circle Storm Drain
RI-02752	1993	Goodman, John David Ii	Spring Rancheria: Archaeological Investigations of A Transient Cahuilla Village In Early Riverside, California
RI-02938	1990	Drover, Christopher E.	An Archaeological Assessment of The Mt. Rubidoux Golf Course Project Riverside County, California.
RI-03897	1995	Keller, Jean A.	A Phase I Cultural Resources Assessment of Emerald Meadows Ranch, 155.0 Acres Of Land Near Rubidoux, Riverside County, California
RI-04400	2000	Love, Bruce, Bai "Tom" Tang, Michael Hogan, and Mariam Dahdul	Identification And Evaluation of Historic Properties Mission/ La Rue Senior Housing Project, In The Community of Rubidoux Riverside County, California.
RI-04426	2002	Love, Bruce, Bai "Tom" Tang, Daniel Ballester, Laura Hensley Shaker, and Mariam Duhdul	Identification And Evaluation Of Historic Properties: Rubidoux Community Library & Administration Facility, In The Community of Rubidoux, Riverside County, California
RI-04481	2002	Historic Resource Associates	Determination Of Eligibility For The USDA Natural Resource Conservation Services (NRCS), Area Office/Old United States Salinity Laboratory, Riverside, California
RI-04586	2002	White, Robert S. and Laura S. White	A Cultural Resources Assessment of A 3.63-Acre Parcel Located Adjacent To The East Side Of Pierce Street At The 91 Freeway, City of Riverside, Riverside County
RI-04722	2001	Carr, Peter E.	Cultural Resource Assessment: Hector's Pallet Yard Project, City of Rubidoux, Riverside County, California
RI-05737	2005	Dice, Michael	Phase I Cultural Resources Survey Report For The Stockdale-Rubidoux Project (Apn#178-150-001, -002), Belltown Area, County of Riverside, California.
RI-06114	2005	Aislin-Kay, Marnie	Letter Report: Records Search Results and Site Visit For Nextel Telecommunications Facility Candidate Ca5374a Elham, 2958 Rubidoux Boulevard, Riverside, Riverside County, California.
RI-06604	2006	Tang, Bai "Tom", Michael Hogan, and Terri Jacquemain	Historical/Archaeological Resources Survey Report, Assessor's Parcel No. 179-160-001, In The Community of Rubidoux, Riverside County, California
RI-06607	2006	Tang, Bai "Tom", Michael Hogan, Casey Tibbet, Terri Jacquemain, and Josh Smallwood	Historical/Archaeological Resources Survey Report, Tentative Tract Map No. 32973, In The Community of Rubidoux, Riverside County, California
RI-06608	2006	Tang, Bai "Tom", Michael Hogan, Casey Tibbet, and Terri Jacquemain	Historical/Archaeological Resources Survey Report, Tentative Tract Map No. 32975, In The Community of Rubidoux, Riverside County, California

Table 1. Previously Conducted Cultural Resources Studies within 1-Mile of Project APE

Report No.	Date	Author	Title
RI-06609	2006	Tang, Bai "Tom", Michael Hogan, Casey Tibbet, and Terri Jacquemain	Historical/Archaeological Resources Survey Report, Tentative Tract Map No. 32974, In The Community of Rubidoux, Riverside County, California
RI-06869	2006	Tetra Tech, Inc.	An Archaeological Survey of The Proposed Jurupa Truck Facility, Rubidoux, Riverside County, California
RI-07772	2008	Gust, Sherri	Phase I Archaeological Assessment Report For The Emerald Meadows Ranch West Project In Riverside County, California
RI-07773	2008	Austerman, Virginia	Cultural Resources Assessment Fairmount Park Lake Dredging Project City of Riverside Riverside County California
RI-07916	2007	Sander, Jay K.	Cultural Resources Inventory of 11.6 Acres: Apn: 543-170-007, 543-160-006, And 543-140-022 Banning, Riverside County, California
RI-08151	2004	Wilkman, Bill	Cultural Resources Property Report 4648 Ladera Lane, Riverside, Ca 92501, APN 207-022-003, Final Report.
RI-08381	2010	Sander, Jay K.	Archaeological Survey Report For Southern California Edison's Pole Replacement Project: Highgrove-Corona 115KV Circuit, San Bernardino And Riverside Counties, California.
RI-08400	2010	Daly, Pamela	Letter Report: Evaluation of The Riviera Family Restaurant.
RI-08549	2011	Tang, Bai "Tom", Michael Hogan, Terri Jacquemain, and Daniel Ballester	Master Planned Development Project: Mission Plaza
RI-08555	2010	Bai "Tom" Tang, Michael Hogan, Terri Jacquemain, and Daniel Ballester	Letter Report: Rancho Jurupa Sports Park Project
RI-09445	2014	Brunzell, David	Archaeological Monitoring Results for 3105 Redwood Drive, City of Riverside, Riverside County, California (BCR Consulting Job No. RIV1401)
RI-09459	2016	Tang, Bai "Tom" and Michael Hogan	Historical/Archaeological Resource Survey Report Tentative Tract Map No. 36947 City of Jurupa Valley Riverside County, California
RI-09653	2014	Greenberg, Gregory	Cultural Resources Survey Odell/Ensite #20831 (288219) 5316 37th Street Riverside City and County, California 92509
RI-10894	2020	Smith, Brian F.	Cultural Resources Study for the West Coast Cold Storage Project, City of Jurupa Valley, Riverside County, California (APNs 178-140-010 and -018)

RI-08061

In 2003, Cogstone Resource Management Inc. conducted an archaeological and paleontological assessment and mitigation plan in support of a proposed redevelopment of a 250-acre area within and directly north of the currently proposed Project APE. This study covered approximately 50% of the proposed Project APE. One historic resource (P-33-005648), the Jurupa Ditch, was identified within the project area. In the amended evaluation, P-33-005648 was determined to not meet CEQA's definition of a historical resource. The Jurupa Ditch does not intersect the currently proposed Project APE, nor were any additional prehistoric or historic-era cultural resources identified as part of this study. Though Cogstone recommended cultural resources monitoring during project implementation, the vast majority of the project area was unavailable for survey due to access issues, imported fill, and cropland cover. Approximately 50% of the currently proposed Project APE was subject to cultural resources investigations as part of this study, though the pedestrian survey is not considered adequate according to the Secretary of the Interiors Standards for Archaeology and Historic Preservation (Gust et al. 2004).

RI-08402

In 2010, CRM Tech conducted a Section 106-compliant cultural resources study in support of a proposed well water improvements project for the District, directly west of the currently proposed Project APE. This study included a records search, a brief culture history overview, Native American correspondence, and an intensive-level pedestrian survey. No historic properties were identified within or adjacent to the APE as part of this study. Ultimately, CRM Tech concluded the APE of the project to be low in sensitivity for potentially significant archaeological deposits, and recommended no further cultural resources investigations, including monitoring, to be conducted prior to/during project implementation (Tang and Hogan 2010).

Previously Recorded Cultural Resources

The EIC records search indicates that 96 previously recorded cultural resources are located within one mile of the proposed Project APE, and no resources intersect the proposed Project APE (Table 2). Of the 96 resources, 90 are historic, five are prehistoric, and one is multicomponent. The large majority (85) of these resources are historic-era built environment resources associated with the historic development of Riverside County over the 20th century. See Appendix A for the complete EIC records search results, documentation, and California Department of Parks and Recreation (DPR) cultural resources site records.

Table 2. Previously Recorded Cultural Resources within 1-Mile of Project APE

Primary Number	Trinomial	Age	Resource Type	Eligibility for CRHR/NRHP
Outside Project APE				
P-33-000678	CA-RIV-000678	Multicomponent	Historic-era refuse scatter and prehistoric potsherd and faunal remains	Not evaluated
P-33-003320	CA-RIV-003320H	Historic	Cornelius and Mercedes Jensen Ranch	Listed on CRHR and NRHP
P-33-003353	CA-RIV-003353	Historic	Refuse scatter	Not evaluated

Table 2. Previously Recorded Cultural Resources within 1-Mile of Project APE

Primary Number	Trinomial	Age	Resource Type	Eligibility for CRHR/NRHP
P-33-003358	CA-RIV-003358	Historic	Refuse scatter	Not evaluated
P-33-003834	CA-RIV-003834	Historic	Refuse scatter	Not evaluated
P-33-004170	CA-RIV-004170	Prehistoric	Bedrock milling features ad ephemeral midden deposit	Not evaluated
P-33-005042	CA-RIV-005042	Historic	Concrete reservoir	Not evaluated
P-33-005648	CA-RIV-005513H	Historic	Jurupa Ditch	Recommended not eligible
P-33-007411	—	Historic	Historic address	Not evaluated
P-33-007724	—	Historic	Historic address	Not evaluated
P-33-009680	—	Historic	Point of historical interest	Not evaluated
P-33-009698	—	Historic	Point of historical interest	Not evaluated
P-33-009699	—	Historic	Point of historical interest	Not evaluated
P-33-011193	—	Historic	Historic address	Recommended not eligible
P-33-011748	—	Historic	Historic address	Not evaluated
P-33-011749	—	Historic	Historic address	Not evaluated
P-33-011769	—	Historic	Historic address	Not evaluated
P-33-011770	—	Historic	Historic address	Not evaluated
P-33-011771	—	Historic	Historic address	Not evaluated
P-33-011772	—	Historic	Historic address	Not evaluated
P-33-011773	—	Historic	Historic address	Not evaluated
P-33-011783	—	Historic	Historic address	Not evaluated
P-33-011834	—	Historic	Historic address	Not evaluated
P-33-011835	—	Historic	Historic address	Not evaluated
P-33-011836	—	Historic	Historic address	Not evaluated
P-33-011837	—	Historic	Historic address	Not evaluated
P-33-011838	—	Historic	Historic address	Not evaluated
P-33-011839	—	Historic	Historic address	Not evaluated
P-33-011840	—	Historic	Historic address	Not evaluated
P-33-011841	—	Historic	Historic address	Not evaluated
P-33-011842	—	Historic	Historic address	Not evaluated
P-33-011843	—	Historic	Historic address	Not evaluated
P-33-011844	—	Historic	Historic address	Not evaluated
P-33-011845	—	Historic	Historic address	Not evaluated
P-33-011846	—	Historic	Historic address	Not evaluated
P-33-011855	—	Historic	Historic address	Not evaluated
P-33-011856	—	Historic	Historic address	Not evaluated
P-33-011857	—	Historic	Historic address	Not evaluated

Table 2. Previously Recorded Cultural Resources within 1-Mile of Project APE

Primary Number	Trinomial	Age	Resource Type	Eligibility for CRHR/NRHP
P-33-011858	—	Historic	Historic address	Not evaluated
P-33-011859	—	Historic	Historic address	Not evaluated
P-33-011860	—	Historic	Historic address	Not evaluated
P-33-011861	—	Historic	Historic address	Not evaluated
P-33-011870	—	Historic	Historic address	Not evaluated
P-33-011871	—	Historic	Historic address	Not evaluated
P-33-011873	—	Historic	Historic address	Not evaluated
P-33-011874	—	Historic	Historic address	Not evaluated
P-33-011875	—	Historic	Historic address	Not evaluated
P-33-011876	—	Historic	Historic address	Not evaluated
P-33-011877	—	Historic	Historic address	Not evaluated
P-33-012130	—	Historic	Fairmont Park	Recommended not eligible
P-33-012322	—	Prehistoric	Isolate	Not eligible
P-33-013240	CA-RIV-007325	Historic	Railroad spur	Recommended not eligible
P-33-013967	—	Historic	Historic address	Recommended not eligible
P-33-013968	—	Historic	Historic address	Recommended not eligible
P-33-013969	—	Historic	Historic address	Recommended not eligible
P-33-013971	—	Historic	Historic address	Recommended not eligible
P-33-013972	—	Historic	Historic address	Recommended not eligible
P-33-013973	—	Historic	Historic address	Recommended not eligible
P-33-013974	—	Historic	Historic address	Recommended not eligible
P-33-014325	—	Historic	Historic address	Recommended eligible for listing on City of Riverside Register and CRHR
P-33-014327	—	Historic	Historic address	Recommended eligible for listing on City of Riverside Register and CRHR
P-33-014329	—	Historic	Historic address	Recommended not eligible
P-33-014330	—	Historic	Historic address	Recommended not eligible
P-33-014331	—	Historic	Historic address	Recommended not eligible
P-33-014332	—	Historic	Historic address	Recommended not eligible
P-33-014333	—	Historic	Historic address	Recommended not eligible
P-33-014334	—	Historic	Historic address	Recommended not eligible
P-33-014336	—	Historic	Historic address	Recommended not eligible
P-33-014337	—	Historic	Historic address	Recommended not eligible
P-33-014338	—	Historic	Historic address	Recommended not eligible
P-33-014339	—	Historic	Historic address	Recommended not eligible
P-33-014341	—	Historic	Historic address	Recommended not eligible
P-33-014342	—	Historic	Historic address	Recommended not eligible
P-33-014343	—	Historic	Historic address	Recommended not eligible

Table 2. Previously Recorded Cultural Resources within 1-Mile of Project APE

Primary Number	Trinomial	Age	Resource Type	Eligibility for CRHR/NRHP
P-33-014344	—	Historic	Historic address	Recommended not eligible
P-33-014345	—	Historic	Historic address	Recommended not eligible
P-33-014346	—	Historic	Historic address	Recommended not eligible
P-33-014347	—	Historic	Historic address	Recommended not eligible
P-33-014348	—	Historic	Historic address	Recommended not eligible
P-33-014349	—	Historic	Historic address	Recommended not eligible
P-33-014350	—	Historic	Historic address	Recommended not eligible
P-33-014351	—	Historic	Historic address	Recommended not eligible
P-33-016711	—	Historic	Historic address	Not evaluated
P-33-017539	CA-RIV-009105	Historic	Foundation of single-family residence	Not evaluated
P-33-018044	—	Historic	Historic address	Recommended not eligible
P-33-019793	—	Historic	Historic address	Recommended not eligible
P-33-019794	—	Historic	Historic shopping plaza	Recommended not eligible
P-33-019795	—	Historic	Historic address	Recommended not eligible
P-33-019894	—	Historic	Historic address	Recommended not eligible
P-33-024752	CA-RIV-012254	Prehistoric	Rock shelter complex	Not evaluated
P-33-028013	—	Historic	Loring Park	Recommended eligible for City of Riverside Register
P-33-028834	—	Historic	Isolate	Not eligible
P-33-029321	—	Prehistoric	Isolate	Not eligible
P-33-029322	—	Historic	Refuse scatter	Not evaluated
P-33-029775	—	Historic	Flight school	Not evaluated
P-33-029776	—	Prehistoric	Isolate	Not eligible

4.2 Archival Research

In addition to the EIC records search, Dudek conducted an online review of Bureau of Land Management (BLM) General Land Office Records, historical topographic maps, and historic aerial photographs to understand the development of the Project APE and surrounding properties over time. The Project APE was first recorded within Lot No. 38 of the Jurupa Rancho Land Grant by Theodore Wagner in 1878. The BLM plat image shows the Project APE within an undeveloped area just west of the historic course of the Santa Ana River (BLM 2023).

Historic topographic maps (historic topo) of the Project APE are available for the years of 1901 to 1983 (USGS 2023). The earliest historic topo from 1901 shows the Santa Ana River located to the east of the Project APE. Additionally, Mission Blvd, Crestmore Rd, and 34th Street also appear within the general Project vicinity, though both Well 25 and Treatment Plant APEs remain undeveloped. There are no significant changes to the historic depiction of the Project APE until 1942, when the historic topo reveals the development of several additional

roadways and structures throughout the general area which now appears to be a commercial district, labeled as "Riverside West". In this topographic depiction, the Well 25 APE remains undeveloped, while a structure appears with frontage on 34th Street within the Treatment Plant APE. There are no significant changes to the historic depiction of the Project APE and surrounding areas until 1973. By 1973, a trailer park appears to the southeast of the Well 25 APE, though the Well 25 APE itself appears to remain undeveloped. There is additional development throughout the commercial district, now labeled "Rubidoux" on the historic topo. There are no significant changes within the Project APE as evidenced by the historic topo maps for the remainder of the available years depicted, the last of which is 1983. The structure located within the Treatment Plant APE first depicted in 1942 remains depicted in the last available historic topo from 1983 (USGS 2023).

Historic aerial photographs (historic aerials) of the Project APE are available from 1948 to 2020 and provide more detail on the historic development of the region through time (NETR 2023). In 1948, the historic aerial depicts three structures within the Well 25 APE, two with frontage on Mission Blvd. Additionally, there are three structures within the Treatment Plant APE, one with frontage on 34th Street and another two towards the northeast of the first structure. By 1959, there appears an additional building within the Well 25 APE, replacing one of the structures with frontage on Mission Blvd. Additionally, the area surrounding the Well 25 APE is further developed into what appears to be a commercial and residential district. There is little change in both the Well 25 and Treatment Plant APEs until 1994. By 1994, only one structure remains with frontage on Mission Blvd within the Well 25 APE, and only one structure remains with frontage on 34th Street within the Treatment Plant APE. By 2005, all structures and associated hardscape within the Well 25 APE have been razed, and it appears the area has been graded and cleared out by heavy machinery. In 2009, a circular pattern appears within the Treatment Plant APE, a feature likely associated with the well pump identified during the pedestrian survey in September of 2023. By 2010, all remaining structures and landscaping within the Treatment Plant APE have been razed as well, with the exception of the well pump first identified in the 2009 historic aerial. By 2012, the Treatment Plant APE appears to have been cleared out by heavy machinery, and a dirt vehicle overland travel path appears within the Well 25 APE. There are no significant changes within the Project APE as evidenced by the historic aerial imagery for the remainder of the available years depicted, the last of which is 2020 (NETR 2023).

Overall, the review of historic topo maps and aerial imagery indicate the entire Project APE has been disturbed by past development, grading and clearing, and overland vehicle travel. Any historic structures that once existed within the Project APE were razed by 2010. Currently, the Project APE appears to be mostly vacant, though a well pump within the Treatment Plant APE first identified in the 2009 aerial remains.

4.3 Review of Geomorphological Context

According to the U.S. Department of Agriculture Natural Resources Conservation Services (USDA 2023), the Project APE consists predominately of a Grangeville loamy fine sand soil type, drained, with 0 to 5 slopes. Additionally, approximately 20% of the Well 25 APE contains a Delhi fine sand soil type, 2 to 15 slopes. Both soil types occur in settings with alluvial fans, deriving predominately from granite, and are found in areas with elevations ranging from 600 to 1,800 feet above mean sea level (amsl). Alluvial soils are present within the Project APE, which have a moderate potential for containing subsurface cultural deposits.

4.4 Native American Outreach and Coordination

Dudek contacted the NAHC on August 3, 2023 and requested a review of their Sacred Lands File (SLF) for the proposed Project APE and a one-mile radius of the Project APE. The SLF consists of a database of known Native American cultural resources. These resources may not be included in the EIC database. The NAHC replied via email on August 28, 2023, stating that the SLF search was completed with positive results. Positive results indicate the presence of Native American cultural resources within one mile of the Project APE, and not necessarily directly within the Project APE. The NAHC additionally provided a list of 37 Native American individuals and/or tribal organizations that should be contacted for more information on potential tribal sensitivities regarding the currently proposed Project APE. To date, Dudek has not conducted subsequent outreach or other coordination with the entities identified by NAHC. See Appendix B for complete documentation of NAHC correspondence and SLF results. In compliance with AB 52 and Section 106, the District, as lead state agency, and Reclamation, as lead federal agency, are both responsible for conducting government to government consultation with tribal entities.

4.5 Pedestrian Survey

Dudek archaeologist Roshanne Bakhtiary conducted an intensive-level cultural resources pedestrian survey of the proposed Project APE on September 12, 2023. The pedestrian survey employed standard archaeological procedures and techniques and met the Secretary of the Interior's standards for a cultural resources inventory. Methods consisted of a pedestrian survey conducted in parallel transects spaced no more than 15 meters apart over the Project APE. For areas inaccessible by foot, an opportunistic approach was utilized which included a visual inspection of exposed ground surfaces through fencing. With both approaches, the ground surface was examined for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions, features indicative of the current or former presence of structures or buildings (e.g., standing exterior walls, post holes, foundations), and historic artifacts (e.g., metal, glass, ceramics, building materials). Ground disturbances such as burrows, cut banks, and drainages were also visually inspected for exposed subsurface materials.

An intensive-level pedestrian survey was not conducted for approximately 20% of the Treatment Plant APE due to inaccessibility. Due to past disturbances within the APE as indicated in Dudek's archival review, and in consideration of the nature and characteristics of the previously recorded cultural resources adjacent to the APE, an 80% survey sample appears adequate for the purposes of cultural resources identification and assessment of existing conditions.

Well 25

The Well 25 APE consists of a 1-acre undeveloped/vacant lot that is surrounded by chain-link fencing. Visibility of the ground surface was fair (25-50%) in areas of moderate to dense vegetation. In areas not obscured by vegetation (in tire ruts and areas of vehicle overland travel), the ground visibility was excellent (90-100%). Approximately 75% of the APE had excellent visibility. Soils within the APE were characterized as a light brown silty sand with a light content of sub-angular cobbles (0-15%). Vegetation included various species of invasive grasses, castor bean (*Ricus* sp.), puncturevine (*Tribilus* sp.), and tumbleweed (*Salsola* sp.). Disturbances included modern debris, building materials, vehicle rut scars, vehicle overland travel paths, evidence of past use by the unhoused community, and evidence of redeposited (native) soils. No prehistoric or historic-era cultural resources were identified during the pedestrian survey. See Exhibit 1 for a photographic overview of the Well 25 APE.

Treatment Plant

The Treatment Plant APE consists of a 1.4-acre vacant lot that is partially utilized as a vehicle storage and dump yard. Approximately 20% of the APE with frontage on 34th Street was inaccessible at date of survey due to impassible fencing. Although this portion of the APE was not subject to systematic transects, a visual inspection of the ground surface was conducted through the fencing along the southern and northern boundaries of the inaccessible area. This portion of the APE consists predominantly of vehicles, vehicle parts, and other modern debris. No prehistoric or historic-era cultural resources were identified within the inaccessible portion of the APE during this visual inspection See Exhibit 2 for a photographic overview of the eastern portion of the Treatment Plant APE in the foreground, with a view of the inaccessible area in the background.

Approximately 80% of the APE was surveyed and consisted predominantly of fallow cropland with modern debris strewn throughout (e.g. vehicles, vehicle parts, building materials, modern trash, and animal manure). A well pump, first identified in the historic aerials in 2009, remains extant (but does not appear operational) within the APE. Visibility of the ground surface was poor (0-25%) in areas of dense vegetation and modern debris. In areas not obscured by vegetation, the ground visibility was fair (25-50%). Approximately 50% of the APE had fair visibility. Soils within the APE were characterized as a light brown silty sand. Vegetation included various species of invasive grasses, castor bean (*Ricus* sp.), and tumbleweed (*Salsola* sp.). Disturbances included modern debris, vehicle parts, vehicles, animal manure, and building materials. No prehistoric or historic-era cultural resources were identified during the pedestrian survey. See Exhibit 3 for a photographic overview of the western portion of the Treatment Plant APE.

Exhibit 1. Overview of Well 25 APE; view to southeast.

Exhibit 2. Overview of eastern portion of Treatment Plant APE; view to south.

Exhibit 3. Overview of western portion of Treatment Plant APE; view to southwest.

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5 Recommendations and Management Considerations

Dudek's Phase I cultural resources inventory of the Project APE suggests there is a low potential for the inadvertent discovery of cultural resources during Project implementation. Dudek conducted a records search of the proposed Project APE and the surrounding one-mile radius at the EIC. The records search did not identify any previously recorded cultural resources within the Project APE, though 96 previously recorded cultural resources were identified within one mile of the Project APE. The large majority (85) of these resources are historic-era built environment resources associated with the historic development of Riverside County over the 20th century. No prehistoric or historic-era cultural resources were identified within the Project APE as part of the intensive-level pedestrian survey. In addition, a review of historic topographic maps and aerial imagery indicate the Project APE has been disturbed by past development, grading and clearing, and overland vehicle travel. An NAHC search of the SLF was requested, and results were positive for Native American cultural resources within one mile of the Project APE, but did not provide details on what the resource(s) are or where they are located.

Based on the available archival information indicating disturbances within the Project APE, the nature of the historic-age built environment resources within a one-mile radius of the Project APE, and in consideration of the lack of prehistoric archaeological resources adjacent to the Project APE; there is low potential for the inadvertent discovery of cultural resources during earth moving activities. No cultural resources are likely to be impacted (No Historic Properties Affected) by the Project. In consideration of the negative results of the EIC records search, archival research, and intensive-level pedestrian survey, no further archaeological efforts or mitigation, including cultural construction monitoring, are recommended to be necessary in support of Project implementation.

In the unlikely event that archaeological resources are encountered during the exposure of subsurface soils within the Project APE, ground-disturbing work should be immediately halted, and a qualified archaeologist should be retained to evaluate the resource(s). Management recommendations to reduce potential impacts to unanticipated archaeological resources and human remains during construction activities are provided below.

Unanticipated Discovery of Archaeological Resources

In the event that archaeological resources (sites, features, and artifacts) are exposed during construction activities involving ground disturbance for the proposed Project, all construction work occurring within a 100-foot buffer of the find shall immediately stop until a qualified specialist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. This avoidance buffer may be adjusted following inspection of this area by that qualified specialist. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole shell, burned or complete bone, non-local lithic materials, or characteristics observed to be typical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Significance of the find under will be assessed based on processes outlined by CEQA (14 CCR 15064.5(f); PRC Section 21082) and Section 106 of the NHPA. Feasible options for avoidance must also be considered. If the discovery proves significant under

CEQA and/or the NHPA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery may be warranted.

Unanticipated Discovery of Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within 2 working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the County Coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the MLD from the deceased Native American. The MLD shall provide recommended next steps within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

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Appendix A

(Confidential) EIC Records Search Results

Appendix B
NAHC Sacred Lands File Results

From: Roshanne Bakhtiary

Sent: Thursday, August 3, 2023 4:00 PM

To: NAHC@NAHC

Cc: Adam Giacinto

Subject: Sacred Lands File Search Request for Dudek PN 13726.21

Attachments: Dudek_PN_13726.21_Sacred-Lands-File-NA-Contact-Form.pdf

Dear NAHC,

Please find attached to this email the NAHC Sacred Lands File Search request with project location map for WMWD Projects 1 and 2 (Dudek #13726.21) located in Riverside County, California. Dudek is requesting an NAHC Sacred Lands File Search for any sacred sites, tribal cultural resources, and other places of Native American community value that may fall within a one-mile radius of the proposed project location.

Please let me know if you have any questions regarding this project. You can email the results to me at: rbakhtiary@dudek.com.

Thank you,

Roshanne S. Bakhtiary, MA

Archaeologist

760.557.0998

www.dudek.com

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21)

County: Riverside

USGS Quadrangle Name: Riverside West and Fontana

Township: 2 South **Range:** 5 West **Section(s):** 9, 10, 14, 15, 16, 21, 22, 23

Company/Firm/Agency: Dudek

Street Address: 605 3rd Street

City: Encinitas, CA **Zip:** 92024

Phone: (760) 557-0998

Fax:

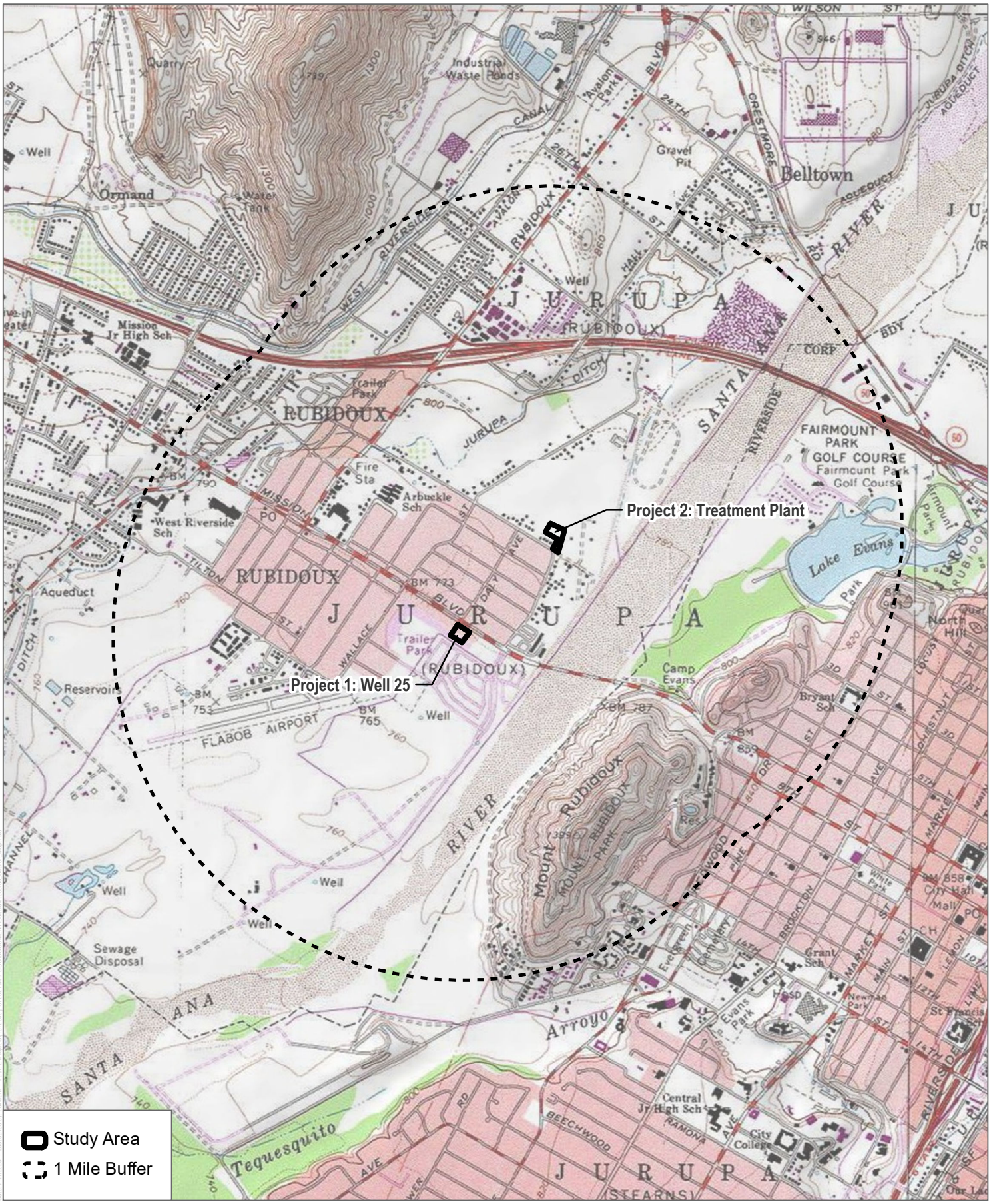
Email: rbakhtiary@dudek.com

Project Description:

Two Western Municipal Water District (WMWD) Water Resources Projects

Project 1: Well 25 construction

Project 2: Water treatment plant construction



SOURCE: USGS 7.5-Minute Series Riverside West & Fontana Quadrangles
Township 2S; Range 5W; Sections 9, 10, 14, 15, 16, 21, 22, 23

DUDEK

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1:24,000

Records Search

WMWD NEPA-Compliant Cultural Assessments for Projects 1 And 2

From: Green, Andrew@NAHC <Andrew.Green@nahc.ca.gov>

Sent: Monday, August 28, 2023 4:25 PM

To: Roshanne Bakhtiary

Cc: admin@gabrielenoindians.org

Subject: WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21) Project

Attachments: SLF Yes WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21) Project 8.28.2023.pdf; WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21) Project 8.28.2023.xlsx

Good Afternoon,

Attached is the response to the project referenced above. If you have any additional questions, please feel free to contact our office email at nahc@nahc.ca.gov.

In our ongoing effort to enhance your user experience and increase functionality, we have transitioned from distributing data in PDF Format to Excel Format. This change allows you to take full advantage of features such as searching, filtering, and mail-merging, making it easier for you to handle and utilize the data provided. If you encounter any technical difficulties, or if you have any questions regarding this new format, please do not hesitate to reach out to me directly.

Regards,

Andrew Green

Native American Heritage Commission

1550 Harbor Blvd., Suite 100

West Sacramento, CA 95691

Andrew.Green@nahc.ca.gov

Direct Line: (916) 573-1072

Office: (916) 373-3710

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

August 28, 2023

Roshanne Bakhtiary
Dudek

Via Email to: rbakhtiary@dudek.com

Re: WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21) Project, Riverside County

Dear Ms. Bakhtiary:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
8/28/2023

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Agua Caliente Band of Cahuilla Indians	F	Patricia Garcia, Director of Historic Preservation	5401 Dinah Shore Drive Palm Springs, CA, 92264	(760) 699-6907	(760) 699-6919	pagarcia@aguacaliente.net	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	7/20/2023
Augustine Band of Cahuilla Mission Indians	F	Amanda Vance, Chairperson	84-001 Avenue 54 Coachella, CA, 92236	(760) 398-4722	(760) 369-7161	hhaines@augustinetribe.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cabazon Band of Mission Indians	F	Doug Welmas, Chairperson	84-245 Indio Springs Parkway Indio, CA, 92203	(760) 342-2593	(760) 347-7880	jstapp@cabazonindians-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cahuilla Band of Indians	F	Daniel Salgado, Chairperson	52701 CA Highway 371 Anza, CA, 92539	(951) 972-2568	(951) 763-2808	chairman@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	Anthony Madrigal, Tribal Historic Preservation Officer	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		anthonymad2002@gmail.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	BobbyRay Esaprza, Cultural Director	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		besparza@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Gabrieleno Band of Mission Indians - Kizh Nation	N	Andrew Salas, Chairperson	P.O. Box 393 Covina, CA, 91723	(844) 390-0787		admin@gabrielenoindians.org	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	8/18/2023
Gabrieleno Band of Mission Indians - Kizh Nation	N	Christina Swindall Martinez, Secretary	P.O. Box 393 Covina, CA, 91723	(844) 390-0787		admin@gabrielenoindians.org	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	8/18/2023
Gabrieleno/Tongva San Gabriel Band of Mission Indians	N	Anthony Morales, Chairperson	P.O. Box 693 San Gabriel, CA, 91778	(626) 483-3564	(626) 286-1262	GTTribalcouncil@aol.com	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Ventura	
Gabrielino /Tongva Nation	N	Sandonne Goad, Chairperson	106 1/2 Judge John Aiso St., #231 Los Angeles, CA, 90012	(951) 807-0479		sgoad@gabrielino-tongva.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Ventura	3/28/2023
Gabrielino Tongva Indians of California Tribal Council	N	Robert Dorame, Chairperson	P.O. Box 490 Bellflower, CA, 90707	(562) 761-6417	(562) 761-6417	gtongva@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	3/16/2023
Gabrielino Tongva Indians of California Tribal Council	N	Christina Conley, Cultural Resource Administrator	P.O. Box 941078 Simi Valley, CA, 93094	(626) 407-8761		christina.marsden@alumni.usc.edu	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	3/16/2023

Native American Heritage Commission
Native American Contact List
Riverside County
8/28/2023

Gabrielino-Tongva Tribe	N	Sam Dunlap, Cultural Resource Director	P.O. Box 3919 Seal Beach, CA, 90740	(909) 262-9351		tongvatcr@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Ventura	5/30/2023
Gabrielino-Tongva Tribe	N	Charles Alvarez, Chairperson	23454 Vanowen Street West Hills, CA, 91307	(310) 403-6048		Chavez1956metro@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Ventura	5/30/2023
Los Coyotes Band of Cahuilla and Cupeño Indians	F	Ray Chapparosa, Chairperson	P.O. Box 189 Warner Springs, CA, 92086-0189	(760) 782-0711	(760) 782-0712		Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Robert Martin, Chairperson	12700 Pumarra Road Banning, CA, 92220	(951) 755-5110	(951) 755-5177	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Ann Brierty, THPO	12700 Pumarra Road Banning, CA, 92220	(951) 755-5259	(951) 572-6004	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Pala Band of Mission Indians	F	Alexis Wallick, Assistant THPO	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3537		awallick@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	3/23/2023
Pala Band of Mission Indians	F	Shasta Gaughen, Tribal Historic Preservation Officer	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3515	(760) 742-3189	sgaughen@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	3/23/2023
Pechanga Band of Indians	F	Tuba Ebru Ozdil, Pechanga Cultural Analyst	P.O. Box 2183 Temecula, CA, 92593	(951) 770-6313	(951) 695-1778	eozdil@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Pechanga Band of Indians	F	Steve Bodmer, General Counsel for Pechanga Band of Indians	P.O. Box 1477 Temecula, CA, 92593	(951) 770-6171	(951) 695-1778	sbodmer@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023

Native American Heritage Commission
Native American Contact List
Riverside County
8/28/2023

Ramona Band of Cahuilla	F	John Gomez, Environmental Coordinator	P. O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	jgomez@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	8/16/2016
Ramona Band of Cahuilla	F	Joseph Hamilton, Chairperson	P.O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	admin@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Rincon Band of Luiseno Indians	F	Cheryl Madrigal, Cultural Resources Manager/Tribal Historic Preservation Officer	One Government Center Lane Valley Center, CA, 92082	(760) 648-3000		cmadrigal@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Joseph Linton, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 803-3548		jlinton@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Laurie Gonzalez, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 484-4835		lgonzalez@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Denise Turner Walsh, Attorney General	One Government Center Lane Valley Center, CA, 92082	(760) 689-5727		dwalsh@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	7/7/2023
San Manuel Band of Mission Indians	F	Alexandra McCleary, Cultural Lands Manager	26569 Community Center Drive Highland, CA, 92346	(909) 633-0054		alexandra.mccleary@sanmanuel-nsn.gov	Serrano	Kern,Los Angeles,Riverside,San Bernardino	3/27/2023
Santa Rosa Band of Cahuilla Indians	F	Lovina Redner, Tribal Chair	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	lsaul@santarosa-nsn.gov	Cahuilla	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	
Serrano Nation of Mission Indians	N	Wayne Walker, Co-Chairperson	P. O. Box 343 Patton, CA, 92369	(253) 370-0167		serranonation1@gmail.com	Serrano	Los Angeles,Riverside,San Bernardino	4/29/2019
Serrano Nation of Mission Indians	N	Mark Cochrane, Co-Chairperson	P. O. Box 343 Patton, CA, 92369	(909) 528-9032		serranonation1@gmail.com	Serrano	Los Angeles,Riverside,San Bernardino	
Soboba Band of Luiseno Indians	F	Jessica Valdez, Cultural Resource Specialist	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-6261	(951) 654-4198	jvaldez@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Soboba Band of Luiseno Indians	F	Joseph Ontiveros, Tribal Historic Preservation Officer	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-5279	(951) 654-4198	jontiveros@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Torres-Martinez Desert Cahuilla Indians	F	Cultural Committee,	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300	(760) 397-8146	Cultural-Committee@torresmartinez-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	

Native American Heritage Commission
Native American Contact List
Riverside County
8/28/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed WMWD NEPA-Compliant Cultural Assessments for Projects 1 and 2 (PN 13726.21) Project, Riverside County.

Record: PROJ-2023-004365
Report Type: List of Tribes
Counties: Riverside
NAHC Group: All

APPENDIX D

Energy Tables

Table 1 – Total Construction-Related Fuel Consumption

Well 25 Project

Fuel	Consumption	
Diesel		
On-Road Construction Trips[1]	4,279	Gallons
Off-Road Construction Equipment[2]	59,534	Gallons
Diesel Total	**63,813**	**Gallons**
Gasoline		
On-Road Construction Trips[1]	4,005	Gallons
Off-Road Construction Equipment[3]	-	Gallons
Gasoline Total	**4,005**	**Gallons**

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod for construction in 2024 and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for Riverside (South Coast). See Table 2 for calculation details.
2. Off-road mobile source fuel usage based on a fuel usage rate of 0.05 gallons of diesel per horsepower (HP)-hour, based on SCAQMD CEQA Air Quality Handbook, Table A9-3E.
3. All emissions from off-road construction equipment were assumed to be diesel.

Table 2 – On-Road Construction Trip Estimates

Well 25 Project

Trip Type	Trips	Trip length	Vehicle Miles Traveled (VMT)	Fuel Efficiency	Annual Fuel Usage[1]	
	(trips)	(miles)	(miles)	(mpg)	(Fuel)	(gallon)
Worker[2,3]	5,538	18.5	102,444	26.2	Gasoline	4,005
Vendor[4]	3,046	10.2	31,069	7.5	Diesel	4,279
Hauling[5]	0	20	0	6.1	Diesel	0

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod (See Air Quality/GHG Memo) for construction and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for 2024 in Riverside (South Coast).
2. Worker trips were assumed to be 100% gasoline powered vehicles.
3. Per CalEEMod, worker Trips were assumed to be 25% LDA, 50% LDT1, and 25% LDT2.
4. Vendor trips were assumed to be 50% MHDT and 50% HHDT, split evenly between the MHDT and HHDT construction categories.
5. Per CalEEMod, hauling trips were assumed to be 100% HHDT.