Appendix A:
Air Quality and Greenhouse Gas Modeling

Camp Switzerland Lift Station Assumptions

Project Area = 0.2 acres (8,712 square feet)
Disturbance Area = 3,361 SF (structure: 45.5 x 36.5 = 1,660.75 SF and pipeline/electrical: 566.56 x 3 = 1699.68 SF)

Construction Schedule	Start Date	End Date
Site Preparation	1/16/2025	2/16/2025
Grading	2/16/2025	1/14/2026
Building Construction	2/16/2025	1/14/2026

Soil export = 100 cubic yards
distance = 10.2 miles to Heaps Peak Transfer Station

Project includes 2 Flygt Non-Clog Submersible Sewage Pumps
assume each pump would run 8 hours per day and use 7,387.6 kWh per year (total 14,775.2 kWh per year)

Assume maintenance crew would vist site once per month. Trip would originate from Sanitation District site, distance is 0.44 miles one-way, rounded up to 1 mile.

Camp Switzerland Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Camp Switzerland
Construction Start Date	1/16/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	8.40
Location	34.24896903272493, -117.26936261695042
County	San Bernardino-South Coast
City	Unincorporated
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5149
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.22

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

User Defined Industrial	1.00	User Defined Unit	0.20	1,661	0.00	0.00	—	—
Other Non-Asphalt Surfaces	1.70	1000sqft	0.04	0.00	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.	1.96	1.65	15.3	17.6	0.03	0.68	5.42	6.10	0.63	2.59	3.22	—	3,143	3,143	0.13	0.03	0.45	3,155
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.54	2.14	19.5	23.4	0.04	0.89	6.02	6.92	0.82	2.67	3.49	—	4,078	4,078	0.17	0.04	0.02	4,095
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.25	1.05	9.78	11.3	0.02	0.44	3.42	3.86	0.40	1.62	2.03	—	2,014	2,014	0.08	0.02	0.13	2,022
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.19	1.78	2.06	< 0.005	0.08	0.62	0.70	0.07	0.30	0.37	—	333	333	0.01	< 0.005	0.02	335
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Threshold	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.96	1.65	15.3	17.6	0.03	0.68	5.42	6.10	0.63	2.59	3.22	—	3,143	3,143	0.13	0.03	0.45	3,155
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.54	2.14	19.5	23.4	0.04	0.89	6.02	6.92	0.82	2.67	3.49	—	4,078	4,078	0.17	0.04	0.02	4,095
2026	1.85	1.55	14.0	17.0	0.03	0.61	5.42	6.03	0.56	2.59	3.15	—	3,131	3,131	0.12	0.03	0.01	3,143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.25	1.05	9.78	11.3	0.02	0.44	3.42	3.86	0.40	1.62	2.03	—	2,014	2,014	0.08	0.02	0.13	2,022
2026	0.05	0.04	0.38	0.47	< 0.005	0.02	0.15	0.17	0.02	0.07	0.09	—	85.8	85.8	< 0.005	< 0.005	< 0.005	86.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.23	0.19	1.78	2.06	< 0.005	0.08	0.62	0.70	0.07	0.30	0.37	—	333	333	0.01	< 0.005	0.02	335
2026	0.01	0.01	0.07	0.09	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.02	—	14.2	14.2	< 0.005	< 0.005	< 0.005	14.3

2.4. Operations 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.	0.01	0.05	< 0.005	0.08	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.8	14.8	< 0.005	< 0.005	< 0.005	14.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.5	14.5	< 0.005	< 0.005	< 0.005	14.5
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.05	< 0.005	0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.3	14.3	< 0.005	< 0.005	< 0.005	14.4
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	2.36	2.36	< 0.005	< 0.005	< 0.005	2.38
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.46	0.46	< 0.005	< 0.005	< 0.005	0.48
Area	0.01	0.05	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.30	0.30	< 0.005	< 0.005	—	0.30
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.05	< 0.005	0.08	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.8	14.8	< 0.005	< 0.005	< 0.005	14.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Area	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.5	14.5	< 0.005	< 0.005	< 0.005	14.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.07
Area	0.01	0.05	< 0.005	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.20	0.20	< 0.005	< 0.005	—	0.20
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.05	< 0.005	0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	14.3	14.3	< 0.005	< 0.005	< 0.005	14.4

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01
Area	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.03	0.03	< 0.005	< 0.005	—	0.03
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	2.32	2.32	< 0.005	< 0.005	—	2.33
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	2.36	2.36	< 0.005	< 0.005	< 0.005	2.38

3. Construction Emissions Details

3.1. Site Preparation (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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	0.47	4.16	5.57	0.01	0.21	—	0.21	0.20	—	0.20	—	859	859	0.03	0.01	—	862
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
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	0.03	0.03	0.25	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.8	51.8	< 0.005	< 0.005	—	51.9
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	< 0.005	< 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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.57	8.57	< 0.005	< 0.005	—	8.60
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 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	0.02	0.02	0.02	0.29	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	64.6	64.6	< 0.005	< 0.005	0.01	65.4
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	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.4	21.4	< 0.005	< 0.005	< 0.005	22.5
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	—	3.95	3.95	< 0.005	< 0.005	0.01	4.00
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.29	1.29	< 0.005	< 0.005	< 0.005	1.35
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.66
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22

3.3. Grading (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	1.29	1.09	10.1	10.0	0.02	0.46	—	0.46	0.43	—	0.43	—	1,714	1,714	0.07	0.01	—	1,720
Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
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	1.29	1.09	10.1	10.0	0.02	0.46	—	0.46	0.43	—	0.43	—	1,714	1,714	0.07	0.01	—	1,720
Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
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	0.81	0.68	6.28	6.27	0.01	0.29	—	0.29	0.27	—	0.27	—	1,070	1,070	0.04	0.01	—	1,074
Dust From Material Movement	—	—	—	—	—	—	3.32	3.32	—	1.60	1.60	—	—	—	—	—	—	—
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	0.15	0.12	1.15	1.14	< 0.005	0.05	—	0.05	0.05	—	0.05	—	177	177	0.01	< 0.005	—	178
Dust From Material Movement	—	—	—	—	—	—	0.61	0.61	—	0.29	0.29	—	—	—	—	—	—	—
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	0.00	0.00	0.00	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.04	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	96.9	96.9	< 0.005	< 0.005	0.01	98.1
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.29	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	61.3	61.3	< 0.005	< 0.005	0.11	62.2

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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.2	10.2	< 0.005	< 0.005	0.02	10.3
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

3.5. Grading (2026) - 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	1.22	1.02	9.19	9.69	0.02	0.42	—	0.42	0.39	—	0.39	—	1,714	1,714	0.07	0.01	—	1,720
Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
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	0.03	0.03	0.25	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.0	47.0	< 0.005	< 0.005	—	47.1

Dust From Material Movement	—	—	—	—	—	—	0.15	0.15	—	0.07	0.07	—	—	—	—	—	—	—
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	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.78	7.78	< 0.005	< 0.005	—	7.80
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.41	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	94.9	94.9	< 0.005	< 0.005	0.01	96.1
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
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	—	2.64	2.64	< 0.005	< 0.005	< 0.005	2.67
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	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.44
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. Building 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	0.62	0.52	5.14	6.94	0.01	0.22	—	0.22	0.20	—	0.20	—	1,305	1,305	0.05	0.01	—	1,309
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	0.62	0.52	5.14	6.94	0.01	0.22	—	0.22	0.20	—	0.20	—	1,305	1,305	0.05	0.01	—	1,309
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	0.39	0.32	3.21	4.33	0.01	0.14	—	0.14	0.12	—	0.12	—	815	815	0.03	0.01	—	817
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	0.07	0.06	0.59	0.79	< 0.005	0.02	—	0.02	0.02	—	0.02	—	135	135	0.01	< 0.005	—	135
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	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.83	9.83	< 0.005	< 0.005	0.04	9.98
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.40	8.40	< 0.005	< 0.005	0.02	8.82
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	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.01	9.01	< 0.005	< 0.005	< 0.005	9.13
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.40	8.40	< 0.005	< 0.005	< 0.005	8.80
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.71	5.71	< 0.005	< 0.005	0.01	5.79
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.24	5.24	< 0.005	< 0.005	0.01	5.50
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	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.96
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.87	0.87	< 0.005	< 0.005	< 0.005	0.91
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. Building Construction (2026) - 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	0.59	0.49	4.81	6.91	0.01	0.19	—	0.19	0.17	—	0.17	—	1,304	1,304	0.05	0.01	—	1,309
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	0.02	0.01	0.13	0.19	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	35.7	35.7	< 0.005	< 0.005	—	35.9
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.92	5.92	< 0.005	< 0.005	—	5.94
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	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.83	8.83	< 0.005	< 0.005	< 0.005	8.94
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.26	8.26	< 0.005	< 0.005	< 0.005	8.66
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	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.25	0.25	< 0.005	< 0.005	< 0.005	0.25
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.23	0.23	< 0.005	< 0.005	< 0.005	0.24
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	—	0.04	0.04	< 0.005	< 0.005	< 0.005	0.04
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.04	0.04	< 0.005	< 0.005	< 0.005	0.04
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

4.1. Mobile Emissions by Land Use

4.1.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.46	0.46	< 0.005	< 0.005	< 0.005	0.48
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.46	0.46	< 0.005	< 0.005	< 0.005	0.48
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01

4.2. Energy

4.2.1. Electricity Emissions By Land Use - 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	14.0	14.0	< 0.005	< 0.005	—	14.1

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	14.0	14.0	< 0.005	< 0.005	—	14.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	—	2.32	2.32	< 0.005	< 0.005	—	2.33
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2.32	2.32	< 0.005	< 0.005	—	2.33

4.2.3. Natural Gas Emissions By Land Use - 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.30	0.30	< 0.005	< 0.005	—	0.30
Total	0.01	0.05	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.30	0.30	< 0.005	< 0.005	—	0.30

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.03	0.03	< 0.005	< 0.005	—	0.03
Total	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.03	0.03	< 0.005	< 0.005	—	0.03

4.4. Water Emissions by Land Use

4.4.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5. Waste Emissions by Land Use

4.5.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.6. Refrigerant Emissions by Land Use

4.6.1. 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipment Type	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

Equipment Type	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. 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Site Preparation	Site Preparation	1/16/2025	2/16/2025	5.00	22.0	—
Grading	Grading	2/16/2025	1/14/2026	5.00	238	—
Building Construction	Building Construction	2/16/2025	1/14/2026	5.00	238	—

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
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41

Site Preparation	Tractors/Loaders/Backh	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backh oes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backh oes	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
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.59	10.2	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.70	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.27	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT

Building Construction	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 (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	100	11.0	0.00	—
Grading	—	0.00	179	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%
Other Non-Asphalt Surfaces	0.04	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
User Defined Industrial	0.00	0.46	0.00	23.7	0.00	0.46	0.00	23.7
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

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)
0	0.00	2,492	831	102

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
User Defined Industrial	14,775	346	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	346	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
User Defined Industrial	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
User Defined Industrial	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

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	28.8	annual days of extreme heat
Extreme Precipitation	13.8	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	38.0	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	100
AQ-PM	42.0
AQ-DPM	11.6
Drinking Water	38.2
Lead Risk Housing	73.0
Pesticides	0.00
Toxic Releases	46.7
Traffic	1.26
Effect Indicators	—
CleanUp Sites	5.64
Groundwater	0.00
Haz Waste Facilities/Generators	1.80
Impaired Water Bodies	23.9
Solid Waste	55.5
Sensitive Population	—
Asthma	90.5
Cardio-vascular	98.3
Low Birth Weights	33.0
Socioeconomic Factor Indicators	—

Education	32.6
Housing	70.2
Linguistic	0.00
Poverty	55.7
Unemployment	25.2

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	26.35698704
Employed	4.914667009
Median HI	26.62645964
Education	—
Bachelor's or higher	31.19466188
High school enrollment	2.438085461
Preschool enrollment	55.49852432
Transportation	—
Auto Access	71.35891184
Active commuting	79.25060952
Social	—
2-parent households	23.23880405
Voting	68.26639292
Neighborhood	—
Alcohol availability	43.10278455
Park access	81.35506224
Retail density	30.05261132

Supermarket access	56.52508662
Tree canopy	94.75170024
Housing	—
Homeownership	65.25086616
Housing habitability	80.70062877
Low-inc homeowner severe housing cost burden	48.76170923
Low-inc renter severe housing cost burden	78.59617606
Uncrowded housing	66.9190299
Health Outcomes	—
Insured adults	34.04337226
Arthritis	0.0
Asthma ER Admissions	5.1
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	19.7
Cognitively Disabled	21.0
Physically Disabled	22.7
Heart Attack ER Admissions	5.5
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	94.3
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	99.3
SLR Inundation Area	0.0
Children	53.3
Elderly	15.4
English Speaking	72.3
Foreign-born	5.9
Outdoor Workers	51.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	96.9
Traffic Density	1.9
Traffic Access	23.0
Other Indices	—
Hardship	62.6
Other Decision Support	—
2016 Voting	76.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	43.0
Healthy Places Index Score for Project Location (b)	23.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No

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
Land Use	Sewer Lift Station does not match default CalEEMod land uses, building square feet includes area for lift station, parking includes area for pipeline and electrical
Construction: Construction Phases	construction phases based on construction schedule provided by applicant.
Construction: Trips and VMT	soil export taken to Heaps Peak Transfer Station, 10.2 miles away
Operations: Vehicle Data	assume maintenance vehicle to visit site once per month, one-way distance measured from Crestline Sanitation District facility to lift station following access road = 0.44 miles, conservatively rounded up to 1 mile
Operations: Energy Use	7387.6 kwh per year per pump conservatively assuming 8 hours of operation per day 2 * 7387.6 = 14,775.2 kWh/year

Appendix B:
Biological Resources Assessment

Appendix B:
Biological Resources Assessment and Jurisdictional Delineation

February 2, 2024

KIMLEY-HORN
Attention: *John Nsofor*
3880 Lemon Street, Suite 420
Riverside, California 92501

SUBJECT: Biological Resources Assessment for the Proposed Camp Switzerland Lift Station and Pipeline located near Lake Gregory in San Bernardino County, California

Introduction

This report contains the findings of ELMT Consulting's (ELMT) habitat assessment for the proposed Camp Switzerland Lift Station and Pipeline located near Lake Gregory in the City of Crestline, San Bernadino County, California. The field investigation was conducted by biologists Jacob H. Lloyd Davies and Rachael A. Lyons on November 21, 2022, and again by biologists Mr. Lloyd Davies and Megan E. Peukert on July 31, 2023, to document baseline conditions and assess the potential for special-status[1] plant and wildlife species to occur within the proposed project site that could pose a constraint to implementation of the proposed project. Special attention was given to the suitability of the on-site habitat to support southern rubber boa (*Charina umbratica*), California spotted owl (*Strix occidentalis*), San Bernardino flying squirrel (*Glaucomys sabrinus californicus*), and several other special-status species identified by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and other electronic databases as potentially occurring on or within the general vicinity of the project site. Additionally, the suitability of the vegetation on and surrounding the proposed project site was surveyed for its ability to provide suitable avian nesting opportunities.

Project Location

The project site is generally located east of State Route 138, north of State Route 18, west of State Route 189, and south of Pilot rock in the City of Crestline, San Bernadino County, California. The site is depicted on the San Bernadino North quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map series in Section 23 of Township 2 North, Range 4 West. Specifically, the project sites lie along the shoulder of Houston Drive, and approximately 273 feet to the east of the eastern shoulder of Houston Drive, west of Edelweiss Drive, and to the northwest of Lake Gregory and Lake Gregory Dam. Refer to Exhibits 1-3 in Attachment A.

Project Description

The project proposes the construction of a new sewer lift station and connecting pipes for Camp

1 As used in this report, "special-status" refers to plant and wildlife species that are federally, State, and MSHCP listed, proposed, or candidates; plant species that have been designated with a California Native Plant Society Rare Plant Rank; wildlife species that are designated by the CDFW as fully protected, species of special concern, or watch list species; and specially protected natural vegetation communities as designated by the CDFW.

Switzerland, near Lake Gregory in Crestline, California. The proposal includes the addition of new pipes, running from the existing sewer main pipe which is currently located along the shoulder of Houston Drive. These new pipes will run to the new sewer lift station to be constructed at Camp Switzerland, adjacent to west bank of Houston Creek. Currently, three new pipe installations will occur along Houston Drive, and will transect the road, running east and south to the new sewer lift station. Refer to Attachment B, *Site Plan*.

Methodology

Literature Review

Prior to conducting the field study, species and habitat information was gathered a literature review and records search were conducted to determine which special-status biological resources have the potential to occur on or within the general vicinity of the project site. Previously recorded occurrences of special-status plant and wildlife species and their proximity to the project were determined through a query of the CDFWs CNDDB Rarefind 5, the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, Calflora Database, compendia of special-status species published by CDFW, and the United States Fish and Wildlife Service (USFWS) species listings for the *San Bernadino North* and *Silverwood Lake* USGS 7.5-minute quadrangles. These quadrangles were queried due to the proximity of the project site to quadrangle boundaries and regional topography.

All available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the project site were reviewed to understand existing site conditions and note the extent of any disturbances that have occurred on the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources, as well as the following resources:

- Environmental Protection Agency (EPA) Water Program “My Waters” data layers
- Google Earth Pro historic aerial imagery (1984-2023);
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey[2];
- USFWS Critical Habitat designations for Threatened and Endangered Species;
- USFWS National Wetlands Inventory (NWI);

The literature review provided a baseline from which to inventory the biological resources potentially occurring on the project site. The CNDDB database was used, in conjunction with ArcGIS software, to locate the nearest recorded occurrences of special-status species and determine the distance from the project.

Field Investigation

Following the literature review, biologists Jacob H. Lloyd Davies and Rachael A. Lyons initially inventoried and evaluated the condition of the habitat within the project site on November 21, 2022. A second field investigation was conducted by biologists Mr. Lloyd Davies and Megan E. Peukert on July 31,

2 A soil series is defined as a group of soils with similar profiles developed from similar parent materials under comparable climatic and vegetation conditions. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources.

2023. Plant communities identified on aerial photographs during the literature review were verified by walking meandering transects through the plant communities and along boundaries between plant communities. In addition, aerial photography was reviewed prior to the site investigation to locate potential natural corridors and linkages that may support the movement of wildlife through the area. These areas identified on aerial photography were then walked during the field survey.

All plant and wildlife species observed, as well as dominant plant species within each plant community, were recorded. Plant species observed during the field survey were identified by visual characteristics and morphology in the field. Unusual and less familiar plant species were photographed during the field survey and identified in the laboratory using taxonomical guides. Wildlife detections were made through observation of scat, trails, tracks, burrows, nests, and/or visual and aural observation. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site plant communities, and presence of potential jurisdictional drainage and/or wetland features were noted.

Soil Series Assessment

On-site and adjoining soils were researched prior to the field survey using the USDA NRCS Soil Survey for San Bernardino National Forest Area, California. In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes that the project site has undergone.

Plant Communities

The plant communities were evaluated for their potential to support special-status plant and wildlife species. Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography. The plant communities were classified in accordance with Sawyer, Keeler-Wolf and Evens (2009) and delineated on an aerial photograph, and then digitized into ArcGIS. The ArcGIS application was used to compute the area of each plant community in acres.

Plants

Common plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less-familiar plants were photographed in the field and identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual (Hickman 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

Wildlife

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other sign were recorded during surveys in a field notebook. Field guides were used to assist with identification of wildlife species during the survey included The Sibley Field Guide to the Birds of Western North America (Sibley 2003), A Field Guide to Western Reptiles and Amphibians (Stebbins 2003), and A Field Guide to Mammals of North America (Reid 2006). Although common names of wildlife species are fairly well-standardized, scientific names are provided immediately following common names in this report (first reference only).

Jurisdictional Drainages and Wetlands

Aerial photography was reviewed prior to conducting a field investigation to locate and inspect any potential natural drainage features, ponded areas, or water bodies that may fall under the jurisdiction of the United States Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), or CDFW. In general, surface drainage features indicated as blue-line streams on USGS maps that are observed or expected to exhibit evidence of flow are considered potential riparian/riverine habitat and are also subject to state and federal regulatory jurisdiction. In addition, ELMT reviewed jurisdictional waters information through examining historical aerial photographs to gain an understanding of the impact of land-use on natural drainage patterns in the area. The USFWS National Wetland Inventory (NWI) and Environmental Protection Agency (EPA) Water Program "My Waters" data layers were also reviewed to determine whether any hydrologic features and wetland areas have been documented on or within the vicinity of the project site.

Topography and Soils

The project site occurs in a portion of the San Bernardino Mountains that supports highly variable topography including major and minor ridgelines, shallow valleys, rolling hills, and sharply incised ravines, and associated paved and unpaved access roads. Based on the latest available blueprints for the proposed project, the site itself occurs at an approximate elevation of 4,468 to 4,568 feet above mean sea level, with the site generally sloping from southwest to northeast. Specific on-site topography consists of steep to low hills and slopes, with most features bearing eastward or minorly southward descending slopes away from Houston Drive.

Based on the NRCS USDA Web Soil Survey, the project site is underlain by Cedarpines-Stargazer-Urban Land Complex (15 to 30 percent slopes) and Cedarpines-Stargazer-Urban Land Complex (30 to 50 percent slopes). Soils underlying the limits of disturbance for the proposed project vary from undisturbed to moderately disturbed due off-road vehicular use, and staging activities associated with existing on-site and surrounding development and site preparation activities, and heavily disturbed and compacted where site boundaries overlap with Houston Drive.

Existing Site Condition

The proposed project site lies northwest of Lake Gregory and Lake Drive, from Houston Drive, which roughly bounds the site to the west, to Houston Creek, which roughly bounds the site to the east. The project area consists of a mix of developed, heavily forested, and disturbed land which spans the proposed project site from west to east respectively. On the western boundary of the proposed project site lies Houston Drive, a fully paved and maintained road and the location of the existing sewer main pipe, which will be accessed when the proposed new connecting pipes are installed. The new connecting pipes will run eastward and southward through belts of old-growth coniferous forest. Forested areas within the proposed project site range from moderately to densely vegetated. The connecting pipes will access the proposed sewer lift station, which will lie adjacent to the western bank of Houston Creek. This area has been maintained to be free of vegetation in recent years, supporting materials and spoils stockpiling as early as 2017. Soils within this area have been disturbed from construction-related activities, vehicular access, and off-road vehicle recreational use.

Vegetation

The project site and adjacent terrain primarily support native plant communities supporting moderate to dense plant cover, with artificially barren and developed areas present. Natural plant communities that may be impacted by project implementation are generally consolidated to the periphery of the proposed location for the new lift station. Refer to Attachment C, *Site Photographs*, for representative site photographs.

The project site supports two (2) natural plant communities: mixed evergreen forest and mixed riparian forest. In addition, the site supports two (2) land cover types that would be classified as developed and disturbed (refer to Exhibit 4, *Vegetation*).

Mixed Evergreen Forest

The mixed evergreen forest supported by the project site is co-dominated by conifer species such as white fir (*Abies concolor*), sugar pine (*Pinus lambertiana*), yellow pine (*Pinus ponderosa*), and Douglas-fir (*Pseudotsuga macrocarpa*), and broadleaf evergreen species such as canyon live oak (*Quercus chrysolepis*) and black oak (*Quercus kelloggii*). This plant community supports an often-dense to sometimes-sparse shrub layer and robust herbaceous layer. Other common plant species observed in the mixed evergreen forest plant community supported by the project site include yarrow (*Achillea millefolium*), Eastwood manzanita (*Arctostaphylos glandulosa*), bigberry manzanita (*Arctostaphylos glauca*), deer brush (*Ceanothus integerrimus*), interior goldenbush (*Ericameria linearifolia*), leafy daisy (*Erigeron foliosus*), mountain phacelia (*Phacelia imbricata*), sword fern (*Polystichum imbricans*), coffeeberry (*Rhamnus californica*), hollyleaf redberry (*Rhamnus ilicifolia*), thimbleberry (*Rubus parviflorus*), and elderberry (*Sambucus mexicana*).

Mixed Riparian Forest

Portions of the site that occur along Houston Creek support a Mixed Riparian Forest. The upper canopy of this plant community would be classified as a riparian ecotone that consists of the dominant evergreen tree species that overhang from adjacent portions of Mixed Conifer Forest. Beneath this upper canopy, the Mixed Riparian Forest is dominated by phreatophytic tree species such as box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), and mountain dogwood (*Cornus nuttallii*). This plant community supports an open shrub layer composed of the aforementioned phreatophytes, and a robust herbaceous layer. Other common plant species observed in this plant community include maidenhair fern (*Adiantum aleuticum*), California mugwort (*Artemisia douglasiana*), waterweed (*Elodia* sp.), seep monkeyflower (*Erythranthe guttata*), wild pepper grass (*Lepidium virginicum*), slender muhly (*Muhlenbergia filiformis*), rush (*Schoenoplectus sp.*), and California wild grape (*Vitis californica*).

Disturbed

Disturbed portions of the project site are routinely cleared of vegetation based on land use needs of nearby construction or infrastructure operations, or for site preparation purposes for future on-site land use. As such, no natural plant communities are allowed to establish in these areas. The disturbed portions of the site are dominated by weedy/early successional species and may exhibit dense monocultures. Common plant species observed in the disturbed portions of the project site include slender oat (*Avena barbata*), soft chess (*Bromus hordaceus*), bull thistle (*Cirsium vulgare*), tree tobacco (*Nicotiana glauca*), purple sand spurry (*Spergularia rubra*), feverfew (*Tanacetum parthenium*), dandelion (*Taraxacum officinale*), mullein (*Verbascum densiflorum*), and periwinkle (*Vinca major*).

Developed

Developed land supported by the project site includes overlapping portions of Houston Drive and associated retaining structures and flood control infrastructure. These areas are generally barren except for occasional cover by especially hardy plant species adapted to growing in such conditions.

Wildlife

Plant communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a discussion of those wildlife species that were observed or are expected to occur within the project site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation.

Fish

No hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for fish were observed within the project site. Therefore, no fish are expected to occur, and all are presumed absent.

Houston Creek, which flows adjacent to the eastern boundary of the proposed lift area, does support potential habitat for local fish species. Houston Creek is a perennial riverine feature that receives flows from Lake Gregory via a spillway to the south of the site. Regular flows maintain sufficiently deep open water to support local fish species, and the riparian and aquatic vegetation supported within the creek provide suitable foraging and cover opportunities. Common fish species that are known to occur in Lake Gregory and surrounding waterways include mosquitofish (*Gambusia affinis*), tule perch (*Hysterocarpus traskii*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), and rainbow trout (*Oncorhynchus mykiss*).

Amphibians

The project site and nearby portions of Houston Creek provide suitable foraging and cover habitat for local amphibian species. No amphibian species were observed during the field investigation. Common amphibian species that could be expected to occur include California toad (*Anaxyus boreas halophilus*), ensatina (*Ensatina eschscholtzii*), American bullfrog (*Lithobates catesbeianus*), California treefrog (*Pseudacris cadaverina*), and Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*).

Reptiles

The project site and surrounding areas provide suitable foraging and cover habitat for local reptilian species. At the time of the investigation, no reptilian species were observed. Common reptilian species that could be expected to occur on-site include southern rubber boa (*Charina umbratica*), San Bernadino ringneck snake (*Diadophis punctatus modestus*), two-striped gartersnake (*Thamnophis hammondii*), striped racer (*Masticophis lateralis*), and western fence lizard (*Sceloporus occidentalis*).

Birds

The project site and surrounding areas provide suitable foraging and nesting habitat for a variety of resident and seasonal avian species. Bird species detected during the field survey include California scrub jay (*Aphelocoma californica*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), red-

shouldered hawk (*Buteo lineatus*), northern flicker (*Colaptes auratus*), common raven (*Corvus corax*), Steller's jay (*Cyanocitta stelleri*), acorn woodpecker (*Melanerpes formicivorus*), band-tailed pigeon (*Patagioenas fasciata*), Nuttall's woodpecker (*Picoides nuttallii*), and mountain chickadee (*Poecile gambeli*).

Mammals

The project site provides suitable foraging and cover habitat for local mammalian species. Mammalian species observed during the field investigation include bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), California chipmunk (*Neotamias obscurus*), mule deer (*Odocoileus hemionus*), racoon (*Procyon lotor*), and grey squirrel (*Sciurus carolinensis*). Additional common mammal species that could be expected to occur include big brown bat (*Eptesicus fuscus*), mouse-eared bats (*Myotis* sp.), San Bernadino flying squirrel (*Glaucomys oregonesis californicus*), mountain lion (*Puma concolor*), lodgepole chipmunk (*Tamias speciosus*), Botta's pocket gopher (*Thomomys bottae*), and American black bear (*Ursus americanus*).

Nesting Birds and Raptors

No active nests or birds displaying nesting behavior were observed during the field survey, which was conducted outside of breeding season. The project site supports dense swathes of native forest that provide suitable nesting habitat for year-round and seasonal avian residents, as well as migrating songbirds that could occur in the area.

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction.

Migratory Corridors and Linkages

Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet still inadequate for others. Wildlife corridors are features that allow for the dispersal, seasonal migration, breeding, and foraging of a variety of wildlife species. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

As mapped by the San Bernardino County General Plan, Lake Gregory and its associated tributaries and downstream waterways have been identified as Major Open Space Areas and/or Wildlife Corridors or Linkages. While portions of the project site occur adjacent to Houston Creek, the project has been designed to avoid long-term impacts to viable natural habitats in proximity to the creek, and the majority of long-term impacts will be confined to existing disturbed and developed land that do not support natural plant communities. Further, any short-term impacts proposed to areas supporting natural habitats are not expected to have a significant effect on local wildlife movement due to ample undeveloped open space surrounding Houston Creek. In addition, no significant impacts to the creek itself are expected to occur. As such, no

long-term impacts to wildlife movement opportunities are expected to occur due to project implementation.

Jurisdictional Areas

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates discharge of dredge or fill materials into "waters of the United States" pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates alterations to streambed and bank under Fish and Wildlife Code Sections 1600 et seq., and the Regional Board regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

A small portion of Houston Creek runs adjacent to the easternmost boundary of the project site, just within the proposed limits of disturbance (refer to Exhibit 4, *Jurisdictional Areas*). Houston Creek supports surface waters year-round and is fed by the discharge waters of Lake Gregory Dam to the south. The portion of Houston Creek running adjacent to the project site supports a Mixed Riparian Forest plant community that supports such riparian species as riparian vegetation such as box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), mountain dogwood (*Cornus nuttallii*), maidenhair fern (*Adiantum aleuticum*), California mugwort (*Artemisia douglasiana*), waterweed (*Elodia* sp.), seep monkeyflower (*Erythranthe guttata*), wild pepper grass (*Lepidium virginicum*), slender muhly (*Muhlenbergia filiformis*), rush (*Schoenoplectus sp.*), and California wild grape (*Vitis californica*). None of these plant species are threatened, endangered, or have special status in California.

Houston Creek is largely supported by the discharge waters of Lake Gregory through Lake Gregory dam. The creek then flows northwest and connects to the East Fork Mojave River, which flows into Silverwood Lake. Silverwood Lake is the main junction of the West Fork and East Fork Mojave River, which run from the San Bernardino Mountains, the headwaters of the greater Mojave River. Water flows out of the northern boundary of Silverwood Lake through Cedar Springs Dam, into the Upper Narrows of the Mojave River (Relatively Permanent Water). Water from the Upper Narrows, flows northeast into the greater Mojave River (Traditional Navigable Water).

Since Houston Creek is an intermittent drainage it will fall under the regulatory authority of the Corps, Regional Board, and CDFW. If any impacts to Houston Creek will occur within the proposed project footprint, regulatory approvals will need to be prepared and processed with the Corps, Regional Board, and CDFW. The proposed project is anticipated to be constructed to avoid impacts to Houston Creek.

Special-Status Biological Resources

The CNDDB was queried for reported locations of special-status plant and wildlife species as well as natural communities of special concern in the San Bernadino North and Silverwood Lake USGS 7.5-minute quadrangles. These two quadrangles were queried due to the proximity of the site to quadrangle boundaries and regional topography. A search of published records was conducted using the CDFW BIOS database and the CNPS Inventory of Rare and Endangered Plants of California that supplied information regarding the distribution and habitats of vascular plants in the vicinity of the project site. The habitat assessment evaluated the conditions of the habitat(s) within the boundaries of the project site to determine if the existing plant communities, at the time of the survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species.

The literature search identified forty-two (42) special-status plant species, sixty-three (63) special-status wildlife species, and six (6) special-status plant communities as having potential to occur within the San Bernadino North quadrangle. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on habitat requirements, availability, and quality of suitable habitat, and known distributions. Species determined to have the potential to occur within the general vicinity of the project site is presented in Attachment C*: Potentially Occurring Special-Status Biological Resources*.

Special-Status Plants

According to the CNDDB and CNPS, forty-two (42) special-status plant species have been recorded in the San Bernadino North and Silverwood Lake quadrangles. No special-status plants were observed on the project site during the field investigation. Based on habitat requirements for specific species, the availability and quality of on-site habitats, and local observation records, it was determined that the project site has a high potential to support San Bernadino Mountains owl's-clover (*Castilleja lasiorhyncha*), ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), Laguna Mountains jewelflower (*Streptanthus bernardinus*), and southern jewelflower (*Streptanthus campestris*); and a low potential to support Palmer's mariposa-lily (*Calochortus palmeri* var. *palmeri*), Plummer's mariposa-lily (*Calochortus plummerae*), Southern Sierra woolly sunflower (*Eriophyllum lanatum* var. *obovatum*), Pine green-gentian (*Frasera neglecta*), California muhly (*Muhlenbergia californica*), golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*), Mojave phacelia (*Phacelia mohavensis*), and San Bernadino aster (*Symphyotrichum defoliatum*). It was further determined that the project site does not have potential to support the remainder of special-status plant species known to occur in the vicinity and all are presumed to be absent.

None of the aforementioned special-status are federally or state listed as endangered or threatened. These species are CNPS Rare Plant Rank 1B- and 4- species, indicating that they are rare throughout their range or are of limited distribution throughout a broad range, respectively. Since none of these species are formally listed species, no further surveys regarding these species are recommended.

Special-Status Wildlife

According to the CNDDB, sixty-three (63) special-status wildlife species have been reported in the San Bernadino North and Silverwood Lake quadrangles. No special-status wildlife species were observed on the project site during the field investigation. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site and surrounding area have a high potential to support Cooper's hawk (*Accipiter cooperii*), San Bernadino flying squirrel (*Glaucomys oregonensis californicus*), and California spotted owl (Strix *occidentalis occidentalis*); and a low potential to support arroyo toad (*Anaxyrus californicus*), long-eared owl (*Asio otus*), Southern rubber boa (Charina umbratica), Olive-sided flycatcher (*Contopus cooperi*), San Bernadino ringneck snake (*Diadophis punctatus modestus*), bald eagle (*Haliaeetus leucocephalus*), Dohrn's elegant eucnemid beetle (*Palaeoxenus dohrni*), purple martin (*Progne subis*), and two-striped gartersnake (*Thamnophis hammondii*). It was further determined that the project site does not have potential to support the remainder of special-status plant species known to occur in the vicinity, and all are presumed to be absent.

Of the aforementioned species, bald eagle is state listed as endangered, arroyo toad is federally listed as endangered, and southern rubber boa is state listed as threatened. None of the other species are federally or state listed as endangered or threatened.

In order to ensure impacts to special-status avian species do not occur from implementation of the proposed project, a pre-construction clearance survey is recommended to be conducted prior to ground disturbance. With implementation of the pre-construction clearance survey, impacts to special-status species will be less than significant and no mitigation will be required.

Due to regional significance and listing status, the potential occurrence of San Bernadino flying squirrel, California spotted owl, arroyo toad, and southern rubber boa are discussed in further detail below.

San Bernardino flying squirrel

The San Bernardino flying squirrel is not formally listed by either USFWS or CDFW. However, CDFW has designated San Bernardino flying squirrel a species of special concern. It is also considered a sensitive species in the San Bernardino National Forest by the U.S. Forest Service. The historic distribution of the San Bernardino flying squirrel includes both the San Bernardino and San Jacinto Mountains, however, recent data suggests that this subspecies may now only be extant in the San Bernardino Mountains.

The San Bernardino flying squirrel is nocturnal and is rarely observed. It occurs in a range of coniferous and deciduous forests, including riparian forests and mixed conifer forests. They are usually found in mature old-growth forests and, to a lesser degree, forests with second-growth stands. Occupied habitat tends to have an open understory with a heavy duff layer and a somewhat closed canopy. For locomotion/gliding purposes, they require somewhat dense tree cover (less than 120 feet between tall trees and preferably around 65 feet). Trees with snags and cavities suitable for nesting and denning are required, and trees that are greater than 100 feet tall and greater than 30 inches diameter at breast height are preferred. The San Bernardino flying squirrel depends largely on truffles and arboreal moss for food, as well as seeds, nuts, insects, fruit, bird eggs, and tree sap. Larger, older trees with associated woody debris and decaying logs tend to indicate a higher potential for healthy truffle growth in the underlying soil.

The project site supports swathes of heavily forested, undisturbed areas with a dense canopies and larger, older trees which provide suitable denning, and gliding opportunities for flying squirrels. In addition, the understory in these areas in composed of sufficient woody debris to provide suitable foraging habitat. Further, local records indicate that San Bernardino flying squirrel has been observed recently in nearby areas. Due to the high suitability of on-site habitat and the documented occurrence of San Bernardino flying squirrel in nearby areas, it was determined that the project site has a high potential to support San Bernardino flying squirrel. To ensure impacts to San Bernardino flying squirrel do not occur as a result of project implementation, a pre-construction clearance survey for this species is recommended to be conducted prior to project implementation, especially where project activities may involve felling or disturbing old-growth trees. With the implementation of the proposed survey, impacts to San Bernardino flying squirrel will be less than significant and no mitigation is expected to be required.

California spotted owl

The California spotted owl has been designated by CDFW as a species of special concern and is also considered a sensitive species in the San Bernardino National Forest by the U.S. Forest Service. The California spotted owl is distributed across the Sierra Nevada from Shasta County to Kern County, and along coastal southern California mountain ranges from Monterey County to San Diego County. In the San Bernardino Mountains, California spotted owl nests in mixed conifer habitat, oak/ Douglas-fir habitat, and hardwood/conifer habitat. In the San Bernardino Mountains, the average elevation of occupied nest habitat

is at 6,000 feet. Home ranges in the San Bernardino Mountains vary from approximately 800 acres to 2,200 acres. Eighty percent of nesting trees have canopy cover greater than 70 percent, with surrounding nesting habitat having at least two canopy layers. Nest trees often support large cavities, broken tops, and/or dwarf mistletoe brooms. In southern California conifer forests, stick nests placed on platforms built by other species are common. In coniferous forests, large snags and fallen logs are typically present in nesting habitat Nesting trees are on average 37 inches diameter at breast height in the San Bernardino Mountains and are typically on north-facing slopes where temperatures tend to be cooler. While California spotted owls may forage in the same habitat that they use for nesting and roosting, foraging habitat is often much more open, with canopy cover as low as 40 percent to provide ample space for flying. Although the California spotted owl will forage opportunistically on a variety of different prey species, their primary prey (79 to 97 percent) is woodrats (*Neotoma* sp.).

The project site supports suitable foraging and nesting habitat for California spotted owl, as well as the preferred variability in canopy density. In addition, local observation records indicate that this species has been documented near Lake Gregory. Therefore, it was determined that the project site has a high potential to support California spotted owl. With the completion of a pre-construction nesting bird clearance survey prior to project implementation, no significant impacts to California spotted owl are expected to occur.

Arroyo toad

The arroyo toad inhabits rivers and streams of coastal southern California, from Monterey County southward into northern Baja California, Mexico. In the United States, the arroyo toad was listed as an endangered species on December 16, 1994 (59 Federal Register 64859). In California, the arroyo toad is identified as a Species of Special Concern. The arroyo toad is about 2 to 3 inches in length with light olive green, gray, or light brown skin color with a light-colored stripe shaped “V” across the head and eyelids. Arroyo toads are found in low gradient, medium-to-large streams and rivers with intermittent and perennial flow in coastal and desert drainages in central and southern California, and Baja California, Mexico. Arroyo toads occupy aquatic, riparian, and upland habitats within its range and require slow-moving steams that are composed of sandy soils with sandy streamside terraces. Suitable habitat is created and maintained by periodic flooding and scouring that modify stream channels, redistribute channel sediments, and alter pool location and form.

Arroyo toads are found in stream segments that lack coarser sediments and flow rates are sufficient to keep silt and clay suspended. Arroyo toads breed and deposit egg masses in shallow, sandy pools bordered by sand and gravel flood terraces. Outside of the breeding season, arroyo toads are terrestrial, utilizing riparian habitats with low to moderate vegetative cover for foraging and burrowing. Adult and sub-adult arroyo toads seek shelter during the day and other periods of inactivity by burrowing into upland terraces, along flood channels, and often in the soils below the driplines of riparian tree species. Preferred substrates include of sand, fine gravel, and otherwise friable soil, with varying amounts of large gravel, cobble, and boulders. Areas utilized by juveniles consist of sand or fine gravel bars adjacent to stabilized sandy terraces and flats. Outside of the breeding season, arroyo toads forage and burrow in sand bars, alluvial terraces, and streamside benches that lack vegetation or support a low to moderate cover composed of tall trees. Upland habitats utilized by arroyo toads include alluvial scrub, coastal sage scrub, chaparral, grassland, woodland, and forest habitats. Available data suggests that arroyo toads will utilize upland habitat within approximately 1,000 feet of an active streambed.

Adjacent portions of Houston Creek supports the variable substrates preferred by arroyo toad, including friable banks and pools suitable for breeding and egg laying. In addition, the riparian and aquatic habitats present within Houston Creek and the upland habitats supported by the project site provide suitable foraging and burrowing habitat both during and outside of the breeding season. While local records indicate that this species has been observed in nearby portions of the San Bernardino Mountains, observations in proximity to the site are lacking and outdated. Therefore, it was determined that the project site has a low potential to support arroyo toad. To ensure impacts to arroyo toad to not occur due to project implementation, a pre-construction clearance survey for this species is recommended to be conducted. With the implementation of the proposed survey, impacts to arroyo toad will be less than significant and no mitigation is expected to be required.

Southern rubber boa

The southern rubber boa has been designated by the CDFW as a threatened species under the California Endangered Species Act and is also considered a sensitive species in the San Bernardino National Forest by the U.S. Forest Service. Southern rubber boa inhabits oak-conifer and mixed-conifer forests at elevations between 5,000 to 8,200 feet where rocks and logs or other debris provide shelter. It is semi-fossorial with nocturnal and crepuscular tendencies, making it difficult to find in a general diurnal field survey. It is restricted to the San Bernardino and San Jacinto Mountains. They emerge from hibernation in April and generally disappear during the summer months, though they can appear after rains or periods of high humidity. Available data suggests that southern rubber boa occurs almost exclusively within or near small to large rock outcrops, which serve as hibernacula.

Portions of the project site support large rock outcrops that provide suitable hibernacula for southern rubber boa and suitable foraging and cover habitat is present throughout the site. Therefore, it was determined that the undisturbed areas on the project site has a low potential to support southern rubber boa. To ensure impacts to southern rubber boa do not occur from project implementation, a pre-construction clearance survey for this species is recommended to be conducted. With the implementation of the proposed survey, impacts to southern rubber boa will be less than significant and no mitigation is expected to be required.

Special-Status Plant Communities

The CNDDB lists six (6) special-status habitats as being identified within the San Bernadino North and Silverwood Lake quadrangles: Mixed Montane Chaparral, Riversidian Alluvial Fan Sage Scrub, Semi Desert Chaparral, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, and Westside Ponderosa Pine Forest. None of these special status habitats were observed as occurring within or near the project site.

Critical Habitat

Under the federal Endangered Species Act, "Critical Habitat" is designated at the time of listing of a species or within one year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. All federal agencies are required to consult with the United States Fish and Wildlife Service (USFWS) regarding activities they authorize, fund, or permit which may affect a federally listed species or its designated Critical Habitat. The purpose of the consultation is to ensure that projects will not jeopardize

the continued existence of the listed species or adversely modify or destroy its designated Critical Habitat. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing is on federal lands, uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highways Administration or a CWA Permit from the Corps). If there is a federal nexus, then the federal agency that is responsible for providing the funding or permit would consult with the USFWS.

The project site is not located with federally designated Critical Habitat. The nearest designated Critical Habitat is located approximately 1.9 miles southwest for southwestern willow flycatcher (*Empidonax trailli extimus*). Refer to Exhibit 5, *Critical Habitat*, in Attachment A. Therefore, the loss or adverse modification of Critical Habitat will not occur as a result of project implementation and consultation with the USFWS will not be required for implementation of the proposed project.

Conclusion

Based on the literature review and field survey, and existing site conditions discussed in this report, implementation of the project will have no significant impacts on federally or State listed species known to occur in the general vicinity of the project site. Additionally, the project will have no effect on designated Critical Habitat, or regional wildlife corridors/linkage due to relevant long-term impacts being consolidated to already disturbed or developed land and the presence of ample open space surrounding the site. A single drainage feature, Houston Creek, was observed occurring adjacent to the eastern boundary of the project site. With completion of the recommendations provided below, no impacts to year-round, seasonal, or special-status avian residents or special-status species will occur from implementation of the proposed project.

Recommendations

Migratory Bird Treaty Act and Fish and Game Code

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). In order to protect migratory bird species, a nesting bird clearance survey should be conducted prior to any ground disturbance or vegetation removal activities that may disrupt the birds during the nesting season.

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting

behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

As part of the nesting bird clearance, it is recommended that a burrowing owl pre-construction clearance survey be conducted prior to any ground disturbance or vegetation removal activities to ensure that burrowing owls remain absent from the project site.

San Bernardino flying squirrel, arroyo toad, and southern rubber boa

To ensure impacts to San Bernardino flying squirrel, arroyo toad, and southern rubber boa do not occur as a result of project implementation, pre-construction clearance surveys for these species are recommended to be conducted prior to project implementation. With the completion of the recommended surveys, no significant impacts to these species will occur and no mitigation related to these species will be required.

Although not anticipated, if San Bernardino flying squirrel, arroyo toad, or southern rubber boa are found on-site during the pre-construction clearance survey, coordination will need to occur with the USFWS and CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to desert tortoise, or if "Take" permits will need to be obtained prepared and approved by the USFWS and CDFW.

Jurisdictional Waters

Since Houston Creek is an intermittent drainage it will fall under the regulatory authority of the Corps, Regional Board, and CDFW. If any impacts to Houston Creek will occur within the proposed project footprint, regulatory approvals will need to be prepared and processed with the Corps (CWA Section 404), Regional Board (CWA Section 401), and CDFW (SAA 1602). The proposed project is anticipated to be constructed to avoid impacts to Houston Creek.

Please do not hesitate to contact Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com, or Jacob Lloyd Davies at jhld@elmtconsulting.com should you have any questions.

Sincerely,

Travis J. McGill | Director

Jacob H. Lloyd Davies | Associate Biologist

Attachments:

A. *Project Exhibits*
B. *Site Plan*
C. *Site Photographs*
D. *Potentially Occurring Special-Status Biological Resources*
E. *Regulations*

Attachment A

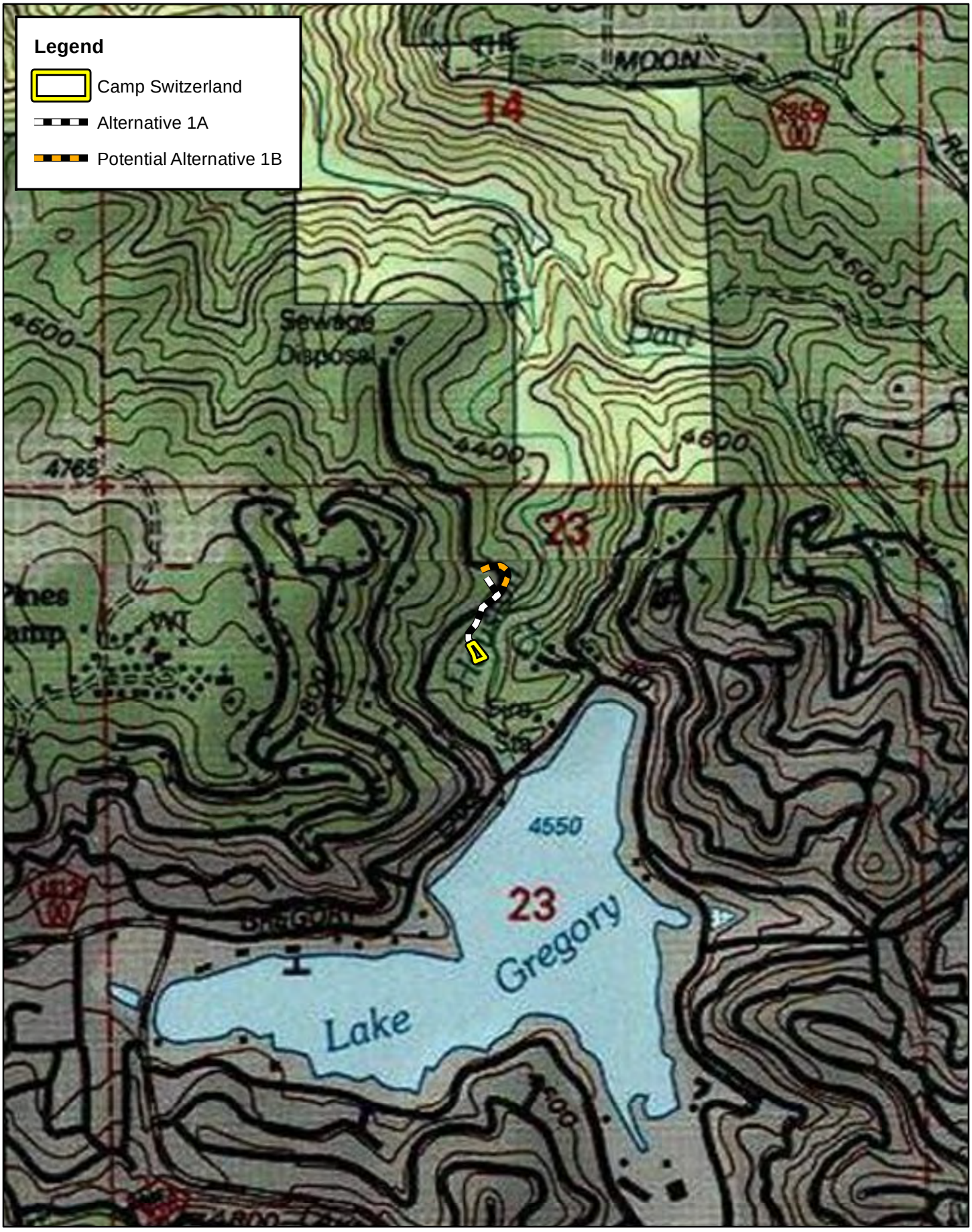
Project Exhibits

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Regional Vicinity

Source: World Street Map, San Bernardino County

Exhibit 1



ELMT CONSULTING

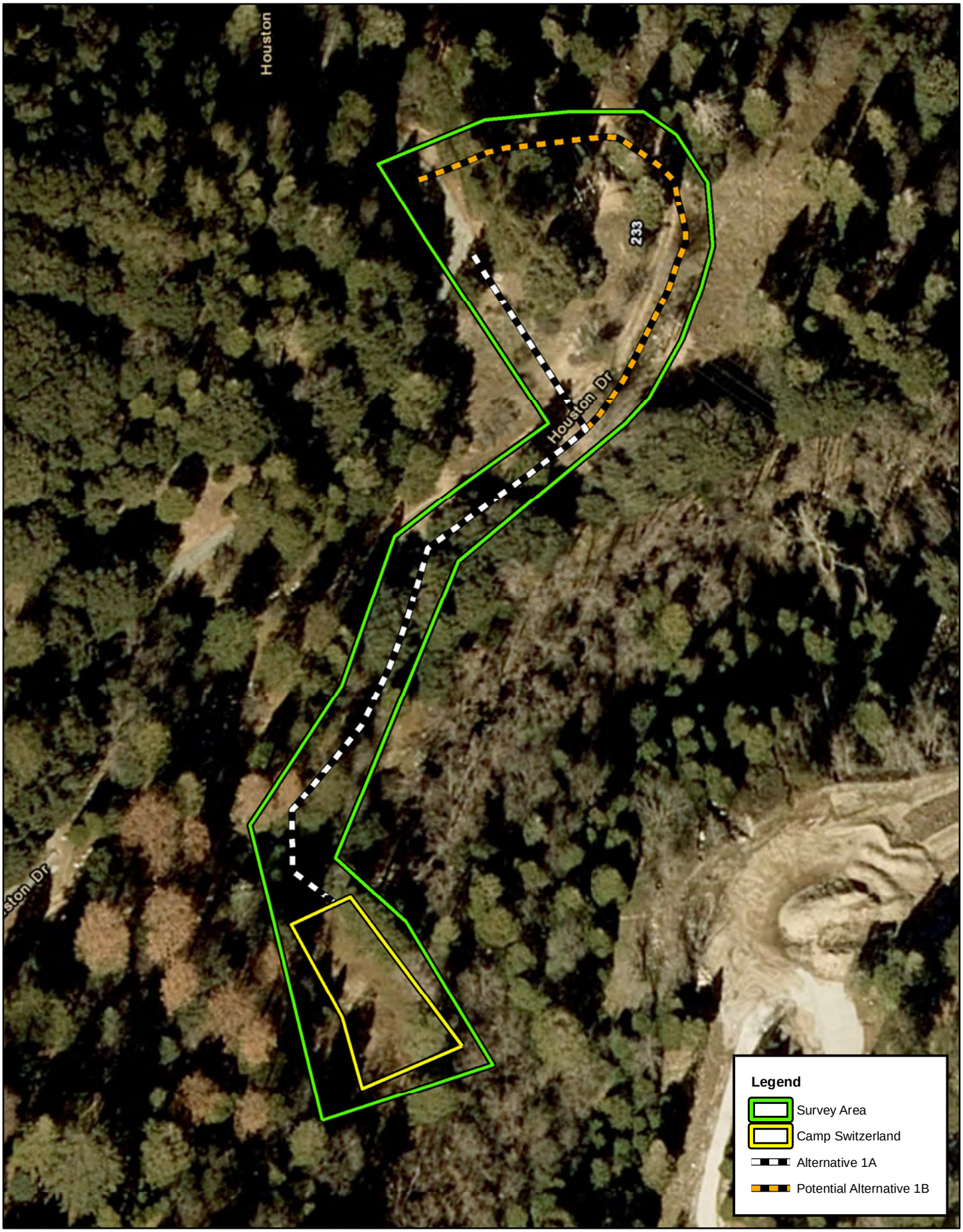
0 500 1,000 2,000 Feet

Source: USA Topographic Map, San Bernardino County

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Site Vicinity

Exhibit 2



ELMT CONSULTING

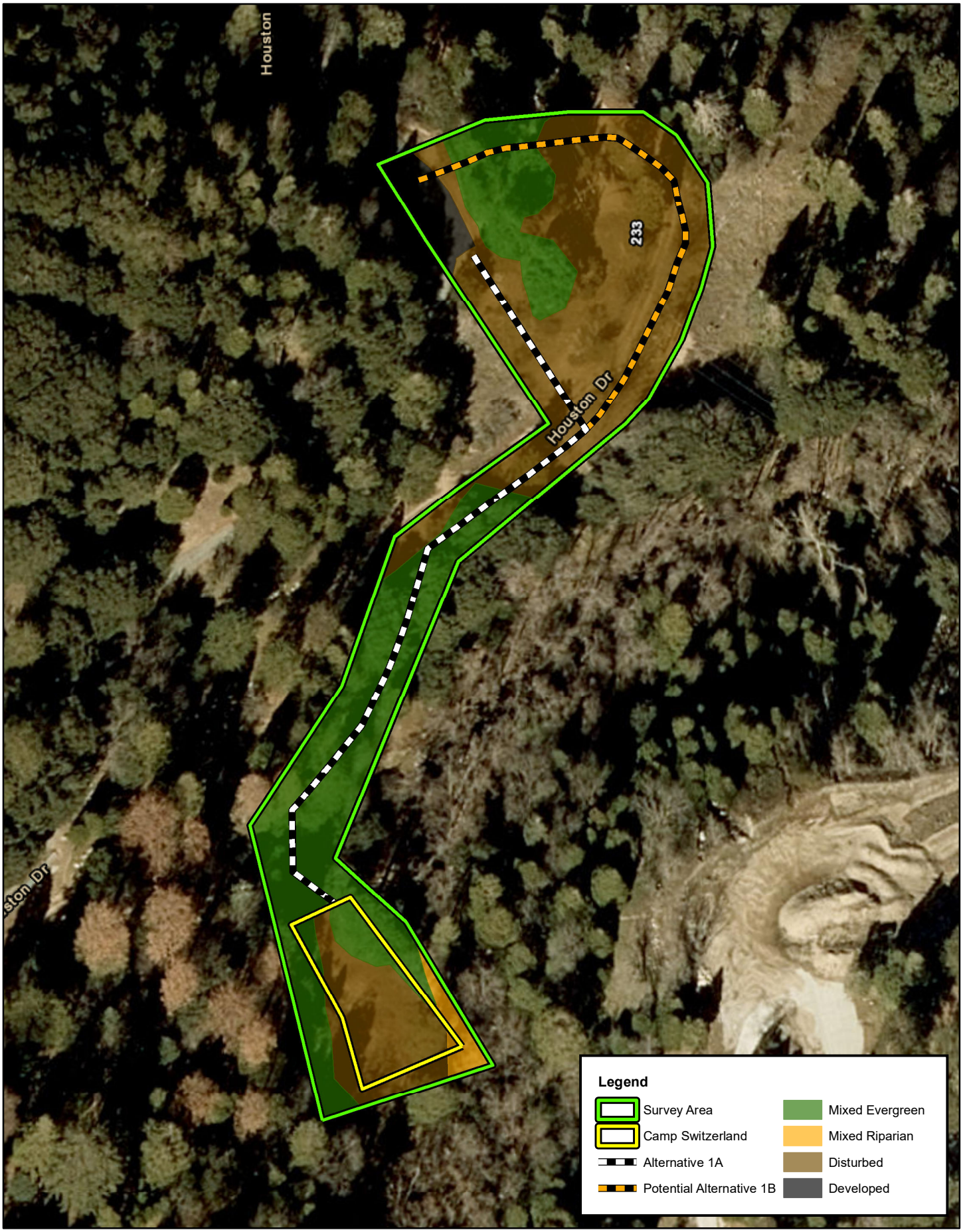
0 50 100 200 Feet

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Project Site

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 3



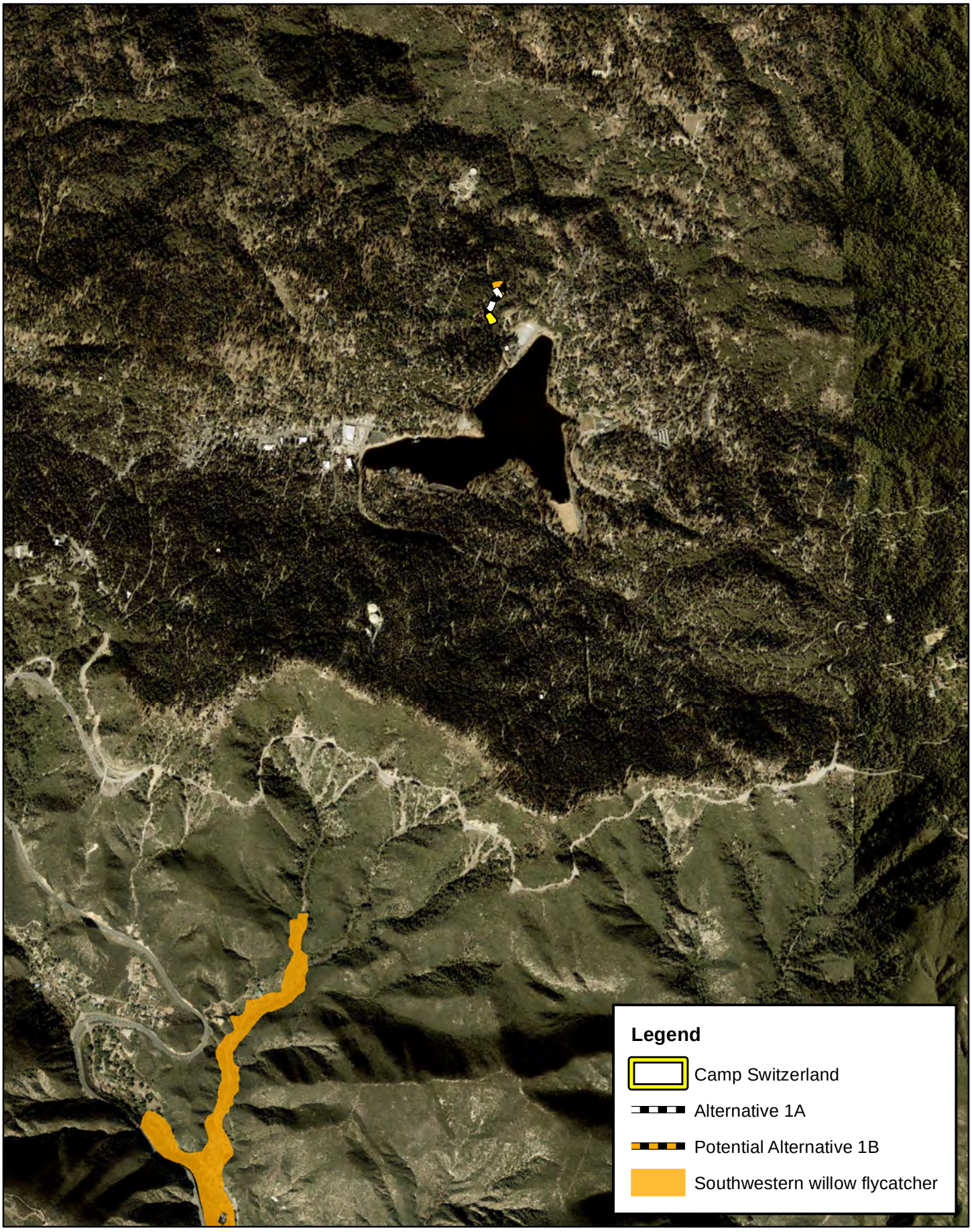
ELMT CONSULTING

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Vegetation

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 4



ELMT CONSULTING

0 0.25 0.5 1 Miles

Source: ESRI Aerial Imagery, USFWS Critical Habitat, San Bernardino County

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Critical Habitat

Exhibit 5

Attachment B

Site Plan

POTENTIAL ALTERNATIVE 1B

ALTERNATIVE 1A

Approximate Camp Switzerland Location

EDELWEISS DR.

LAKEAMBLE DRIVE

RS 40/68

1"=100'

ATKINS

Attachment C

Site Photographs

Photograph 1: From the inside the project site, looking west at a guard rail marking the eastern boundary of Houston Drive and the existing sewer main line.

Photograph 2: From inside the project site, looking west toward Houston Drive through an unnamed drainage in forested area, where the new proposed sewer lines will run.

Photograph 3: From the northern boundary of the area which will support the proposed sewer lift station, looking west toward Houston Drive.

Photograph 4: From the northern boundary of the area which will support the proposed sewer lift station, looking south along Houston Creek.

Photograph 5: From the northern boundary of the area which will support the proposed sewer lift station, looking southwest through the middle of the site.

Photograph 6: From the western boundary of the area which will support the proposed sewer lift station, looking east through the middle of the site toward Houston Creek.

Photograph 7: From the southwest corner of the area which will support the proposed sewer lift station, looking north along the western boundary of the site.

Photograph 8: From the southeast corner of the area which will support the proposed sewer lift station, looking north along the eastern boundary of the site.

Photograph 9: From the southeast corner of the corner of the area which will support the proposed sewer lift station, looking south toward an unmarked access path offsite.

Photograph 10: From an area inside Houston Creek, which runs adjacent to the proposed project site, looking south upstream toward Lake Gregory Dam.

Photograph 11: From inside an unnamed access road, which leads from Houston Drive to the proposed site for the new sewer lift station.

Photograph 12: From Houston Drive, looking north at the unnamed access road connecting Houston Drive to the proposed site for the new sewer lift station.

Attachment D

Potentially Occurring Special-Status Species

Table D-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
SPECIAL-STATUS WILDLIFE SPECIES				
Accipiter cooperii Cooper's hawk	Fed: None CA: WL	Generally found in forested areas up to 8,000 feet in elevation, especially near edges and rivers. Prefers hardwood stands and mature forests but can be found in urban and suburban areas where there are tall trees for nesting. Common in open areas during nesting season.	No	**High** Suitable foraging and nesting habitat are present within and surrounding the project site.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	Fed: None CA: WL	Typically found between 3,000 and 6,000 feet in elevation. Breed in sparsely vegetated shrublands on hillsides and canyons. Prefers coastal sage scrub dominated by California sagebrush (*Artemisia californica*), but can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Anaxyrus californicus arroyo toad	Fed: **END** CA: SSC	Found in low gradient, medium-to-large streams and rivers with intermittent and perennial flow in coastal and desert drainages from central California to Baja California, Mexico. Require exposed sandy streamsides with stable terraces for burrowing, and scattered vegetation.	No	**Low** Suitable foraging and burrowing habitat are present adjacent to the project site.
Anniella stebbinsi southern California legless lizard	Fed: None CA: SSC	Occurs primarily in areas with sandy or loose loamy soils under sparse vegetation of beaches, chaparral, or pine-oak woodland; or near sycamores, oaks, or cottonwoods that grow on stream terraces. Often found under or in the close vicinity of logs, rocks, old boards, and the compacted debris of woodrat nests.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Aquila chrysaetos golden eagle	Fed: None CA: FP; WL	Occupies nearly all terrestrial habitats of the western states except densely forested areas. Favors secluded cliffs with overhanging ledges and large trees for nesting and cover. Hilly or mountainous country where takeoff and soaring are supported by updrafts is generally preferred to flat habitats. Deeply cut canyons rising to open mountain slopes and crags are ideal habitat.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Arizona elegans occidentalis California glossy snake	Fed: None CA: SSC	Occurs in a wide variety of habitat types including open desert, grasslands, shrublands, chaparral, and woodlands. Prefers areas where the soil is loose and sandy which allows for burrowing.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Artemisiospiza belli belli Bell's sage sparrow	Fed: None CA: WL	Occurs in chaparral dominated by dense stands of chamise. Also found in coastal sage scrub in south of range.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Asio otus long-eared owl	Fed: None CA: SSC	Inhabits forests with extensive meadows, groves of conifers or deciduous trees and streamside groves. Favors dense trees for nesting and roosting and open country for hunting.	No	**Low** Moderate foraging and nesting habitat are present within and surrounding the project site.
Aspidoscelis hyperythra orangethroat whiptail	Fed: None CA: WL	Inhabits low-elevations coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats. Semi-arid brushy areas typically with loose soil and rocks, including washes, stream sides, rocky hillsides, and coastal chaparral.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Aspidoscelis tigris stejnegeri coastal whiptail	Fed: None CA: SSC	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage such as chaparral, woodland, and riparian areas.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Batrachoseps gabrieli San Gabriel slender salamander	Fed: None CA: None	Known from select localities in the San Gabriel Mountains and the Mt. Baldy area, and limited distribution in the western periphery of the San Bernardino Mountains in San Bernardino Co., with an elevation range of 1,200- 5,085 feet. Occurs on talus slopes surrounded by a variety of conifer and montane hardwood species, including bigcone spruce, pine, white fir, incense cedar, canyon live oak, black oak, and California laurel.	No	**Presumed Absent** The project site occurs outside of the geographic range of this species.
Bombus crotchii Crotch bumble bee	Fed: None CA: CE	Colonial species that lives almost exclusively from coastal California east towards the Sierra-Cascade Crest and can be found uncommonly in western Nevada and south through Baja California. Inhabits grassland and scrub habitats in hotter and drier climates than most other bumblebee species and is only capable of tolerating a narrow range of climatic conditions. This species usually nests underground, often in abandoned rodent dens.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Bombus pensylvanicus American bumblebee	Fed: None CA: None	Prefers farmlands, meadows, grasslands, and open fields. Nests below grass or underground. Feeds on pollen of a wide variety of flowering plants including vetches, clovers, goldenrods, and many crop species.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Buteo regalis ferruginous hawk	Fed: None CA: WL	Occurs primarily in open grasslands and fields, but may be found in sagebrush flats, desert scrub, low foothills, or along the edges of pinyon-juniper woodland. Feeds primarily on small mammals and typically found in agricultural or open fields.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Calypte costae Costa's hummingbird	Fed: None CA: None	Desert and semi-desert, arid brushy foothills and chaparral. A desert hummingbird that breeds in the Sonoran and Mojave Deserts. Departs desert heat moving into chaparral, scrub, and woodland habitats.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Chaetodipus fallax fallax northwestern San Diego pocket mouse	Fed: None CA: SSC	Occurs in desert and coastal habitats in southern California, Mexico, and northern Baja California, from sea level to at least 1,400 meters above msl. Found in a variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Requires low growing vegetation or rocky outcroppings, as well as sandy soils for burrowing.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Charina umbratica Southern rubber boa	Fed: None CA: **THR**	Found in a variety of montane forest habitats, particularly in the vicinity of streams or wet meadows. Requires loose, moist soil for burrowing and seeks cover in rotting logs. Restricted to the San Bernardino and San Jacinto Mountains.	No	**Low** Suitable foraging and burrowing habitat are present within and surrounding the project site.
Contopus cooperi Olive-sided flycatcher	Fed: None CA: SSC	Montane and northern coniferous forests. Usually found in forest edges and openings, such as meadows and ponds.	No	**Low** Suitable foraging and nesting habitat are present within and surrounding the project site.
Crotalus ruber red-diamond rattlesnake	Fed: None CA: SSC	Found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cooler ocean shores. Commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake; however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats.		**Presumed Absent** There is no suitable habitat present within or near the project site.
Diadophis punctatus modestus San Bernadino ringneck snake	Fed: None CA: None	Found in various moist habitats including woodland chaparral, forest and grassland at elevations up to 7,200 feet. Can also be found in farmlands and gardens. Shelters under logs, stones or boards and is not an active burrower.	No	**Low** Limited foraging and cover habitat are present within and surrounding the project site.
Dipodomys merriami parvus San Bernardino kangaroo rat	Fed: **END** CA: CE; SSC	Primarily found in Riversidian alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub. May occur at lower densities in Riversidian upland sage scrub, chaparral and grassland in uplands and tributaries in proximity to Riversidian alluvial fan sage scrub habitats. Tend to avoid rocky substrates and prefer sandy loam substrates for digging of shallow burrows.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Dipodomys simulans Dulzura kangaroo rat	Fed: None CA: None	Relatively common in chaparral, coastal sage scrub, Riversidean alluvial fan sage scrub, and peninsular juniper woodland habitats.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Empidonax traillii Willow flycatcher	Fed: None CA: **END**	Found in bushes, willows, thickets, brushy fields and upland copses. Breeds in thickets of deciduous trees and shrubs, especially willows or along woodland edges. Often near streams or marshes, especially in southern part of range, but may be found in drier habitats than Alder Flycatcher.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Empidonax traillii extimus Southwestern willow flycatcher	Fed: **END** CA: **END**	Requires dense riparian habitats for nesting. Breeds in thickets of deciduous trees and shrubs, especially willows or along woodland edges. Often near streams or marshes. Winters around clearings and second growth in the tropics, especially near water.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Emys marmorata western pond turtle	Fed: None CA: SSC	Found in permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, irrigation ditches, and reservoirs. Basks on land or near water on logs, branches or boulders. Eggs are deposited in burrows dug in sandy soils.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Eremophila alpestris actia California horned lark	Fed: None CA: WL	Generally found in shortgrass prairies, grasslands, disturbed fields, or similar habitat types along the coast or in deserts. Trees are shrubs are usually scarce or absent. Generally rare in montane, coniferous, or chaparral habitats. Forms large flocks outside of the breeding season.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Euchloe hyantis andrewsi Andrew's marble butterfly	Fed: None CA: None	Inhabits yellow pine forests near Lake Arrowhead and Big Bear Lake at elevations between 5,000 and 6,000 feet. Uses Laguna Mountains jewelflower (*Streptanthus bernardinus*) and pine rockcress (*Arabis holboelli var. pinetorum*) as host plants; larvae feed on mountain tansy mustard (*Descurainia incana*).	No	**Presumed Absent** The project site occurs outside of the known geographic and elevational range for this species.
Euphydryas editha quino quino checkerspot butterfly	Fed: **END** CA: None	Primary larval host plant is dwarf plantain (*Plantago* erecta). Occupies a variety of habitat types, including grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodland and semi-desert scrub.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Falco columbarius merlin	Fed: None CA: WL	Winters in open forests, grasslands and coastal areas. Breeds in forested openings, edges and along rivers. Habitat varies from coniferous forests to open conifer woodland, prairie groves, foothill marshes and open country.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Falco peregrinus anatum American peregrine falcon	Fed: DL CA: DL	Found in wide variety of open habitats, from tundra to desert mountains. Often near water, especially along coast. Migrants may fly far out to sea. Often found in cities, nesting on building ledges and feeding on pigeons.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Gila orcuttii arroyo chub	Fed: None CA: SSC	Occupies warm streams of the Los Angeles Plain, which provide muddy torrents during the winter, and clear quiet brooks in the summer, but can dry up in certain areas. Found in both slow-moving, and rapid sections, typically in areas deeper than 15 inches.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Glaucomys oregonensis californicus San Bernadino flying squirrel	Fed: None CA: SSC	Occurs in white fir (*Abies concolor*) and Jeffrey pine (*Pinus jeffreyi*) mixed conifer forests with black oak (*Quercus kelloggii*) components at higher elevations. Use cavities in large trees, snags, and logs for cover. Habitats are typically mature, dense conifer forest in close proximity to riparian areas.	No	**High** Suitable foraging and cover habitat and denning opportunities are present within and surrounding the project site. Records indicate this species is present in the area.
Gopherus agassizii Mojave Desert tortoise	Fed: **THR** CA: **THR**	Occurs in desert scrub, desert wash, and Joshua tree habitats with friable, sandy, well-drained soils for nest and burrow construction. Highest densities occur in creosote bush scrub with extensive annual wildflower blooms and succulents with little to no non-native plant species.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Gymnogyps californianus *California condor*	Fed: **END** CA: **END**; FP	Inhabits rugged canyons, gorges, and forested mountains between 985 and 8,860 feet. Nests primarily between 2,000 and 4,500 feet in cliff caves.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Haliaeetus leucocephalus bald eagle	Fed: **DL** CA: **END**; FP	Found throughout most of North America from Alaska and Canada to northern Mexico. Prefers lakes and resevoirs with alot of fish and surrounding old-growth forests. Winters around unfrozen lakes and hunts along coastlines, reservoirs, and rivers.	No	**Low** Minimal nesting habitat is present within the project site and suitable foraging habitat is present to the south within Lake Gregory.
Helminthoglypta taylori westfork shoulderband	Fed: None CA: None	Found in coastal sage scrub and chaparral habitats in the desert foothills. Very little information can be obtained about the habitat preferences of this species.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Icteria virens yellow-breasted chat	Fed: None CA: SSC	Primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide shade and concealment. It winters south the Central America.	No	**Presumed Absent** The narrow swathes of riparian vegetation within and east of the site are not substantial enough to support this species.
Lanius ludovicianus loggerhead shrike	Fed: None CA: SSC	Often found in broken woodlands, shrublands, and other habitats. Prefers open country with scattered perches for hunting and fairly dense brush for nesting.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Lasiurus xanthinus Western yellow bat	Fed: None CA: SSC	Roosts in palm trees in foothill riparian, desert wash, and palm oasis habitats with access to water for foraging.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Lepus californicus bennettii San Diego black-tailed jackrabbit	Fed: None CA: None	Occurs in diverse habitats, but primarily is found in arid regions supporting shortgrass habitats. Openness of open scrub habitat is preferred over dense chaparral.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Neolarra alba white cuckoo bee	Fed: None CA: None	Found in dry, sandy areas (particularly deserts) in the American southwest near the host plants for *Perdita* bee species, of which it is a nest parasite.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Neotoma lepida intermedia San Diego desert woodrat	Fed: None CA: SSC	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Prefers moderate to dense canopies, and especially rocky outcrops.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Nyctinomops femorosaccus pocketed free-tailed bat	Fed: None CA: SSC	Often found in pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
***Oncorhynchus mykiss irideus* pop. 10** steelhead – southern california DPS	Fed: **END** CA: CE	Found in permanent coastal streams from San Diego to the Smith River.	No	**Presumed Absent** The rainbow trout present in Lake Gregory is not this subspecies, but rather a stocked game fish.
Palaeoxenus dohrni Dohrn's elegant eucnemid beetle	Fed: None CA: None	Typically found in remote mountainous forested lands consisting of cedar, ponderosa pine, and sugar pine. Adults and larvae are found beneath bark near the base of stumps. Adults are active from May through June.	No	**Low** Suitable habitat is present within and surrounding the project site.
Pandion haliaetus osprey	Fed: None CA: WL	Remain close to still or slow-moving bodies of water including oceans, rivers, lakes, mangroves, coastal wetlands, lagoons, reefs, estuaries and marshes. Generally nest in high places, such as trees, power poles, or cliffs.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Perognathus longimembris brevinasus Los Angeles pocket mouse	Fed: None CA: SSC	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows but will seek refuge under weeds and dead leaves instead.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Phrynosoma blainvillii coast horned lizard	Fed: None CA: SSC	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (i.e. fire, floods, roads, grazing, fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Polioptila californica californica coastal California gnatcatcher	Fed: **THR** CA: SSC	Obligate resident of sage scrub habitats that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Progne subis purple martin	Fed: None CA: SSC	Prefers open spaces that are located near water sources. Forages in meadows, grasslands, over lakes and ponds and flooded pastures. Also inhabits urban areas like farms, croplands, parks and gardens. Nests in cavities of trees, cactus, buildings, or cliffs.	No	**Low** Suitable foraging and nesting habitat are present within and surrounding the project site.
Pyrocephalus rubinus vermillion flycatcher	Fed: None CA: SSC	Prefers open habitat such as arid scrubland, farmland, desert savannah, cultivated lands and riparian woodlands. Nests can be found specifically in willows, oaks, cottonwoods, mesquites and sycamores.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Rana draytonii California red-legged frog	Fed: **THR** CA: SSC	Found from sea level to elevations of about 5,200 feet, primarily in ponds, marshes, streams, and other slow-moving water bodies with sufficient vegetation. Breeds in aquatic habitats and forages in upland habitats.	No	**Presumed Absent** Suitable aquatic habitat is present within the project site; however, no known populations occur in the vicinity of the site. USFWS no longer recognizes this species as occurring in the San Bernardino Mountains.
Rana muscosa southern mountain yellow-legged frog	Fed: **END** CA: **END**; WL	Occurs in lower elevation habitats characterized by rocky streambeds and wet meadows, while higher elevation habitats include lakes, ponds, and streams. Occupy streams in narrow, rock-walled canyons. Often found along rock walls or vegetated banks and always within a few feet of the water. Specialized for cold, oligotrophic habitats. Typical elevation range is 1,200 to 7,550 feet.	No	**Presumed Absent** Suitable foraging, burrowing, and cover habitat are present within and surrounding the project site. However, the site occurs outside of the geographic range for this species mapped in the CNDDB, and no recent observations have been made locally.
***Rhinichthys osculus* ssp. 8** Santa Ana speckled dace	Fed: None CA: SSC	Requires permanent flowing streams within summer water temperatures of 17 – 20 degrees Celsius. Inhabits shallow cobble and gravel riffles and small streams that flow through steep, rocky canyons with chaparral covered walls.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Salvadora hexalepis virgultea coast patch-nosed snake	Fed: None CA: SSC	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains. Requires friable soils for burrowing.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Setophaga petechia yellow warbler	Fed: None CA: SSC	Nests over all of California except the Central Valley, the Mojave Desert region, higher altitudes, and the eastern side of the Sierra Nevada. Winters along the Colorado River and in parts of Imperial and Riverside Counties. Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral. May also use oaks, conifers, and urban areas near stream courses.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Siphateles bicolor mohavensis Mohave tui chub	Fed: **END** CA: **END**; FP	The only fish native to the Mojave River. Restricted from the base of the San Bernadino Mountains to Soda Dry Lake. Requires slow-moving alkali waters with an abundance of aquatic vegetation. Can be found in deep pools or shallower out-flow streams.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Spea hammondii Western spadefoot	Fed: PT CA: SSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washed, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rainpools which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Spinus lawrencei Lawrence's Goldfinch	Fed: None CA: None	Open woodlands, chaparral, and weedy fields. Closely associated with oaks. Nests in open oak or other arid woodland and chaparral near water.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Strix occidentalis occidentalis California spotted owl	Fed: None CA: SSC	Breeds and roosts in forests and woodland with large old trees and snags, high basal areas of trees and snags, dense canopies, multiple canopy layers, and downed woody debris. Large old trees are key as they provide nest sites and cover from weather.	No	**High** Suitable foraging and nesting habitat are present within and surrounding the project site. Records indicate this species is present nearby.
Taxidea taxus American badger	Fed: None CA: SSC	Primarily occupy grasslands, parklands, farms, tallgrass and shortgrass prairies, meadows, shrub-steppe communities and other treeless areas with sandy loam soils where it can dig more easily for its prey. Occasionally found in open chaparral (with less than 50% plant cover) and riparian zones.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
Thamnophis hammondii Two-striped gartersnake	Fed: None CA: SSC	Occurs in or near permanent fresh water, often along streams with rocky beds and riparian growth up to 7,000 feet in elevation.	No	**Low** Suitable aquatic foraging and cover habitat are present within and surrounding the project site. Records indicate this species occurs nearby.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Vireo bellii pusillus least Bell's vireo	Fed: **END** CA: **END**	Primarily occupy Riverine riparian habitat that typically feature dense cover within 1-2 meters of the ground and a dense, stratified canopy. Typically it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodlands, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses, 2,000 feet elevation in the interior.	No	**Presumed Absent** There is no suitable habitat present within or near the project site.
SPECIAL-STATUS PLANT SPECIES				
Androsace elongata ssp. acuta California androsace	Fed: None CA: None CNPS: 4.2	Grows in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland habitats. Found at elevations ranging from 490 to 4,280. Blooms from May to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Arenaria paludicola marsh sandwort	Fed: **END** CA: **END** CNPS: 1B.1	Grows mainly in wetlands and freshwater marshes in arid climates. The plant can grow in saturated acidic bog soils and soils that are sandy with a high organic content. Found at elevations ranging from 33 to 558 feet. Blooming period is from May to August.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Azolla microphylla Mexican mosquito fern	Fed: None CA: None CNPS: 4.2	Found in freshwater habitats like ponds or slow streams either free-floating or stranded on mud. Grows at elevations ranging from 100 to 330 feet. Blooms in August.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Berberis nevinii Nevin's barrberry	Fed: **END** CA: **END** CNPS: 1B.1	Prefers a riparian and alluvial scrub habitat and can be found in foothill woodlands, coastal sage scrub, and chaparral communities. Grows on sandy, gravelly soils in washes, alluvial terraces and canyon bottoms. Found at elevations ranging from 230 to 2,705 feet. Blooming period is from (February) March to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Brodiaea filifolia Thread-leaved brodiaea	Fed: **THR** CA: **END** CNPS: 1B.1	Often found in clay soils within openings of chaparral, cismontane woodland, coastal scrub, playas, vernal pools, valley and foothill grassland habitats. Found at elevations ranging from 82 to 3,675 feet. Blooming period ranges from March to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Calochortus catalinae Catalina mariposa-lily	Fed: None CA: None CNPS: 4.2	Grows in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Found at elevations ranging from 49 to 2,297 feet. Blooming period is from February to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Calochortus palmeri* var. *palmeri Palmer's mariposa-lily	Fed: None CA: None CNPS: 1B.2	Found in Chaparral, lower montane coniferous forest and meadow and seep habitats from 2,330 to 7,840 feet. Blooms from April to July.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Calochortus plummerae Plummer's mariposa-lily	Fed: None CA: None CNPS: 4.2	Prefers openings in chaparral, foothill woodland, coastal sage scrub, valley foothill grasslands, cismontane woodland, lower montane coniferous forest and yellow pine forest. Often found on dry, rocky slopes and soils and brushy areas. Can be very common after a fire. Found at elevations ranging from 330 to 5,580 feet. Blooming period is from May to July.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Calochortus simulans La Panza mariposa-lily	Fed: None CA: None CNPS: 1B.3	Found in Chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland habitats from 1,065 to 3,775 feet. Prefers granitic soils, but can be found in sandy or serpentine substrates as well. Blooming period is from April to June.	No	**Presumed Absent** The project site occurs outside of the known elevation range for this species.
Canbya candida white-pygmy poppy	Fed: None CA: None CNPS: 4.2	Occurs on gravelly, sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland. Found at elevations ranging from 2,297 to 5,249 feet above mean sea level (msl). Blooming period is from March to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Castilleja lasiorhyncha San Bernadino Mountains owl's-clover	Fed: None CA: None CNPS: 1B.2	Found in chaparral, riparian woodland, pebble (pavement) plain, upper montane coniferous forest, meadows and seeps habitats. Found at elevations ranging from 4,265 to 7,841 feet. Blooming period is from May to August.	No	**High** Suitable habitat is present within and adjacent to the project site. Records indicate this species is present nearby.
Castilleja plagiotoma Mojave paintbrush	Fed: None CA: None CNPS: 4.3	Grows on dry flats, rocky, sandy, or clay slope and ridges in sagebrush steppes, chaparral, desert scrub, and pinyon-juniper woodland communities. Common on dry rocky slopes of Mojave Desert. Found at elevations up to 8,000 feet. Blooms from April to May.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Centromadia pungens* ssp. *Laevis Smooth tarplant	Fed: None CA: None CNPS: 1B.1	Occurs in alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland habitats. Grows in elevation from 0 to 2,100 feet. Blooming period ranges from April to September.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Chloropyron maritimum* ssp. *Maritimum Salt marsh bird's-beak	Fed: **END** CA: **END** CNPS: 1B.2	Upper terraces and higher edges of coastal salt marshes where tidal inundation is periodic. Found at elevations ranging from 0 to 98 feet. Blooming period is from May to October.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Chorizanthe parryi* var. *parryi Parry's spineflower	Fed: None CA: None CNPS: 1B.1	Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. Found at elevations ranging from 951 to 3,773 feet. Blooming period is from April to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Deinandra mohavensis Mojave tarplant	Fed: None CA: **END** CNPS: 1B.3	Found in the southernmost areas of the Sierra Nevada Mountains, the Mojave Desert, the Peninsular Ranges, and the San Bernadino Mountains. Grows in mesic areas in chaparral, coastal scrub, and riparian scrub habitats. Found at elevations ranging from 2,100 to 5,250 feet. Blooms from June to October.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Dodecahema leptoceras slender-horned spineflower	Fed: **END** CA: **END** CNPS: 1B.1	Chaparral, coastal scrub (alluvial fan sage scrub). Flood deposited terraces and washes. Found at elevations ranging from 1,181 to 2,690 feet. Blooming period is from April to June.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Eremothera boothii ssp. boothii Booth's evening-primrose	Fed: None CA: None CNPS: 2B.3	Can be found in sagebrush desert on dry rocky slopes, loose soils, sand or ash, and sometimes along roadsides from low desert plains to mountains and slopes, Found at elevations ranging from 2,675 to 7,875 feet. Blooming period is from April to September.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Eriastrum densifolium* ssp. *sanctorum Santa Ana River woollystar	Fed: **END** CA: **END** CNPS: 1B.1	Found in sandy soil in association with mature alluvial scrub. Ideal habitat appears to be a terrace or bench that receives overbank deposits every 50 to 100 years. Cryptogamic crusts are frequently present in occupied areas. Found at elevations ranging from 299 to 2,001 feet. Blooming period is from April to September.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Eriophyllum lanatum* var. *obovatum Southern Sierra woolly sunflower	Fed: None CA: None CNPS: 4.3	Prefers full sun and well-drained loamy and sandy soils. Most common in chaparral, oak woodland, mixed evergreen forest, yellow pine forest, grassland and sagebrush scrub habitats, but also grows on rocky slopes and bluffs. Found at elevations ranging from 3,655 to 8,205 feet. Blooming period is from June to July.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Fimbristylis thermalis Hot springs fimbristylis	Fed: None CA: None CNPS: 2B.2	Habitat includes meadows and seeps (alkaline, near hot springs). Found at elevations ranging from 361 to 4,396 feet. Blooming period is from July to September.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Frasera neglecta Pine green-gentian	Fed: None CA: None CNPS: 4.3	Found in lower montane coniferous forest, upper montane coniferous forest, pinyon and juniper woodland habitats. Found at elevations ranging from 4,593 to 8,202 feet. Blooming period is from May to July.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Imperata brevifolia California satintail	Fed: None CA: None CNPS: 2B.1	Grows primarily in riparian habitats and has an affinity for moist soils, but can be found in chaparral, coastal scrub, mojavean desert scrub, meadows and seeps. Found at elevations ranging from 0 to 3,986 feet. Blooming period is from September to May.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Juglans californica southern California black walnut	Fed: None CA: None CNPS: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Found at elevations ranging from 164 to 2,953 feet. Blooming period is from March to August.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Juncus duranii Duran's rush	Fed: None CA: None CNPS: 4.3	Grows in mesic areas within lower montane coniferous forest, meadows and seeps, and upper montane coniferous forest. Found at elevations ranging from 5,800 to 9,200 feet. Blooming period is from July to August.	No	**Presumed Absent** The project site occurs outside of the known elevation range for this species.
Lilium humboldtii* ssp. *ocellatum ocellated Humboldt lily	Fed: None CA: None CNPS: 4.2	Found in openings within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Found at elevations ranging from 98 to 5,906 feet in elevation. Blooming period is from March to August.	No	**High** Suitable habitat is present within and adjacent to the project site. Records indicate this species occurs nearby.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Lycium parishii Parish's desert-thorn	Fed: None CA: None CNPS: 2B.3	Habitats include coastal scrub and Sonoran Desert scrub. Found at elevations ranging from 443 to 3,281 feet. Blooming period is from March to April.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Malacothamnus parishii Parish's bush-mallow	Fed: None CA: None CNPS: 1A	Species is presumed extinct. Habitats include coastal scrub and chaparral. Found at elevations ranging from 1,000 to 1,495 feet. Blooming period is from June to July.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site. The project site occurs outside of the known elevation range for this species.
Monardella exilis Mojave monardella	Fed: None CA: None CNPS: 4.2	Grows in sandy soils in chenopod scrub, desert dunes, Great Basin scrub, Joshua tree "woodland", lower montane coniferous forest, Mojavean desert scrub, and pinyon and juniper woodland habitats. Found at elevations ranging from 1,970 to 6,725 feet. Blooming period is from April to September.	No	**Presumed Absent** This species occurs on the northern backslopes of the San Bernardino Mountains.
Muhlenbergia californica California muhly	Fed: None CA: None CNPS: 4.3	Grows in mesic areas, seeps, and streambanks in chaparral, coastal scrub, lower montane coniferous forest, and meadows and seeps habitats. Only known to occur in the San Bernardino Mountains. Found at elevations ranging from 328 to 6,562 feet. Blooming period is from June to September.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Opuntia basilaris var. brachyclada short-joint beavertail	Fed: None CA: None CNPS: 1B.2	Habitats include chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodlands. Found at elevations ranging from 1,394 to 5,906 feet. Blooming period is from April to August.	No	**Presumed Absent** The project site occurs outside of the known elevation range for this species.
Pediomelum castoreum Beaver Dam breadroot	Fed: None CA: None CNPS: 1B.2	Occurs in sandy soils, washes, and roadcuts within Joshua tree woodland and Mojavean desert scrub. Found at elevations ranging from 2,000 to 5,000 feet. Blooming period is from April to May.	No	**Presumed Absent** The project site occurs outside of the known elevation range for this species.
Pentachaeta aurea ssp. aurea golden-rayed pentachaeta	Fed: None CA: None CNPS: 4.2	Grows in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and valley and foothill grassland habitats. Found at elevations ranging from 260 to 6,070 feet. Blooms from March to July.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Phacelia mohavensis Mojave phacelia	Fed: None CA: None CNPS: 4.3	Grows in gravelly (sometimes), sandy (sometimes) areas within cismontane woodland, lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland habitats. Found at elevations ranging from 4,595 to 8,205 feet. Blooming period is from April to August.	No	**Low** Suitable habitat is present within and adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Schoenus nigricans Black bog-rush	Fed: None CA: None CNPS: 2B.2	Grows within marshes and swamps (often alkaline). Found at elevations ranging from 492 to 6,562 feet. Blooming period is from August to September.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Scutellaria bolanderi ssp. austromontana southern mountains skullcap	Fed: None CA: None CNPS: 1B.2	Grows in mesic areas within chaparral, cismontane woodland, and lower montane coniferous forest habitats. Found at elevations ranging from 1,395 to 6,560 feet. Blooming period is from June to August.	No	**Presumed Absent** This species occurs on the northern backslopes of the San Bernardino Mountains.
Sidotheca caryophylloides chickweed oxytheca	Fed: None CA: None CNPS: 4.3	Grows in sandy soils in lower montane coniferous forest habitats. Found at elevations ranging from 3,655 to 8,530 feet. Blooms from July to September (Oct).	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Streptanthus bernardinus Laguna Mountains jewelflower	Fed: None CA: None CNPS: 4.3	Grows in chaparral and lower montane coniferous forest on clay or decomposed granite soils. It is sometimes found in disturbed areas such as streamsides or roadcuts. From 4,724 to 8,202 feet in elevation. Blooming period is from May to August.	No	**High** Suitable habitat is present within and adjacent to the project site. Records indicate this species occurs nearby.
Streptanthus campestris Southern jewelflower	Fed: None CA: None CNPS: 1B.3	Grows in rocky areas within chaparral, lower montane coniferous forest, and pinyon and juniper woodland habitats. Found at elevations ranging from 2.955 to 7,545 feet. Blooming period is from (April) May to July.	No	**High** Suitable habitat is present within and adjacent to the project site. Records indicate this species occurs nearby.
Symphyotrichum defoliatum San Bernadino aster	Fed: None CA: None CNPS: 1B.2	Grows on streambanks within cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, meadows and seeps, and valley and foothill grassland (vernally mesic) habitats. Found at elevations ranging from 5 to 6,695 feet. Blooming period is from July to November.	No	**Low** Suitable habitat is present within and adjacent to the project site.
Syntrichopappus lemmonii Lemmon's syntrichopappus	Fed: None CA: None CNPS: 4.3	Found in sandy or gravelly openings within chaparral, Joshua Tree, or pinyon-juniper woodlands. Grows at elevations between 2,950-4,922 feet. Grows from April to May.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
Yucca brevifolia Western Joshua tree	Fed: None CA: **THR** CNPS: CBR	Found growing in elevations between 1,600-7,200 feet in open, rocky grasslands, broad valleys, alluvial slopes, and on pediments with minimal runoff surrounding desert mountains and mesas.	No	**Presumed Absent** There is no suitable habitat present within or adjacent to the project site.
CDFW SENSITIVE HABITATS				

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Mixed Montane Chaparral	CDFW Sensitive Habitat	Found on shallow to deep soils, on all exposures, and from gentle to relatively steep slopes. It may dominate on more xeric sites but occurs locally throughout the coniferous forest zone. Climate is similar to the coniferous forest zone: cold winters with substantial precipitation, summers are hot and dry. In southern California this plant community occurs above 7,000 feet. Growth form varies from tree-like to prostrate, and often becomes impassable to large mammals when mature. Common indicator species are ceanothus, manzanita, bitter cherry, huckleberry oak, sierra chinquapin, juneberry, fremont silktassel, Greene goldenweed, mountain mahogany, toyon, sumac, and coffeeberry.	No	**Absent** Pockets of mixed chaparral may occur within the Mixed Evergreen Forest plant community supported within and surrounding the project site. However, the site does not support the requisite species composition or occur in the understood elevation range for this classification.
Riversidian Alluvial Fan Sage Scrub	CDFW Sensitive Habitat	Occur within broad washes of sandy alluvial drainages that carry rainfall runoff sporadically in winter and spring but remain relatively dry through the remainder of the year. Is restricted to drainages and floodplains with very sandy substrates that have a dearth of decomposed plant material. These areas do not develop into riparian woodland or scrub due to the limited water resources and scouring by occasional floods.	No	**Absent** This plant community was not observed within the project site.
Semi Desert Chaparral	CDFW Sensitive Habitat	Found in the western and central Great Basin, and east slopes of the Sierra Nevada and Cascade ranges on slopes between lower-elevation desert landscapes and higher-elevation pinyon or juniper-dominated woodlands.	No	**Absent** This plant community was not observed within the project site.
Southern Sycamore Alder Riparian Woodland	CDFW Sensitive Habitat	Occurs below 2,000 meters in elevation, sycamore and alder often occur along seasonally flooded banks; cottonwoods and willows are also often present. Poison oak, mugwort, elderberry and wild raspberry may be present in understory.	No	**Absent** This plant community was not observed within the project site.
Southern Willow Scrub	CDFW Sensitive Habitat	Occurs on loose, fine or sandy, gravelly alluvium deposited near stream channels during flood flows. Community is maintained by frequent flooding, which prevents succession of a riparian forest or woodland community.	No	**Absent** This plant community was not observed within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Westside Ponderosa Pine Forest	CDFW Sensitive Habitat	Occurs above coastal oak, valley oak, blue oak, and blue oak-foothill pine woodlands, and below mixed conifer woodlands. Elevation ranges from 980 to 6,890 feet in the northern Sierra Nevada and Cascade Mountains, the central and southern Sierra Nevada Mountains, the Transverse, and the Peninsular Ranges. Supports open to continuous canopy layer, open to continuous shrub layer, and sparse, abundant, or grassy herbaceous layer. Membership dictates Ponderosa pine comprises over 50% relative canopy cover with hardwoods low, if present; Ponderosa pine being the principal canopy species with at least 10% cover, with black oak substantially lower and incense cedar and white fir comprising less than 1% of the canopy cover; or Ponderosa pine comprising over 30% of relative cover with madrone and oaks present.	No	**Absent** While co-dominant in the canopy, the species evenness observed during the field investigation does not conform to the membership rules for this plant community as defined by CNPS.

U.S. Fish and Wildlife Service (USFWS) - Federal
END- Federal Endangered
THR- Federal Threatened
PT- Proposed Threatened

California Department of Fish and Wildlife (CDFW) - California
END- California Endangered
THR- California Threatened
CE - Candidate Endangered
FP- California Fully Protected
SSC- California Species of Concern
WL- Watch List

California Native Plant Society (CNPS)
California Rare Plant Rank
1A Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
4 Plants of Limited Distribution – A Watch List
CBR- Considered but Rejected

Threat Ranks
0.1- Seriously threatened in California
0.2- Moderately threatened in California
0.3- Not very threatened in California

Attachment E

Regulations

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

Federal Regulations

Endangered Species Act of 1973

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. "Take" under the ESA is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The presence of any federally threatened or endangered species that are in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the United States Fish and Wildlife Service (USFWS) may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Critical Habitat is designated for the survival and recovery of species listed as threatened or endangered under the ESA. Critical Habitat includes those areas occupied by the species, in which are found physical and biological features that are essential to the conservation of an ESA listed species and which may require special management considerations or protection. Critical Habitat may also include unoccupied habitat if it is determined that the unoccupied habitat is essential for the conservation of the species.

Whenever federal agencies authorize, fund, or carry out actions that may adversely modify or destroy Critical Habitat, they must consult with USFWS under Section 7 of the ESA. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highway Administration or a permit from the U.S. Army Corps of Engineers (Corps)).

If USFWS determines that Critical Habitat will be adversely modified or destroyed from a proposed action, the USFWS will develop reasonable and prudent alternatives in cooperation with the federal institution to ensure the purpose of the proposed action can be achieved without loss of Critical Habitat. If the action is not likely to adversely modify or destroy Critical Habitat, USFWS will include a statement in its biological opinion concerning any incidental take that may be authorized and specify terms and conditions to ensure the agency is in compliance with the opinion.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) makes it unlawful to pursue, capture, kill, possess, or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union, and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21).

The MBTA covers the taking of any nests or eggs of migratory birds, except as allowed by permit pursuant to 50 CFR, Part 21. Disturbances causing nest abandonment and/or loss of reproductive effort (i.e., killing or abandonment of eggs or young) may also be considered "take." This regulation seeks to protect migratory birds and active nests.

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles); Cathartidae (New World vultures); Falconidae (falcons and caracaras); Pandionidae (ospreys); Strigidae (typical owls); and Tytonidae (barn owls). The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many relatively common species.

State Regulations

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the CEQA Guidelines independently defines "endangered" and "rare" species separately from the definitions of the California Endangered Species Act (CESA). Under CEQA, "endangered" species of plants or animals are defined as those whose survival and reproduction in the wild are in immediate jeopardy, while "rare" species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

California Endangered Species Act (CESA)

In addition to federal laws, the state of California implements the CESA which is enforced by CDFW. The CESA program maintains a separate listing of species beyond the FESA, although the provisions of each act are similar.

State-listed threatened and endangered species are protected under provisions of the CESA. Activities that may result in "take" of individuals (defined in CESA as; "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by CDFW. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the

absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection. At the federal level, USFWS also uses the label species of concern, as an informal term that refers to species which might be in need of concentrated conservation actions. As the Species of Concern designated by USFWS do not receive formal legal protection, the use of the term does not necessarily ensure that the species will be proposed for listing as a threatened or endangered species.

Fish and Game Code

Fish and Game Code Sections 3503, 3503.5, 3511, and 3513 are applicable to natural resource management. For example, Section 3503 of the Code makes it unlawful to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Further, any birds in the orders Falconiformes or Strigiformes (Birds of Prey, such as hawks, eagles, and owls) are protected under Section 3503.5 of the Fish and Game Code which makes it unlawful to take, possess, or destroy their nest or eggs. A consultation with CDFW may be required prior to the removal of any bird of prey nest that may occur on a project site. Section 3511 of the Fish and Game Code lists fully protected bird species, where the CDFW is unable to authorize the issuance of permits or licenses to take these species. Pertinent species that are State fully protected by the State include golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). Section 3513 of the Fish and Game Code makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Native Plant Protection Act

Sections 1900–1913 of the Fish and Game Code were developed to preserve, protect, and enhance Rare and Endangered plants in the state of California. The act requires all state agencies to use their authority to carry out programs to conserve Endangered and Rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFW at least ten days in advance of any change in land use which would adversely impact listed plants. This allows the CDFW to salvage listed plant species that would otherwise be destroyed.

California Native Plant Society Rare and Endangered Plant Species

Vascular plants listed as rare or endangered by the CNPS, but which have no designated status under FESA or CESA are defined as follows:

California Rare Plant Rank

1A- Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere

1B- Plants Rare, Threatened, or Endangered in California and Elsewhere

2A- Plants Presumed Extirpated in California, But More Common Elsewhere

2B- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3- Plants about Which More Information is Needed - A Review List

4- Plants of Limited Distribution - A Watch List

Threat Ranks

.1- Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2- Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3- Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFG regulates activities under the Fish and Game Code Section 1600-1616, and the Regional Board regulates activities pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

Federal Regulations

Section 404 of the Clean Water Act

In accordance with the Revised Definition of "Waters of the United States"; Conforming (September 8, 2023), "waters of the United Sates" are defined as follows:

(a) ***Waters of the United States*** means:

(1) Waters which are:
(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(ii) The territorial seas; or
(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:
(i) Waters identified in paragraph (a)(1) of this section; or
(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted

cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.*, gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

Section 401 of the Clean Water Act

Pursuant to Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity which may result in any discharge to waters of the United States must provide certification from the State or Indian tribe in which the discharge originates. This certification provides for the protection of the physical, chemical, and biological integrity of waters, addresses impacts to water quality that may result from issuance of federal permits, and helps insure that federal actions will not violate water quality standards of the State or Indian tribe. In California, there are nine Regional Water Quality Control Boards (Regional Board) that issue or deny certification for discharges to waters of the United States and waters of the State, including wetlands, within their geographical jurisdiction. The State Water Resources Control Board assumed this responsibility when a project has the potential to result in the discharge to waters within multiple Regional Boards.

State Regulations

Fish and Game Code

Fish and Game Code Sections 1600 et. seq. establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely impact fish and wildlife resources, or, when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Fish and Game Code Section 1602 requires any person, state, or local governmental agency or public utility to notify the CDFW before beginning any activity that will do one or more of the following:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;
(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or
(3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. CDFW's regulatory authority extends to include riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, the CDFW takes jurisdiction to the top of bank of the stream or to the outer limit of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation. A Section 1602 Streambed Alteration Agreement would be required if impacts to identified CDFW jurisdictional areas occur.

Porter Cologne Act

The California *Porter-Cologne Water Quality Control Act* gives the State very broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline waters. The Porter-Cologne Act has become an important tool in the post SWANCC and Rapanos regulatory environment, with respect to the state's authority over isolated and insignificant waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file a Report of Waste Discharge in the event that there is no Section 404/401 nexus. Although "waste" is partially defined as any waste substance associated with human habitation, the Regional Board also interprets this to include fill discharged into water bodies.

February 2, 2024

KIMLEY-HORN
Attention: *John Nsofor*
3880 Lemon Street, Suite 420
Riverside, California 92501

SUBJECT: Jurisdictional Delineation for the Proposed Camp Switzerland Lift Station and Pipeline located near Lake Gregory in San Bernardino County, California

Introduction

ELMT Consulting (ELMT) conducted a Delineation of State and Federal Jurisdictional Waters for the proposed Camp Switzerland Lift Station and Pipeline Project located near Lake Gregory in the City of Crestline, San Bernadino County, California. This delineation was prepared in order to document the jurisdictional authority of the U.S. Army Corps of Engineers' (Corps), the Santa Ana Regional Water Quality Control Board's (Regional Board), and the California Department of Fish and Wildlife's (CDFW) pursuant to Sections 401 and 404 of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act, and Section 1600 of the Fish and Game Code.

This report explains the methodology utilized throughout the course of the delineation, defines the jurisdictional authority of the regulatory agencies, and documents the findings made by ELMT. This report presents ELMT's determination of jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance provided by the regulatory agencies.

Project Location

The project site is generally located east of State Route 138, north of State Route 18, west of State Route 189, and south of Pilot rock in the City of Crestline, San Bernadino County, California. The site is depicted on the San Bernadino North quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map series in Section 23 of Township 2 North, Range 4 West. Specifically, the project sites lie along the shoulder of Houston Drive, and approximately 273 feet to the east of the eastern shoulder of Houston Drive, west of Edelweiss Drive, and to the northwest of Lake Gregory and Lake Gregory Dam. Refer to Exhibits 1-3 in Attachment A.

Project Description

The project proposes the construction of a new sewer lift station and connecting pipes for Camp Switzerland, near Lake Gregory in Crestline, California. The proposal includes the addition of new pipes, running from the existing sewer main pipe which is currently located along the shoulder of Houston Drive. These new pipes will run to the new sewer lift station to be constructed at Camp Switzerland, adjacent to west bank of Houston Creek. Currently, three new pipe installations will occur along Houston Drive, and will transect the road, running east and south to the new sewer lift station. Refer to Attachment B, *Site Plan*.

Methodology

ELMT field staff conducted a thorough review of relevant literature and materials in order to preliminarily identify potential jurisdictional features occurring on or within the vicinity of the project site. In addition, a field investigation was conducted to verify existing conditions and document the extent of jurisdictional features within the boundaries of the project site.

Literature Review

Prior to conducting the field visit, a review of relevant literature and materials was conducted in order to preliminarily identify potential jurisdictional features occurring on or within the vicinity of the project site. In addition, the following resources were reviewed prior to conducting the field investigation:

- CDFW's *A Review of Stream Processes and Forms in Dryland Watersheds* (2010);
- Corps Arid West Regional Supplement (Version 2.0) to the Corps of Engineers Wetland Delineation Manual (2008);
- Corps Navigable Waters Protection Rule: Definition of "Waters of the United States" (2020)
- Corps Arid West Regional Wetland Plant List (2016);
- Federal Emergency Management Agency Flood Insurance Rate Map;
- Google Earth Aerials (1985 – 2020);
- State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State (2021)
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for Southwestern San Bernardino County;
- USDA NRCS Hydric Soils List of California;
- United States Fish and Wildlife Service National Wetlands Inventory; and
- Water Quality Control Plan for the Santa Ana River Basin.

Field Investigation

ELMT biologists Jacob H. Lloyd Davies and Rachael A. Lyons initially surveyed the project site on November 21, 2022, to verify existing conditions and document the extent of jurisdictional features (e.g., wetlands, streambed, and riparian vegetation) within the boundaries of the project site. A follow-up investigation was conducted by Mr. Lloyd Davies and biologist Megan E. Peukert on July 31, 2023. While in the field, jurisdictional areas and associated plant communities were mapped onto a base map at a scale of 1" = 50' using topographic contours and visible landmarks as guidelines. Common plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less familiar plants were identified in the laboratory using taxonomical guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual. Data points were obtained with a Garmin Map 62 Global Positioning System and used to record and identify jurisdictional boundaries, soils samples, and photograph locations. This data was then transferred via USB port as a .shp file and added to the project's jurisdictional map. The jurisdictional map and associated acreage amounts were prepared and quantified in ESRI ArcMap Version 10.

ELMT carefully assessed the site for depressions, inundation, presence of hydrophytic vegetation, staining, cracked soil, ponding, and indicators of active surface flow and corresponding physical characteristics such

as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris. Suspected jurisdictional areas were checked for the presence of definable channels, soils, and hydrology.

Site Conditions

The project is located in the Silverwood Lake Watershed (Hydrologic Unit Code 18090208), which is part of the West Fork Mojave River Watershed, and the greater Mojave River Watershed. The Silverwood Lake Watershed encompasses approximately 34 square miles and covers an area spanning the southernmost portion of the San Gabriel Mountains and the northeastern portion of the San Bernardino Mountains. The watershed runs from Cleghorn Pass in the northwest to Crestline in the southeast, encompassing both Silverwood Lake and Lake Gregory. The entirety of the watershed falls within San Bernardino County. Elevations range from approximately 3,200 feet above mean sea level surrounding Silverwood Lake to approximately 5,400 feet in the City of Crestline. The watershed is part of the Westfork Mojave River Sub-watershed, which can be broken down further into the Silverwood Lake Sub-watershed, and the Grass Valley Creek Sub-watershed. These sub-watersheds belong to the greater Mojave River "parent" Watershed. The Silverwood Lake Sub-watershed includes granitic mountains characterized by shallow and stony soils. The Grass Valley Creek Sub-watershed consists of relatively stable crystalline rock covered in deep alluvium derived from the San Bernadino Mountains.

Although the specific project footprint is not specified, on-site elevation in the immediate vicinity ranges from approximately 4,489, to 4,554 feet above mean sea level, and on-site elevation slopes from northwest to southeast, from the eastern shoulder of Houston Drive to the western bank of Houston Creek respectively.

Based on the NRCS USDA Web Soil Survey, the project site is underlain by Cedarpines-Stargazer-Urban Land Complex (15 to 30 percent slopes and 30 to 50 percent slopes). Soils on-site have been moderately disturbed from off-road vehicular use, and staging activities associated with surrounding and on-site planned development. Based on the NRCS Hydric Soils List of California, these soils are not listed as hydric.

The U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory maps to determine if any blueline streams or riverine resources have been documented within or immediate surrounding the project site. Based on this review, a single freshwater forested wetland resource has been mapped within the eastern periphery of the project site along Houston Creek. Refer to Attachment D, *Documentation*.

Drainage Features

A small portion of Houston Creek runs adjacent to the easternmost boundary of the project site, just within the proposed limits of disturbance (refer to Exhibit 4, *Jurisdictional Areas*). Houston Creek supports surface waters year-round and is fed by the discharge waters of Lake Gregory Dam to the south. The portion of Houston Creek running adjacent to the project site supports a Mixed Riparian Forest plant community that supports such riparian species as riparian vegetation such as box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), mountain dogwood (*Cornus nuttallii*), maidenhair fern (*Adiantum aleuticum*), California mugwort (*Artemisia douglasiana*), waterweed (*Elodia* sp.), seep monkeyflower (*Erythranthe guttata*), wild pepper grass (*Lepidium virginicum*), slender muhly (*Muhlenbergia filiformis*), rush (*Schoenoplectus sp.*), and California wild grape (*Vitis californica*). None of these plant species are threatened, endangered, or

have special status in California.

Findings

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates discharge of dredge and/or fill materials into "waters of the United States" pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the Regional Board regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act and the CDFW regulates alterations to streambed and associated plant communities pursuant to Section 1602 of the California Fish and Game Code.

United States Army Corps of Engineers

Houston Creek is largely supported by the discharge waters of Lake Gregory through Lake Gregory dam. The creek then flows northwest and connects to the East Fork Mojave River, which flows into Silverwood Lake. Silverwood Lake is the main junction of the West Fork and East Fork Mojave River, which run from the San Bernardino Mountains, the headwaters of the greater Mojave River. Water flows out of the northern boundary of Silverwood Lake through Cedar Springs Dam, into the Upper Narrows of the Mojave River (Relatively Permanent Water). Water from the Upper Narrows, flows northeast into the greater Mojave River (Traditional Navigable Water). The Mojave River flows further east into the Mojave River Basin, where it eventually reaches its terminus into Soda Lake. Since Houston Creek is an intermittent drainage it will qualify as waters of the United States and fall under the regulatory authority of the Corps.

Federal Wetlands

In order to qualify as wetland, a feature must exhibit all three wetland parameters (i.e., vegetation, soils, and hydrology) described in the Corps Arid West Regional Supplement. Based on the results of the field investigation, the soils were rocky and sandy with no ponding water and, it was determined that the basin would not support hydric soil conditions. Therefore, no areas on the project site met all three wetland parameters.

Regional Water Quality Control Board

No isolated or Rapanos conditions were observed within the boundaries of the project site. Therefore, the RWQCB jurisdictional limit follows that of the Corps. Based on the State Policy for Water Quality Control, Houston Creek exhibits characteristics consistent with the Regional Board's methodology and would be considered jurisdictional waters of the State.

State Wetlands

Under the State Water Resources Control Board Sate Wetland Definition, an area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. Based on the results of the field delineation, it was determined that no areas within the project site meet the State Wetland Definition. Therefore, no state wetland features exist within the project site.

California Department of Fish and Wildlife

The on-site drainage feature exhibits characteristics consistent with CDFW's methodology and would be considered CDFW streambed.

Conclusion and Recommendations

A single drainage feature (Houston Creek) was observed adjacent to the eastern boundary of the project site during the field delineation. The drainage possesses hydrologic nexus to downstream waters of the United States, and therefore, will fall under the regulatory authority of the United States Army Corps of Engineers, Regional Board, and CDFW. The proposed project is anticipated to be constructed to avoid impacts to Houston Creek; however, If impacts to Houston Creek occur from project implementation, the following will be required:

United States Army Corps of Engineers

The Corps regulates discharges of dredged or fill materials into waters of the United States, including wetlands, pursuant to Section 404 of the CWA. If any impacts occur to Houston Creek, it will be necessary for the Applicant to acquire a CWA Section 404 permit prior to impacts occurring within Corps jurisdictional areas. Since the project will likely result in the loss of less than ½-acre of Corps jurisdiction (non-wetland waters), it is anticipated that the proposed project can be authorized via a Nationwide Permit (NWP).

Regional Water Quality Control Board

The Regional Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. The Regional Board's jurisdiction extends to all waters of the State and U.S., including wetlands. If any impacts to Houston Creek occur, for a Corps Section 404 permit to be approved, a Section 401 Water Quality Certification from the Regional Board will be required. The Regional Board also requires a Section 401 Certification Application Fee, which is dependent on the amount and type of impacts (i.e., acreage, linear feet, and project type).

California Department of Fish and Wildlife

Pursuant to Section 1600 *et seq.* of the Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. Houston Creek will be considered jurisdictional by CDFW. Therefore, it will be necessary for the applicant to acquire a Section 1602 Streambed Alteration Agreement prior to impacts occurring within CDFW jurisdictional areas.

Please do not hesitate to contact Tom McGill at (951) 285-6014 or tmcgill@elmtconsulting.com or Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com should you have any questions or require further information.

Sincerely,

Travis J. McGill | Director

Jacob H. Lloyd Davies | Associate Biologist

Attachments:

A. *Project Exhibits*
B. *Site Plan*
C. *Site Photographs*
D. *Documentation*
E. *Methodology*

Attachment A

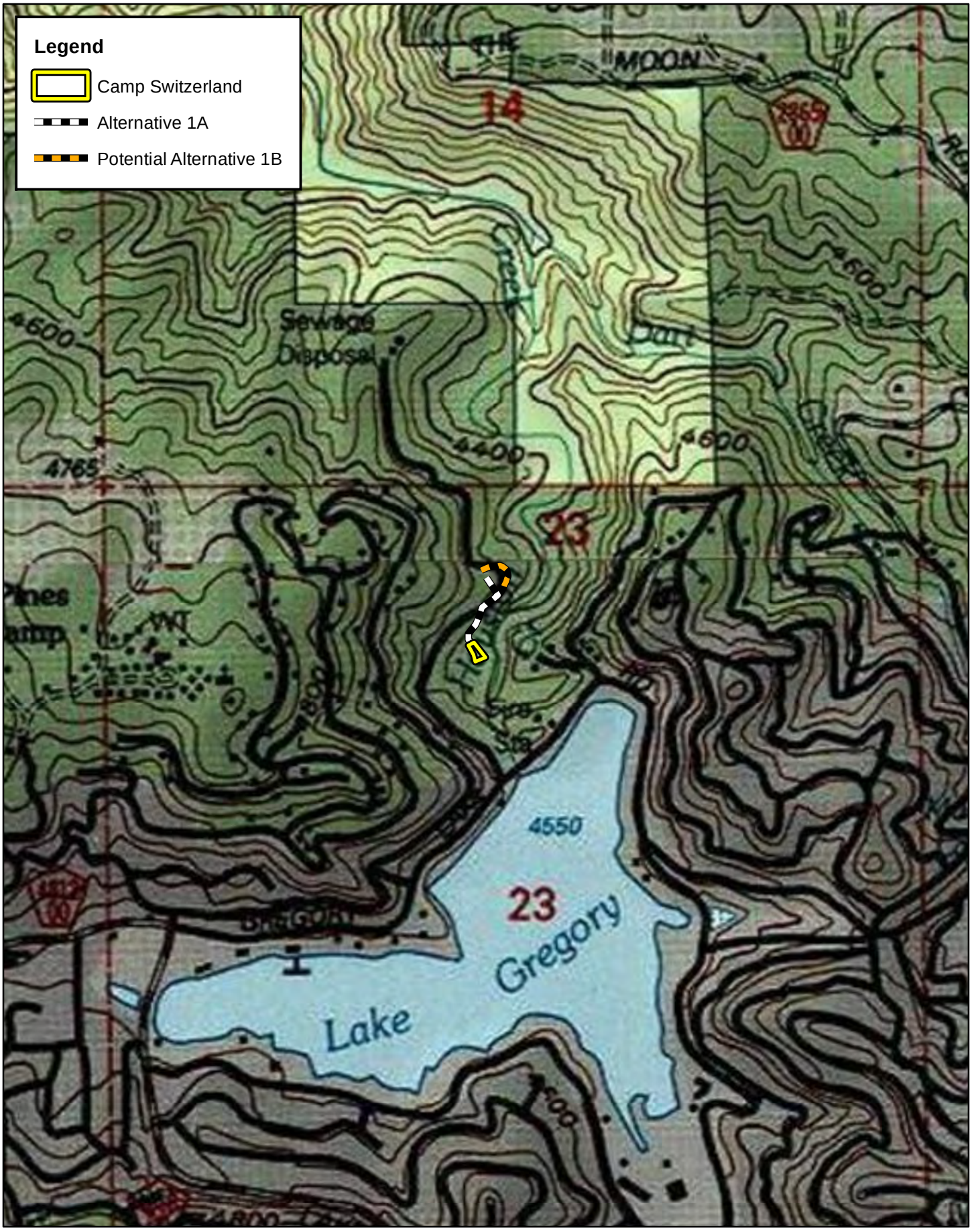
Project Exhibits

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Regional Vicinity

Source: World Street Map, San Bernardino County

Exhibit 1



ELMT CONSULTING

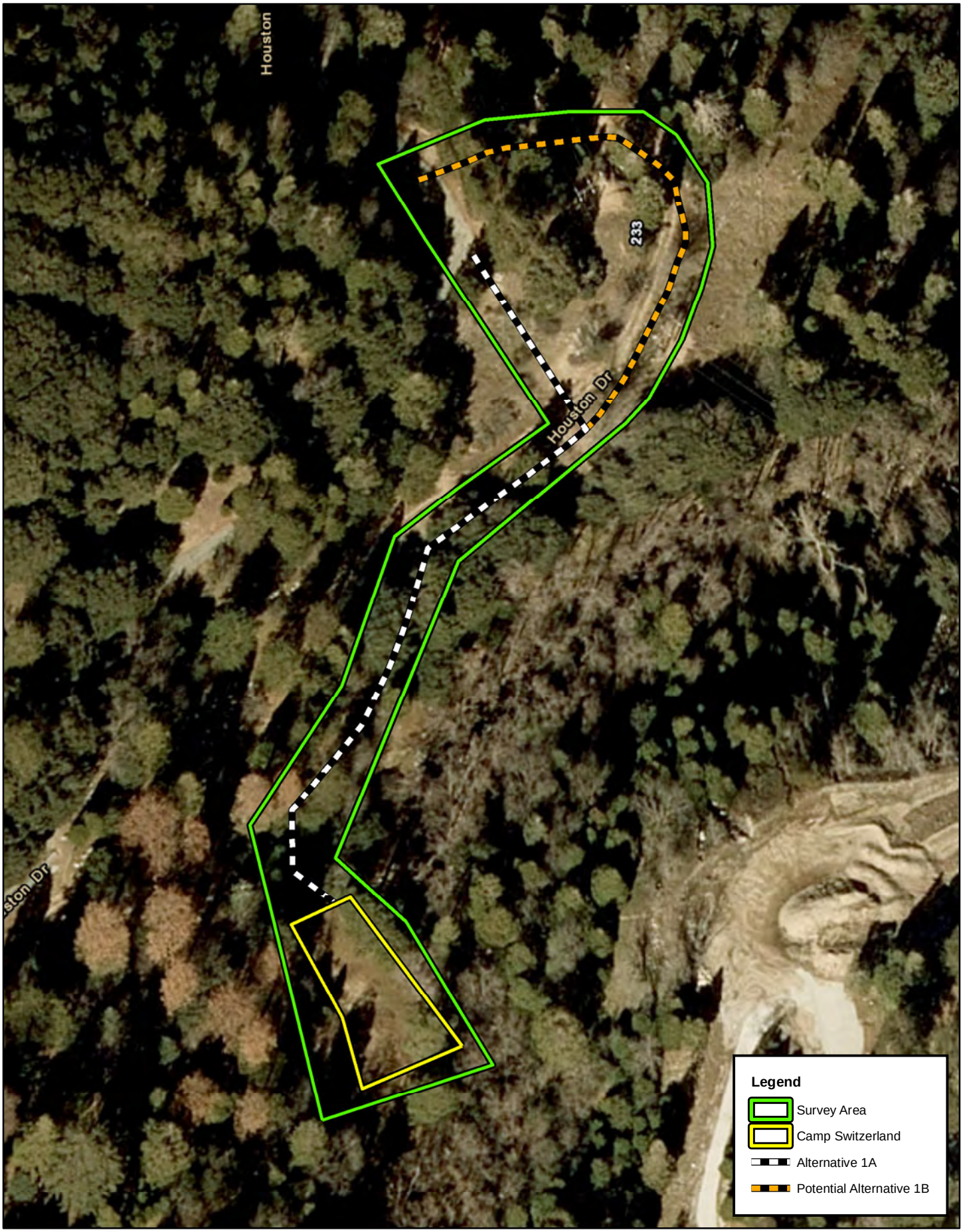
0 500 1,000 2,000 Feet

Source: USA Topographic Map, San Bernardino County

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Site Vicinity

Exhibit 2



ELMT CONSULTING

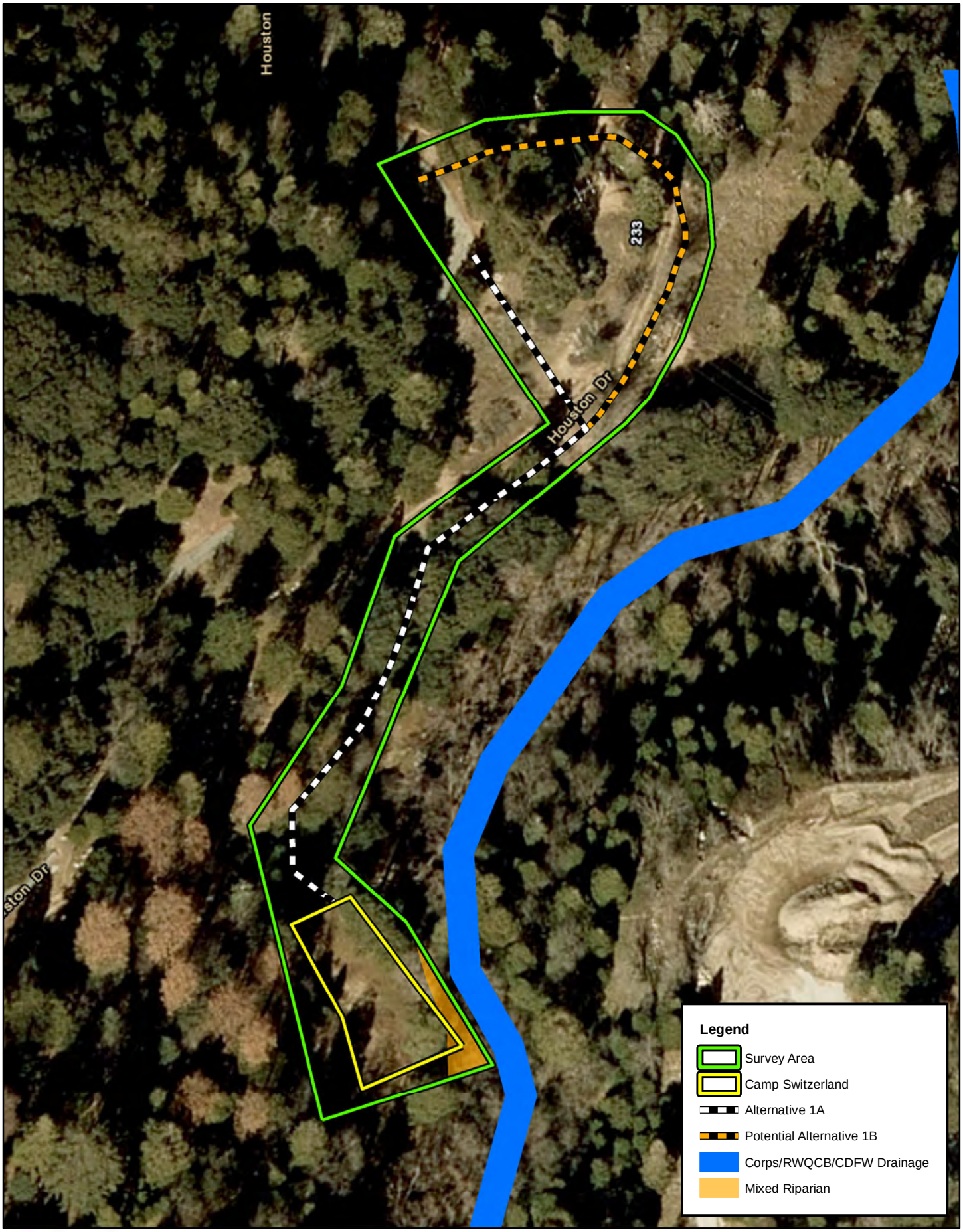
0 50 100 200 Feet

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Project Site

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 3



ELMT CONSULTING

0 50 100 200 Feet

CAMP SWITZERLAND LIFT STATION AND PIPELINE

Jurisdictional Areas

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 4

Attachment B

Site Plan

POTENTIAL ALTERNATIVE 1B

ALTERNATIVE 1A

Approximate Camp Switzerland Location

EDELWEISS DR.

LAKEAMBLE DRIVE

RS 40/68

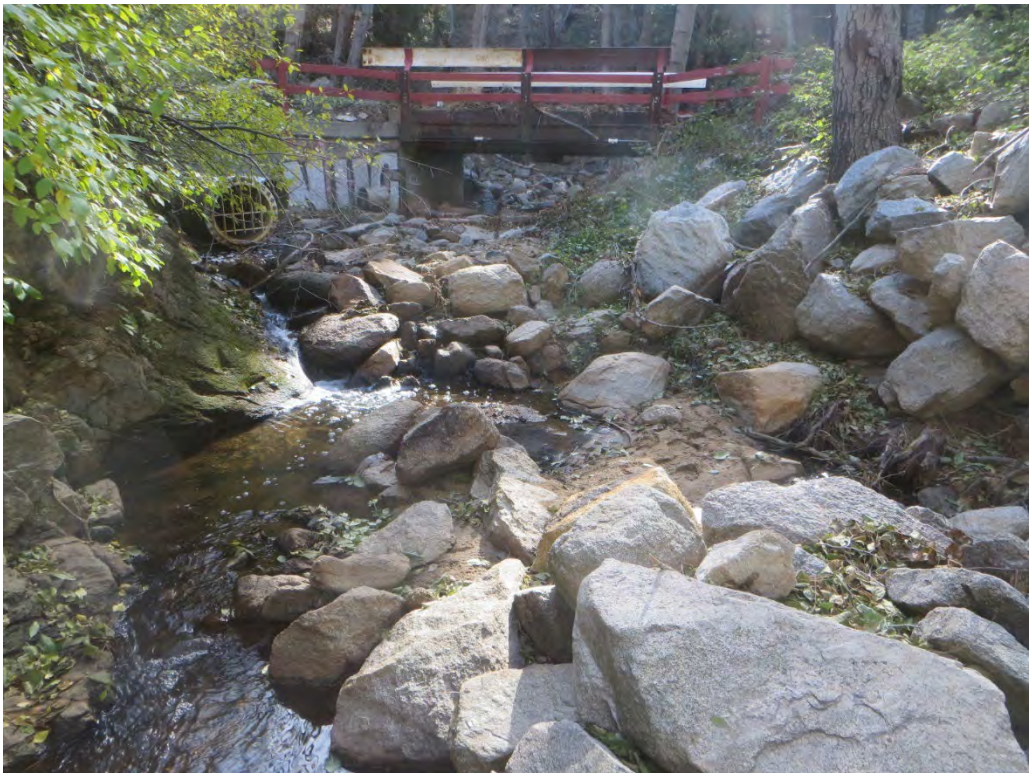
1"=100'

ATKINS

Attachment C

Site Photographs

Photograph 1: To the south of the project site, looking south at the headwaters of Houston Creek fed by Lake Gregory Dam.



Photograph 2: From the southernmost portion of Houston Creek running adjacent to the eastern boundary of the project site, looking south upstream.

Photograph 3: From the southernmost portion of Houston Creek running adjacent to the eastern boundary of the project site, looking north downstream.

Photograph 4: From the eastern boundary of the project site, looking east at an existing riser and footbridge along the western bank of Houston Creek.

Photograph 5: From the middle of Houston Creek, looking south upstream at the existing riser and footbridge which extends from the eastern boundary of the project site.

Photograph 6: From the middle of Houston Creek, looking north downstream through supported vegetation.

Photograph 7: From the middle of Houston Creek, looking south upstream through supported vegetation.

Photograph 8: From the middle of Houston Creek, looking south upstream at a small existing waterfall.

Photograph 9: From the northernmost portion of Houston Creek running adjacent to the eastern boundary of the project site, looking north downstream.

Attachment D

Documentation

U.S. Fish and Wildlife Service
National Wetlands Inventory

Camp Switzerland

April 17, 2024

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

Methodology

WATERS OF THE UNITED STATES

Section 404 of the Clean Water Act

In accordance with the Revised Definition of "Waters of the United States"; Conforming (September 8, 2023), "waters of the United Sates" are defined as follows:

(a) ***Waters of the United States*** means:

(1) Waters which are:
(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(ii) The territorial seas; or
(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:
(i) Waters identified in paragraph (a)(1) of this section; or
(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.*, gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

WETLANDS

For this project location, Corps jurisdictional wetlands are delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Corps 2008). This document is one of a series of Regional Supplements to the Corps Wetland Delineation Manual (Corps 1987). The identification of wetlands is based on a three-parameter approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. In order to be considered a wetland, an area must exhibit at least minimal characteristics within these three (3) parameters. The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. In the field, vegetation, soils, and evidence of hydrology are examined using the methodology listed below and documented on Corps wetland data sheets, when applicable. It should be noted that both the Regional Board and the CDFW jurisdictional wetlands encompass those of the Corps.

Vegetation

Nearly 5,000 plant types in the United States may occur in wetlands. These plants, often referred to as hydrophytic vegetation, are listed in regional publications by the U.S. Fish and Wildlife Service (USFWS). In general, hydrophytic vegetation is present when the plant community is dominated by species that can tolerate prolonged inundation or soil saturation during growing season. Hydrophytic vegetation decisions are based on the assemblage of plant species growing on a site, rather than the presence or absence of particular indicator species. Vegetation strata are sampled separately when evaluating indicators of hydrophytic vegetation. A stratum for sampling purposes is defined as having 5 percent or more total plant cover. The following vegetation strata are recommended for use across the Arid West:

- *Tree Stratum:* Consists of woody plants 3 inches or more in diameter at breast height (DBH), regardless of height;
- *Sapling/shrub stratum:* Consists of woody plants less than 3 inches DBH, regardless of height;
- *Herb stratum:* Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size; and,
- *Woody vines:* Consists of all woody vines, regardless of size.

The following indicator is applied per the test method below.[1] Hydrophytic vegetation is present if any of the indicators are satisfied.

[1] Although the Dominance Test is utilized in the majority of wetland delineations, other indicator tests may be employed. If one indicator of hydric soil and one primary or two secondary indicators of wetland hydrology are present, then the Prevalence Test (Indicator 2) may be performed. If the plant community satisfies the Prevalence Test, then the vegetation is hydric. If the Prevalence Test fails, then the Morphological Adaptation Test may be performed, where the delineator analyzes the vegetation for potential morphological features.

Indicator 1 – Dominance Test

Cover of vegetation is estimated and is ranked according to their dominance. Species that contribute to a cumulative total of 50% of the total dominant coverage, plus any species that comprise at least 20% (also known as the "50/20 rule") of the total dominant coverage, are recorded on a wetland data sheet. Wetland indicator status in California (Region 0) is assigned to each species using the *National Wetland Plant List, version 2.4.0* (Corps 2012). If greater than 50% of the dominant species from all strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation is considered to be met. Plant indicator status categories are described below:

- *Obligate Wetland (OBL):* Plants that almost always occur in wetlands;
- *Facultative Wetland (FACW):* Plants that usually occur in wetlands, but may occur in non-wetlands;
- *Facultative (FAC):* Plants that occur in wetlands and non-wetlands;
- *Facultative Upland (FACU):* Plants that usually occur in non-wetlands, but may occur in wetlands; and,
- *Obligate Upland (UPL):* Plants that almost never occur in wetlands.

Hydrology

Wetland hydrology indicators are presented in four (4) groups, which include:

Group A – Observation of Surface Water or Saturated Soils

Group A is based on the direct observation of surface water or groundwater during the site visit.

Group B – Evidence of Recent Inundation

Group B consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently. These indicators include water marks, drift deposits, sediment deposits, and similar features.

Group C – Evidence of Recent Soil Saturation

Group C consists of indirect evidence that the soil was saturated recently. Some of these indicators, such as oxidized rhizospheres surrounding living roots and the presence of reduced iron or sulfur in the soil profile, indicate that the soil has been saturated for an extended period.

Group D – Evidence from Other Site Conditions or Data

Group D consists of vegetation and soil features that indicate contemporary rather than historical wet conditions, and include shallow aquitard and the FAC-neutral test.

If wetland vegetation criteria is met, the presence of wetland hydrology is evaluated at each transect by recording the extent of observed surface flows, depth of inundation, depth to saturated soils, and depth to free water in the soil test pits. The lateral extent of the hydrology indicators are used as a guide for locating soil pits for evaluation of hydric soils and jurisdictional areas. In portions of the stream where the flow is divided by multiple channels with intermediate sand bars, the entire area between the channels is considered within the OHWM and the wetland hydrology indicator is considered met for the entire area.

Soils

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper 16-20 inches.[2] The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. It should also be noted that the limits of wetland hydrology indicators are used as a guide for locating soil pits. If any hydric soil features are located, progressive pits are dug moving laterally away from the active channel until hydric features are no longer present within the top 20 inches of the soil profile.

Once in the field, soil characteristics are verified by digging soil pits along each transect to an excavation depth of 20 inches; in areas of high sediment deposition, soil pit depth may be increased. Soil pit locations are usually placed within the drainage invert or within adjoining vegetation. At each soil pit, the soil texture and color are recorded by comparison with standard plates within a *Munsell Soil Chart* (2009). Munsell Soil Charts aid in designating color labels to soils, based by degrees of three simple variables – hue, value, and chroma. Any indicators of hydric soils, such as organic accumulation, iron reduction, translocation, and accumulation, and sulfate reduction, are also recorded.

Hydric soil indicators are present in three groups, which include:

<u>All Soils</u>

"All soils" refers to soils with any United States Department of Agriculture (USDA) soil texture. Hydric soil indicators within this group include histosol, histic epipedon, black histic, hydrogen sulfide, stratified layers, 1 cm muck, depleted below dark surface, and thick dark surface.

<u>Sandy Soils</u>

"Sandy soils" refers to soil materials with a USDA soil texture of loamy fine sand and coarser. Hydric soil indicators within this group include sandy mucky mineral, sandy gleyed matrix, sandy redox, and stripped matrix.

[2] According to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0 (Corps 2008), growing season dates are determined through on-site observations of the following indicators of biological activity in a given year: (1) above-ground growth and development of vascular plants, and/or (2) soil temperature.

Loamy and Clayey Soils

"Loamy and clayey soils" refers to soil materials with a USDA soil texture of loamy very fine sand and finer. Hydric soil indicators within this group include loamy mucky mineral, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, and vernal pools.

SWANCC WATERS

The term "isolated waters" is generally applied to waters/wetlands that are not connected by surface water to a river, lake, ocean, or other body of water. In the presence of isolated conditions, the Regional Board and CDFW take jurisdiction through the application of the OHWM/streambed and/or the 3 parameter wetland methodology utilized by the Corps.

Appendix C:
Cultural Resources Assessment

Cultural and Paleontological Resources Assessment for the Camp Switzerland Sewer Lift Station Project, Crestline, San Bernardino County, California

February 12, 2024

Prepared By:

Jamie Nord, MA, RPA

Archaeologist

Kimley-Horn and Associates, Inc.

3801 University Ave, Ste 300

Riverside, CA 92501

Kimley»Horn

EXECUTIVE SUMMARY

Kimley-Horn and Associates, Inc. (KHA) is under contract to complete a Cultural and Paleontological Resources Assessment for the proposed Camp Switzerland Sewer Lift Station Project in Crestline, San Bernardino County, California. The proposed Project consists of the development of a sewer lift station. The project is subject to environmental review and consideration pursuant to the California Environmental Quality Act (CEQA) with the County of San Bernardino acting as the Lead Agency. This report is intended to support the County's review and consideration of the Project and potential impacts it may have on the environment specifically as it relates to cultural and paleontological resources.

A cultural resources records search was provided by the South Central Coastal Information Center (SCCIC) for the Project area on January 24th, 2024 and noted that no cultural resources were previously recorded in the Project area. A pedestrian survey of the Project area was conducted on December 27th, 2023, and it was noted that the Project area is situated in steep, mountainous terrain with areas of prior grading. The Native American Heritage Commission (NAHC) conducted a search of Sacred Lands Files (SLF) on December 14th, 2023, with positive results. A review of historic images and maps indicated that the Project area was largely undeveloped until the mid/late 1900s. A paleontological records search was conducted through the Western Science Center (WSC) on January 4th, 2024. The results indicated that the Project area contains geologic units of leucocratic granitic rocks, which are not considered paleontologically sensitive.

One historic built environment resource, KHA-CSS-24-01, was identified during the field survey. KHA-CSS-24-01 is a wooden utility pole that was constructed sometime after 1945 and is recommended not eligible for listing on the California Register. No archaeological resources were identified within the Project area as a result of the research and field survey. Additionally, it is unlikely that undisturbed buried cultural resources are present within the Project area given the prior grading, steep topography, lack of recorded resources in the vicinity, and geologic age of the underlying units.

As such, no "Historical Resources" or "Unique Archaeological Resources", as defined by CEQA, are present within the Project area. However, the research indicated that the greater San Bernardino Mountains are sensitive for precontact archaeological resources. The presence of Houston Creek also increases the archaeological sensitivity of the area. As such, it is recommended that mitigation measures for cultural resources be included that outline the process for treatment of any cultural resources or human remains inadvertently discovered during Project implementation. The results of the research and paleontological records search indicated that the Project area has a low sensitivity for paleontological resources. However, it is also recommended that mitigation measures be included that outline the process of inadvertent discovery of paleontological resources. With these mitigation measures in place, impacts to cultural and paleontological resources would be less than significant.

TABLE OF CONTENTS

CONTENTS

FIGURES

APPENDICES

INTRODUCTION

Kimley-Horn and Associates, Inc. (KHA) is under contract to complete a Cultural and Paleontological Resources Assessment for the proposed Camp Switzerland Sewer Lift Station Project in Crestline, San Bernardino County, California. The project is subject to environmental review and consideration pursuant to the California Environmental Quality Act (CEQA) with the County of San Bernardino acting as the Lead Agency. This report is intended to support the County's review and consideration of the Project and potential impacts it may have on the environment specifically as it relates to cultural and paleontological resources. Efforts conducted for this assessment include pedestrian survey of the Project area, cultural resources records search, Sacred Lands File (SLF) search, literature review, paleontological records search, review of cultural databases and repositories, and review of historic maps and imagery. This report presents the results of those efforts, as well as recommended mitigation measures for the Project.

PROJECT DESCRIPTION

The proposed Project is located north of Lake Gregory in Crestline, San Bernardino County, California (Figure 1). The Project is bordered by Houston Drive to the west, Lake Gregory Dam to the south, Edelweiss Drive to the east, and U.S. Forest Service land and the Crestline Sanitation District Houston Creek Treatment Plant to the north (Figure 2).

The proposed Project includes the installation of a sewer lift station at Camp Switzerland. The sewer lift station will improve wastewater conveyance efficiency for the immediate area. Wastewater will be collected at the proposed sewer lift station and ultimately discharged to a proposed valve vault and discharge manhole to Crestline Sanitation District.

REGULATORY SETTING

California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations 14(3), § 15002(i)). Under CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (Cal. Code Regs. Tit. 14(3), § 15064.5(b)). Guidelines for Implementation of the California Environmental Quality Act (State CEQA Guidelines) section 15064.5(a) defines a "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register of Historical Resources (California Register)
- Listed in a local register of historical resources (as defined at Cal. Public Res. Code § 5020.1(k))
- Identified as significant in a historical resource survey meeting the requirements of § 5024.1(g) of the Cal. Public Res. Code
- Determined to be a historical resource by a project's lead agency (Cal. Code Regs. Tit. 14(3), § 15064.5(a))

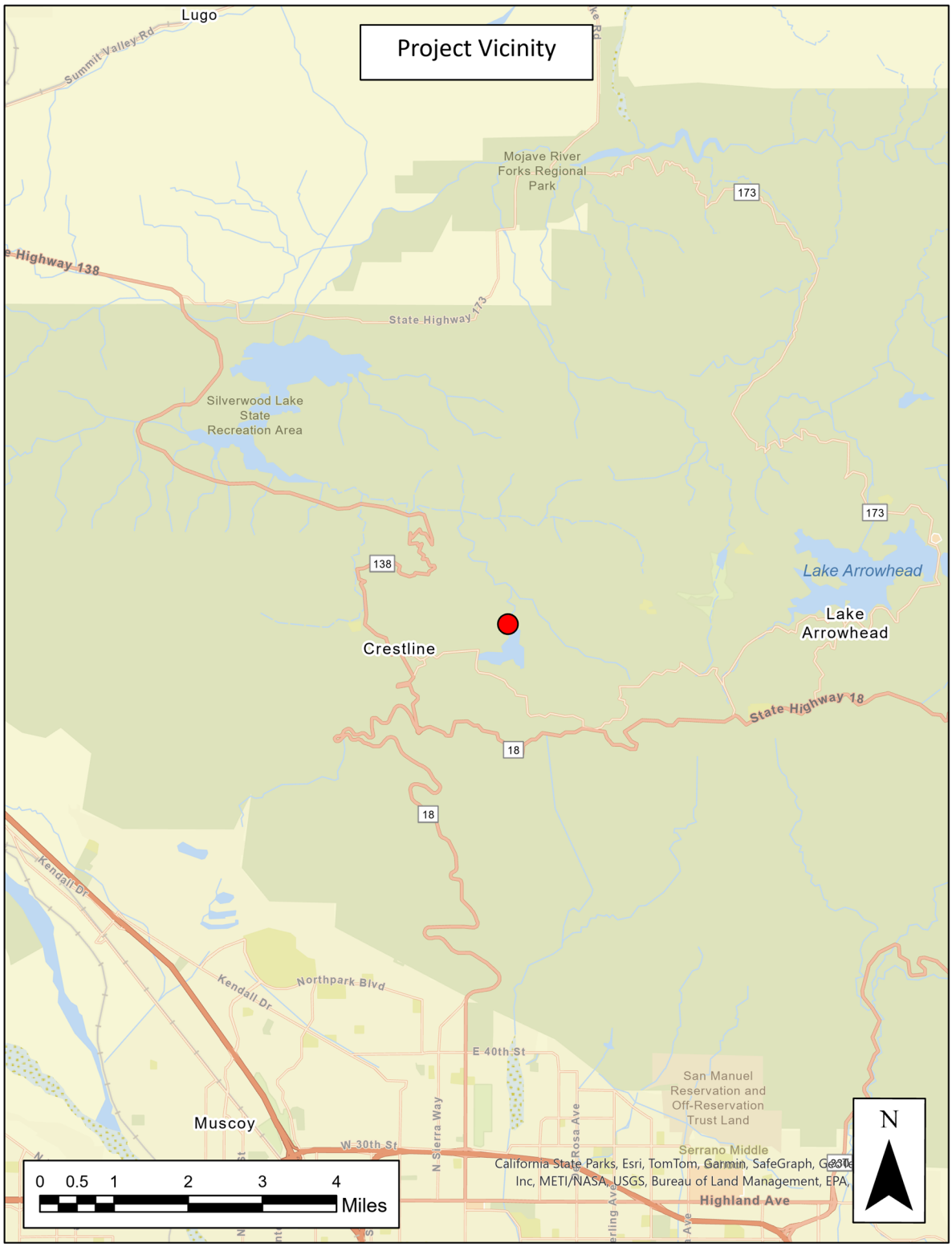


Figure 1: Project Vicinity Map

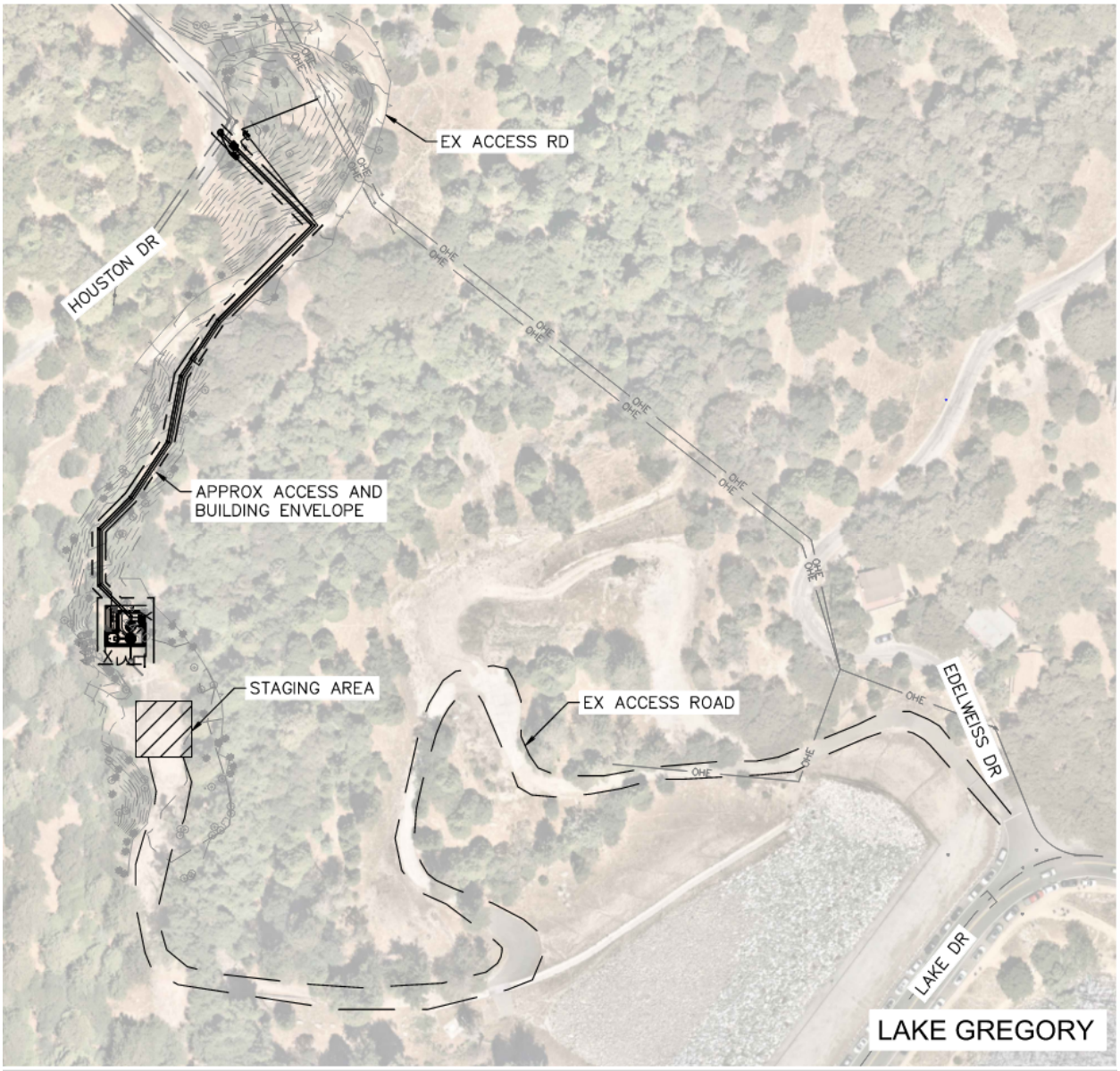


Figure 2: Project Area Map

A historical resource consists of "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California…Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing in the California Register of Historical Resources" (Cal. Code Regs. Tit. 14(3), § 15064.5(a)(3)). The significance of a historical resource is impaired when a project 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 the California Register. If an impact on a historical or archaeological resource is significant, CEQA requires feasible measures to minimize the impact (State CEQA Guidelines § 15126.4 (a)(1)). Mitigation of significant impacts must lessen or eliminate the physical impact that the project will have on the resource. Section 5024.1 of the Cal. Public Res. Code established the California Register. Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)).

Finally, CEQA requires that significant effects on unique archaeological resources be considered and addressed. CEQA defines a unique archaeological resource as any archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

CEQA Guidelines Section 15064.5 Appendix G includes significance criteria relative to archaeological and historical resources. These have been utilized as thresholds of significance here, and a project would have a significant environmental impact if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in section 10564.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 10564.5;
- Disturb any human remains, include those interred outside of formal cemeteries.

California Public Resources Code

California Public Resources Code (PRC) § 5024.1 establishes the California Register of Historical Resources (CRHR). The register lists all California properties considered to be significant historical resources. The CRHR also includes all properties listed or determined eligible for listing in the NRHP, including properties evaluated and determined eligible under § 106.

California Public Resources Code (PRC) § 5020 to 5029.5 continued the former Historical Landmarks Advisory Committee as the State Historical Resources Commission. The commission oversees the administration of the California Register of Historical Resources and is responsible for designating State Historical Landmarks and Historical Points of Interest.

California Public Resources Code (PRC) § 5079 to 5079.65 define the functions and duties of the Office of Historic Preservation, which administers federal- and state-mandated historic preservation programs in California as well as the California Heritage Fund.

California Public Resources Code (PRC) § 5097.9 to 5097.991 provide protection to Native American historical and cultural resources and sacred sites; identify the powers and duties of the Native American Heritage Commission (NAHC); require that descendants be notified when Native American human remains are discovered; and provide for treatment and disposition of human remains and associated grave goods.

California Health and Safety Code

California Health and Safety Code § 7050.5-7055 govern the process for reporting inadvertent discoveries of human remains to the County Coroner; the process for the County Coroner to report human remains of Native American descent to the Native American Heritage Commission (NAHC); and the protections offered against removal or desecration of human remains.

California Code of Regulations

The California Code of Regulations govern the nomination of resources to the California Register of Historical Resources (CRHR) (14 California Code of Regulations [CCR] § 4850). The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

California Register of Historical Resources (CRHR)

The State Historical Resources Commission has designed this program for use by state and local agencies, private groups, and citizens to identify, evaluate, register, and protect California's historical resources. The California Register of Historic Resources (CRHR) is the authoritative guide to the state's significant historical and archeological resources.

The California Register of Historic Resources (CRHR) program encourages public recognition and protection of resources of architectural, historical, archeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under the California Environmental Quality Act (CEQA). To be eligible for listing in the CRHR, a resource must meet at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
- Is associated with the lives of persons important to local, California, or national history.

- Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of a master; or possesses high artistic values.
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may change its historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

Isolated finds, such as a single artifact with no other associated cultural materials, are generally considered to be ineligible for listing in the CRHR. However, the nature of the isolated resource and any available ethnographic data regarding affiliated Native American populations should be carefully considered during the evaluation process, particularly as it relates to potential eligibility under Criterion 4.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical significance. The resource must be approved for designation by the County Board of Supervisors or the City/Town Council in whose jurisdiction it is located; be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. A resource must meet at least one of these following criteria:

- Be the first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California).
- Be associated with an individual or group having a profound influence on the history of California.
- Be a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historical resource may be designated as both a landmark and a point. If a point is subsequently

granted status as a landmark, the point designation is retired. To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- Be the first, last, only, or most significant of its type within the local geographic region (city or county).
- Be associated with an individual or group having a profound influence on the history of the local area.
- Be a prototype of, or an outstanding example of, a period, style, architectural movement or construction or be one of the more notable works or the best surviving work in the local region of a pioneer architect, designer or master builder.

California Historic Building Code

The California Historic Building Code—California Code of Regulations, Title 24, Part 8—provides regulations for the preservation, restoration, rehabilitation, relocation, or reconstruction of buildings or properties designated as qualified historical buildings or properties. The California Historic Building Code is intended to provide solutions for the preservation of qualified historical buildings or properties, to promote sustainability, to provide access for persons with disabilities, to provide a cost-effective approach to preservation, and to provide for the reasonable safety of the occupants or users.

County of San Bernardino Countywide Plan

The County adopted the Countywide Plan (CWP) in October 2020. The CWP Policy Plan addresses the physical, social, and economic issues facing the County's unincorporated portions. The Cultural Resources Element includes cultural-related goals and policies relevant to the Project.

- Goal CR-2 Historic and Paleontological Resources: Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.
- Policy CR-2.1 National and state historic resources: We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards.
- Policy CR-2.2 Local historic resources: We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.
- Policy CR-2.3 Paleontological and archaeological resources: We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.
- Policy CR-2.4 Partnerships: We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.

- Policy CR-2.5 Public awareness and education: We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities.

ENVIRONMENTAL SETTING

The Project area is located near the north shore of Lake Gregory in the western San Bernardino Mountains of San Bernardino County. The San Bernardino Mountains are part of the Transverse Ranges, which form a barrier separating the Mojave Desert from the Pacific Coast. Topography of the Project area and vicinity consists of a mountain slope with 15-30% slope. Houston Creek flows through the Project area. Native soil composition at the Project area is comprised of the Cedarpines-Stargazer-Urban land complex soil series (SoilWeb 2023). The Project area is located between two late Quaternary fault lines with the Cleghorn fault zone to the north and the Waterman Canyon fault zone to the south (U.S. Geological Survey 2024). Geologic maps of the Project area indicate that subsurface geologic units consist of Leucocratic granitic rocks from the Cretaceous Period (Dibblee and Minch 2004). Similar to other parts of California, the Crestline area has a Mediterranean climate characterized by warm and sunny summers and cold, wet winters. Elevation in Crestline averages about 4,500 feet above sea level (Crestline Visitor Center 2023). This part of the San Bernardino Mountains is rich in wildlife. An abundance of gray squirrels, chipmunks, skunks, hawks, racoons, jays, frogs, lizards, woodpeckers, coyotes, foxes, bobcats, mule deer, flying squirrels, porcupines, eagles, king snakes, owls bears, rattlesnakes, and mountain lions call this area home. Native vegetation is equally diverse and representative of the mountainous environment with a mix of conifer forests and oak woodlands (Crestline Visitor Center 2023). Specifically, the San Bernardino Mountains support approximately 2,000 plant species (Anderson et al. 2015). Pinyon pine (*Pinus edulis*) and juniper (*Juniperus californica*) woodlands exist at higher elevations and are two important plant resources for Native American communities that traditionally lived in this area. Lake Gregory Dam is located immediately south of the Project area and was constructed to develop the artificial Lake Gregory.

CULTURAL AND HISTORICAL SETTING

The San Bernardino Mountains are situated in the traditional lands of the *Maara'yam*, more commonly known as the Serrano. Ethnographic notes have been recorded by Benedict (1924), Harrington (1918), and Kroeber (1925) about Serrano living in the San Bernardino Mountains. Serrano clans occupied higher elevations in the mountains during the summer months and transitioned to lower elevations during winter months (U.S. Forest Service 2023). Different important native plant resources were available seasonally at the separate elevations. Serrano clans lived in pit houses at villages and seasonal or temporary campsites. Proximity to water was an important consideration for settlement by the Serrano (Bean and Smith 1978).

Prehistoric chronology for the San Bernardino Mountains is included in chronologies for the greater desert region. Mojave Desert prehistoric chronology has been proposed by Warren (1980, 1984) with more recent expansions by Sutton and colleagues (2007). Due to the settlement patterns of the Serrano, many large, complex archaeological sites have been recorded specifically along the Mojave River, such as at Cronese Lakes, Afton Canyon, Turner Springs, Oro Grande, Deep Creek, and Summit Valley, to name a few (Sutton and Earle 2017). These river sites have contributed to the chronology of the larger desert region,

especially for the Late Prehistoric archaeological record. The Mojave River flows northeast from the San Bernardino Mountains.

Late Pleistocene. The Late Pleistocene paleoenvironment was characterized by a wetter, cooler climate, and numerous lakes were located in the Mojave Desert during this time. Isolated flaked-stone artifacts have been recorded along these Pleistocene-age lakeshores (Roth and Warren 2008). A variety of lithic materials were exploited for toolstone production as hunter-gatherers maintained a high level of mobility and utilized material sources throughout the desert (Basgall 2000).

Early Holocene. Archaeologists have recorded artifacts associated with hunting and plant processing at early Holocene sites, such as projectile points, bifaces, and groundstone tools (Basgall 2000; Eerkens et al. 2007). These Lake Mojave and Pinto lithic technologies supported hunter-gatherer subsistence strategies in a shifting, increasingly arid environment.

Middle Holocene. The Mojave Desert may have experienced a population increase, and Native communities began shifting towards residential stability. Sites associated with the Gypsum Complex have contained a variety of projectile points, faunal remains, and rock art (Byrd et al. 2009; Davis et al. 1981).

Late Holocene. Many archaeological sites in the Mojave Desert have been dated to the Late Holocene and contain technologies associated with the Rose Spring Complex in their assemblages. Artifact assemblages recorded in the Late Holocene were increasingly diverse and included knives, drills, shells, pipes, awls, and obsidian tools, to name a few. There was a substantial increase in obsidian use. Native American communities developed more permanent settlements and relied on a wider range of plant resources (Byers and Broughton 2004; Gardner 2006).

Late Prehistoric. Large, complex villages were developed by the Late Prehistoric period and contained multiple family groups within the clans. Proximity to water was an important factor for the permanent settlements. Late Prehistoric archaeological sites contained diverse artifact assemblages, including Desert series projectile points, ceramics, pendants, incised stones, and shell beads (Sutton 2017). Rock Camp (CA-SBR-342) in the San Bernardino Mountains has been regarded as a seasonal Late Prehistoric Complex acorn processing base camp, but there may have been other periods of occupation, as well (Allen et al. 2022).

Many Serrano were forcibly recruited into the Spanish Mission system. Mission records indicate the presence of Serrano communities at the San Gabriel Mission, which was established in 1771 (Beattie 1923; San Manuel Band of Mission Indians 2023). A mission outpost known as an *estancia* was established in Redlands. Native Americans, including the Serrano, constructed the Mill Creek Zanja for the *estancia*, a long irrigation system that extended from the San Bernardino Mountains to Loma Linda. After the vast decimation of Serrano clans in the region due to forced removal, disease, and forced labor, the Spanish missions ended with the Decree for the Secularization of the Missions of California. Mexico gained independence from Spain, and the program of Mexican Land Grants in California began. The Rancho San Bernardino was formed across much of the San Bernardino Valley.

The Treaty of Guadalupe Hidalgo in 1848 ended the Mexican-American War and the Mexican Rancho Period. California achieved statehood in the U.S. in 1850. San Bernardino County was established a few years later. The citrus industry fueled economic growth and development in San Bernardino County, beginning in the 1850s. Gold was discovered at Holcomb Valley and Bear Valley in the San Bernardino Mountains (City of San Bernardino 2023). Miners flocked to the region as a result, and towns began developing around the mining districts and operations. Records indicate that many Serrano remained within the San Bernardino Mountains well into the mid-19th century, until a militia campaign occurred near Big Bear in 1866 (San Manuel Band of Mission Indians 2023). The remaining Serrano were forced to flee into the San Bernardino Valley. San Bernardino National Forest was established in 1907. Construction of Lake Gregory Dam began in 1937 under a Works Progress Administration (WPA) grant to dam the east and west forks of Houston Creek, which drained into Mojave River tributaries (Jensen 2017). The dam was completed in 1938. The County continued to develop during the 20th century, and Crestline remains a census-designated part of the County.

METHODS

All efforts made for the completion of this report were completed pursuant to requirements set forth in the California Environmental Quality Act (CEQA). This study is intended to identify whether cultural and paleontological resources are located within the Project area, whether any cultural and paleontological resources are potentially significant pursuant to the above-referenced regulations and standards, and to develop specific recommendations that will address potential impacts to existing or potential resources. Tasks completed include:

- A cultural resources records search through the South Central Coastal Information Center (SCCIC) to identify any studies conducted and/or cultural resources recorded within or adjacent to the Project area,
- A Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC),
- A pedestrian survey of the of the Project area and recordation of identified cultural resources,
- A review of cultural resource databases and historical maps,
- A paleontological records search through the Western Science Center (WSC),
- And development of recommendations and/or mitigation measures for cultural resources identified or potentially unrecorded within the Project area.

RESULTS

Cultural Resources Record Search

A cultural resources record search was requested through the South Central Coastal Information Center (SCCIC) for the Project area and a 0.5-mile buffer. The SCCIC provided the results on January 24th, 2024, and noted that no cultural resources were previously recorded within the Project area (Appendix A). However, three (3) previous cultural studies have taken place within the Project area. An additional twelve (12) cultural studies were conducted within 0.5 miles of the Project area. One (1) historic-period resource was recorded within 0.5 miles of the Project area. The historic-period site is known as Thousand Pines Camp and includes the cabins and mill site.

Sacred Lands File (SLF) Search

On December 14th, 2023, the Native American Heritage Commission (NAHC) conducted a search of Sacred Lands Files (SLF) for the Project area and vicinity. The NAHC indicated that the results were positive for sacred lands (Appendix B). The County will perform Assembly Bill (AB) 52 Consultation with the Native American Tribes.

Cultural Field Survey

An intensive-level cultural resources field survey was conducted for the Project area on December 27th, 2023 (Figure 3). The survey was conducted by walking parallel transects spaced approximately 15 meters apart. Ground visibility was fair to good through the bulk of the Project area. Although, approximately 20% of the Project area was inaccessible for survey due to the extreme slope in the northern and western areas (Figure 4). Specifically, the slope ranged from 15-50% in the Project area. The soil composition in the Project area consisted of Cedarpines-Stargazer-Urban land complex (SoilWeb 2023). The Project area was heavily forested and contained flowing water in the ravine of Houston Creek. It was noted that the property contained a few areas of extensive prior grading (Figure 5), as well as existing paved roads. All surface exposures within vegetated areas were examined for evidence of cultural resources.

The survey resulted in the identification of one cultural resource, KHA-CSS-24-01 (Figure 6, Appendix D). The resource is a single historic-period wooden utility pole. The pole is located adjacent to the paved road and bridge in the western Project area. The attached power outlet identified the manufacturer as Midwest Electric Products, Inc. (Figure 7). The electrical equipment manufacturing company was founded in 1945 in Mankato, Minnesota (Midwest Electric Products 2024). The power outlet is labeled as catalog number P30 with 20/240 volts and 30 amps. Since the manufacturer did not exist until the mid-1900s, the utility pole was likely constructed in the mid/late 1900s during development of the campground. The pole is not attached to a power line, and as such, it appears inactive or abandoned.

Additional Research

Staff also conducted a review of the National Register, California Register, National Historic Landmarks list, and other cultural databases. However, no cultural resources were identified within the Project area during the review. Additionally, historic topographic maps and historic imagery were reviewed to determine land use history and changes to the built environment of the region. Historic aerial images of the Project area date to 1938 and portray vacant, forested land. Development of a campground area occurred in the mid-1900s. Trees were cleared from the eastern Project area in 2017. Historic topographic maps of the Project area date to 1896. The maps indicate that Houston Creek flowed through the area.

Paleontological Overview

A paleontological records search was also conducted through the Western Science Center (WSC) for the Project area and 0.5-mile buffer. The results were provided by WSC on January 4th, 2024, and indicated that the WSC does not have any known paleontological localities within the Project area or buffer (Appendix C). The majority of the geologic units underlying the Project area are mapped as leucocratic granitic rocks from the Cretaceous epoch, which are not considered paleontologically sensitive (Dibblee and Minch 2004).

Figure 3: Project Area Overview

Figure 4: Example of Inaccessible Survey Area

Figure 5: Example of Graded Area

Figure 6: KHA-CSS-24-01 Overview

Figure 7: KHA-CSS-24-01 Detail

EVALUATIONS

KHA-CSS-24-01

The California Register of Historical Resources requires that a significance criterion from 1-4 be met for a resource to be eligible. A resource is eligible if (1) it is associated with events that have made a significant contribution to the broad patterns of our history; (2) it is associated with the lives of persons important in our past; (3) it 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 value; or (4) it has yielded or is likely to yield information important in prehistory or history.

Criterion 1: The utility pole may have been constructed in the general context of increased recreational activity and development in the San Bernardino Mountains. The isolated pole may also be associated with the industrialization and electrification of the greater Inland Empire region. However, research has not indicated that the isolated pole contributes to the significance of these important events within the development of the region. It is therefore recommended not eligible for the California Register under Criterion 1.

Criterion 2: The utility pole is not associated with any persons important in local or state history. Therefore, it is recommended not eligible for the California Register under Criterion 2.

Criterion 3: The resource does not possess any distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic value. Its construction method is typical of wooden utility poles from the mid- to late-1900s.

Research did not indicate that it was constructed by an important creative individual. For these reasons, it is recommended not eligible for the California Register under Criterion 3.

Criterion 4: Historic-period utility poles are a common resource type, and as such, it is not likely to yield information important in prehistory or history. It is therefore recommended not eligible for the California Register under Criterion 4.

The isolated utility pole is therefore recommended not eligible under any of the four criteria for listing on the California Register, and as such does not qualify as a Historical Resource under the California Environmental Quality Act (CEQA).

RECOMMENDATIONS

One cultural resource was identified within the Project area as a result of this inventory. KHA-CSS-24-01 is a wooden utility pole that was constructed after 1945 and is recommended not eligible for listing on the California Register. No archaeological resources were identified during this study. As such, no "Historical Resources" or "Unique Archaeological Resources", as defined by CEQA, are present within the Project area. Additionally, no paleontological resources were identified within the Project area or vicinity.

It is unlikely that undisturbed buried cultural resources are present within the Project area given the prior grading, naturally steep topography, lack of recorded resources in the vicinity, and geologic age of the underlying units. However, the literature review indicated a general archaeological sensitivity for the greater San Bernardino Mountains (Allen et al. 20022; Mills 2018; San Manuel Band of Mission Indians 2023). The presence of Houston Creek in the Project area also increases the archaeological sensitivity of the Project area. As such, it is recommended that mitigation measures for cultural resources be included that outline the process for treatment of any cultural resources and/or human remains inadvertently discovered during Project implementation. The results of the paleontological record search and research indicated that the Project area has a low paleontological sensitivity. However, it is recommended that mitigation measures also be included that outline the process for inadvertent discovery of paleontological resources. With these mitigation measures in place, impacts to cultural and paleontological resources would be less than significant. An example of such mitigation is included below:

- **Inadvertent Discoveries of Cultural Resources:** In the event that cultural resources are discovered during Project implementation, all earthwork and ground-disturbing activities will halt within 50 feet of the discovery. An archaeologist meeting the Secretary of Interior's (SOI) minimum professional qualifications in archaeology will coordinate with the County of San Bernardino and identify whether the resource is potentially significant and if it requires further evaluation. If the cultural resources are Native American in origin, the Consulting Tribe(s) must be immediately contacted and consulted regarding potential significance and treatment of the resource. For any potential significant cultural resources, the archaeologist will make recommendations to the County to avoid or mitigate impacts to the resource.

Preservation in place (i.e. avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery to excavate the resource along with subsequent laboratory processing and analysis. Disposition of significant Native American archaeological materials, such as reburial or curation by a qualified repository within the County, will be agreed upon by the County and Consulting Tribe(s). Any significant non-Native American archaeological material shall be curated at a public, non-profit institution with a research interest in the materials within the County, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

All identified cultural resources will be recorded on appropriate CA DPR 523 series forms and evaluated for significance. All findings will be included within a Monitoring Report drafted by the archaeologist and submitted to the County and Consulting Tribe(s) for review. Final copies of the Monitoring Report will be submitted to the County of San Bernardino, Consulting Tribe(s), and South Central Coastal Information Center (SCCIC).

- **Inadvertent Discoveries of Human Remains:** If human remains are encountered during the undertaking, California State Health and Safety Code Section 7050.5 states that excavation shall stop and no further disturbance shall occur within 100 feet of the discovery until the County Coroner has made a determination of origin and disposition of the remains pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery within 48 hours of notification. If the NAHC is unable to identify an MLD, the MLD fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation, the human remains and associated items will be interred on the property with appropriate dignity in a location that will not be subject to future disturbance.

- **Inadvertent Discoveries of Paleontological Resources:** Should paleontological resources be inadvertently encountered, construction activities shall be temporarily halted within 50 feet of the find so that the resource can be evaluated by a paleontologist meeting the Society of Vertebrate Paleontology (SVP) professional qualifications. A paleontologist shall temporarily divert or redirect grading and excavation activities in the area of the exposed material to facilitate evaluation and, if necessary, salvage. The paleontologist shall then assess the discovered material(s) and prepare a survey, study or report evaluating the impact. The County shall then comply with the recommendations of the evaluating paleontologist, and a copy of the survey report shall be submitted to the Western Science Center. Ground disturbing activities may resume once the paleontologist's recommendations have been implemented.

REFERENCES

Anderson, Dayan J., Jeff A. Crouse, Jennifer A. Hinojosa, and Glenn W. Sudmeier
2015 Biodiversity Management and Mining in the San Bernardino Mountains. *Responsible Mining: Case Studies in Managing Social & Environmental Risks in the Developed World*, 289-316.

Basgall, M. E.
2000 Patterns of Toolstone Use in Late-Pleistocene/Early-Holocene Assemblages of the Mojave Desert. *A Peopling of the Americas Publication*, 17, 86.

Bean, Lowell J. and Charles R. Smith
1978 Serrano. *Handbook of North American Indians*. Volume 8, 570-574.

Beattie, George William
1923 San Bernardino Valley in the Spanish Period. *Annual Publication of the Historical Society of Southern California* 12(3): 10-28.

Benedict, Ruth Fulton
1924 A Brief Sketch of Serrano Culture. *American Anthropologist* 26(3): 366-392.

Byers, D. A., and J. M. Broughton
2004 Holocene Environmental Change, Artiodactyl Abundances, and Human Hunting Strategies in the Great Basin. *American Antiquity* 69(2): 235-255.

Byrd, B. F., D. C. Young, and K. R. McGuire
2009 Pavement Quarries, Gypsum Period Residential Stability, and Trans-Holocene Settlement Systems of the Mojave Desert: A Case Study at Fort Irwin. *Journal of California and Great Basin Anthropology*, 29(2): 121-143.

California Natural Resources Agency
2023 *2023 California Environmental Quality Act (CEQA) Statutes and Guidelines*. Association of Environmental Professionals.

City of San Bernardino
2023 History of San Bernardino. https://www.sbcity.org/about/history/history_of_san_bernardino_short_version.

Crestline Visitor Center
2023 Nature and Wildlife. Visit Crestline. https://visitcrestline.org/nature-crestline/.

Davis, C. A., R.E. Taylor, and G. A. Smith
1981 New Radiocarbon Determinations from Newberry Cave. Journal of California and Great Basin Anthropology 3(1): 144-147.

Dibblee, T.W., and Minch, J.A.
2004 Geologic Map of the San Bernardino North/North 1/2 of San Bernardino South Quadrangles, San Bernardino and Riverside County, California. Dibblee Geological Foundation. Dibblee Foundation Map DF-127.

Eerkens, J. W., J. S. Rosenthal, D. C. Young, and J. King
2007 Early Holocene Landscape Archaeology in the Coso Basin, Northwestern Mojave Desert, California. *North American Archaeologist*, 28(2), 87-112.

Gardner, J. K.
2006 The Potential Impact of the Medieval Climatic Anomaly on Human Populations in the Western Mojave Desert. Ph.D. dissertation, University of Nevada, Las Vegas, NV.

Harrington, John Peabody
1918 Ethnographic Field Notes 1917-1917. Serrano. On File with the Smithsonian Institution.

Jensen, Danny
2017 Lake Gregory: The Hidden Gem of the San Bernardino Mountains. PBS SoCal KCET. https://www.pbssocal.org/food-living/lake-gregory-the-hidden-gem-of-the-san-bernardino-mountains.

Kroeber, Alfred L.
1925 *Handbook of the Indians of California.* Bureau of American Ethnology Bulletin No. 78. Washington D.C.: Smithsonian Institution. Reprinted in 1976, New York: Dover.

Midwest Electric Products
2024 About Us. https://www.midwestelectric.com/about-us.

Mills, Evan
2018 Seasonal Round Travel Routes and the Cost of Mobility. Master's thesis. California State University, San Bernardino.

Roth, B. J., and C. N. Warren
2008 On the Shores of Pleistocene Lake Mojave: Investigations at the Soda Springs Rockshelter. In *Proceedings of the 2007 Three Corners Conference* (pp. 211-226).

San Manuel Band of Mission Indians
2023 History. https://sanmanuel-nsn.gov/culture/history.

SoilWeb
2023 SoilWeb. https://casoilresource.lawr.ucdavis.edu/gmap/.

Sutton, M. Q.
2017 Chasing Ghosts: Rethinking the Prehistory of the Late Holocene Mojave Desert. *Pacific Coast Archaeological Society Quarterly* 53(1): 1-78.

Sutton, M. Q., and D. D. Earle
2017 The Desert Serrano of the Mojave River. *Pacific Coast Archaeological Society Quarterly*, 53(2&3), 1-61.

Sutton, M. Q., M. E. Basgall, J. K. Gardner, and M. W. Allen
2007 Chapter 15 Advances in Understanding Mojave Desert Prehistory. In *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones, Kathryn Klar. Society for California Archaeology. Rowman Altamira.

U.S. Forest Service
2023 San Bernardino National Forest: History and Culture. https://www.fs.usda.gov/main/sbnf/learning/history-culture#:~:text=The%20San%20Bernardino%20and%20San,the%20wooded%20San%20Bernardino%20Mountains.

U.S. Geological Survey
2024 U.S. Quaternary Faults. https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf.

Warren, C. N.
1980 The Archaeology and Archaeological Resources of the Amargosa-Mojave Basin Planning Units. In *A Cultural Resources Overview for the Amargosa-Mojave Basin Planning Units.* U.S. Bureau of Land Management, Cultural Resources Publications, Riverside, CA.
1984 The Desert Region. In *California Archaeology* 339-430. Academic Press, Orlando, FL.

APPENDIX A

Record Search Results from the South Central Coastal Information Center

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-36-020287		Resource Name - AE-TP-1; Resource Name - Thousand Pines Camp	Site	Historic	AH04; AH15	2004 (B. Sheets, Applied Earthworks)	SB-04242

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SB-02845	NADB-R - 1062845	1994	LERCH, MICHAEL	CULTURAL RESOURCES ASSESSMENT OF EFFLUENT HOLDING PONDS, CRESTLINE SANITATION DISTRICT, SAN BERNARDINO COUNTY, CA	TOM DODSON & ASSOCIATES	
SB-03039	NADB-R - 1063039	1995	GRAY, DEBORAH and DONN R. GRENDA	ARCHAEOLOGICAL SURVEY OF AN 8.4 ACRE PARCEL FOR THE RIM OF THE WORLD UNIFIED SCHOOL DISTRICT, SAN BERNARDINO COUNTY, CA	STATISTICAL RESEARCH	
SB-04242	NADB-R - 1064242	2004	MIRRO, MICHAEL	CULTURAL RESOURCES SURVEY OF 245 ACRES ON THE THOUSAND PINES PROPERTY FOR THE NATIONAL RESOURCES CONSERVATION SERVICE. 5PP	APPLIED EARTHWORKS	36-020287
SB-04323	NADB-R - 1064323	2004	MIRRO, MICHAEL	CULTURAL RESOURCES SURVEY OF 119 ACRES ON MEPHAM PROPERTY FOR THE NATIONAL RESOURCES CONSERVATION SERVICE. 3PP	APPLIED EARTHWORKS	
*SB-04967	NADB-R - 1064967; NRCS -	2005	Mirro, Michael	Cultural Resources Survey of Approximately 97 Acres within th Crestline Sanitation Property for the Natural Resources Conservation Service.	Applied Earthworks	
SB-05020	NADB-R - 1065020	2006	Mirro, Michael	Cultural Resources Survey of Approximately 51 Acres within the Urban Large Parcel CF 188 Project Area for the Natural Resources Conservation Service.		
*SB-05447	NADB-R - 1065447	2007	Mirro, Michael	Cultural Resources Survey of 148 Parcels Encompassing 175.7 Acres within the Urban Large Parcel CF214 Project Area for the Natural Resources Conservation Service.	Applied Earthworks	36-013426
SB-05451	NADB-R - 1065451; NRCS -	2007	Mirro, Michael	Cultural Resources Survey of 399 Parcels Encompassing 155.21 Acres within the Urban Large Parcel CF 208 Project Area for the Natural Resources Conservation Service.	Applied Earthworks	36-013434, 36-013435, 36-013436, 36-013437, 36-013438
SB-05477	NADB-R - 1065477; Other - SCE	2007	Bonner, Wayne H. and Kames M. Keasling	Cultural Resource Records Search Results and Site Visit for T-Mobile Candidate IE24066D (SCE Tower Ontario), Milliken Avenue, Ontario, San Bernardino County, California.	Michael Brandman Associates	

*In Project Area

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SB-05895	NADB-R - 1065895	2007	Mirro, Michael	Cultural Resources Survey of Approximately 116.5 Acres in the North Road Fuel Modification Project Area for the Natural Resources Conservation Service.		
SB-06048	NADB-R - 1066048; NRCS -	2008	Mirro, Michael	Cultural Resources Survey of 60.6 Acres on the Dart Canyon Fuel Modification Project Area for the Natural Resources Conservation Service.	Applied Earthworks	
SB-06622	CAL FIRE - ; NADB-R - 1066622	2009	Feller, Peter L.	Confidential Archaeological Letter for the Krumwiede Forest Fire Prevention Exemption, San Bernardino County, California.	Black Fox Timber Management Group	
SB-06995	NADB-R - 1066995	2010	Losekoot, Frank	A Confidential Archaeological Letter for the Houston Fuel Modification Project for the County of San Bernardino Hazardous Tree Removal Operations, San Bernardino County, California.	San Bernardino County/CDF	
SB-07206	CAL FIRE - ; NADB-R - 1067206	2012	Feller, Peter L.	Notice of Emergency Timber Operations for the Orr Project.	Black Fox Timber Management Group	
*SB-07640	NADB-R - 1067640	2011	Losekoot, Frank	A Confidential Letter for the Lake Gregory Fuel Modification Project for the County of San Bernardino, San Bernardino County, California.		

APPENDIX B

Sacred Lands File Search Results from the Native American Heritage Commission

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

December 14, 2023

Jamie Nord
Kimley-Horn and Associates, Inc.

Via Email to: jamie.nord@kimley-horn.com

Re: Camp Switzerland Project, San Bernardino County

Dear Mr. Nord:

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 Tribes 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: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

APPENDIX C

Paleontological Record Search Results from the Western Science Center

WESTERN SCIENCE CENTER

January 4th, 2023

Kimley-Horn
Jessica Mauck
3801 University Ave, Ste. 300
Riverside, CA 92501

Hello,

This letter presents the results of a record search conducted for the Camp Switzerland Project located in Lake Gregory in the City of Crestline, San Bernardino County, CA. The project area is located north of Lake Drive and the Lake Gregory Dam on Township 2 North, Range 4 West, Section 23 of the San Bernardino North, CA USGS 7.5" quadrangle.

The geologic units underlying the project area is mapped as majority leucocratic granitic rocks from the Cretaceous epoch, with some alluvial gravel and sand from the Holocene epoch (Dibblee and Minch, 2004). Leucocratic granitic are not considered to be paleontologically sensitive. The Western Science Center does not have localities within the project area or within a 1 mile radius.

Should excavation activity associated with the development of the project area extend beyond the current project are into surrounding alluvial units, paleontological resources would be possible. However, under current project parameters, and with the geologic units described, it would be unlikely for fossil material to be preserved.

If you have any questions, or would like further information, please feel free to contact me at bstoneburg@westerncentermuseum.org.

Sincerely,

Brittney Elizabeth Stoneburg, MSc
Collections Manager

APPENDIX D

CA DPR 523 Form

State of California ◆ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 4 ***Resource Name or #:** (Assigned by recorder) KHA-CSS-24-01
P1. Other Identifier:

***P2. Location:** ☐ **Not for Publication** ✠ **Unrestricted**
***a. County** San Bernardino County **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** San Bernardino North **Date** _____ **T** 2N ; **R** 4W ; __ ☐ **of** __ ☐ **of Sec** 23 ; **B.M.**
c. Address _____ City _____ Zip

d. UTM: (Give more than one for large and/or linear resources) Zone 11S , 475227.05 mE/ 3789651.75 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The isolated resource is a single historic-period wooden utility pole. The pole is located adjacent to the paved road and bridge in the western Project area. The attached power outlet identified the manufacturer as Midwest Electric Products, Inc. This electrical equipment manufacturing company was founded in 1945 in Mankato, Minnesota. The power outlet is labeled as catalog number P30 with 20/240 volts and 30 amps. The pole is not attached to a power line, and as such, it appears inactive or abandoned. The pole also does not possess any crossarms or insulators.

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

***P3b. Resource Attributes:** (List attributes and codes) HP39. Other
***P4. Resources Present:** ☐ Building ✠ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) West, 12/27/23
***P6. Date Constructed/Age and Source:** ✠ Historic ☐ Prehistoric ☐ Both

***P7. Owner and Address:**
San Bernardino County
385 N Arrowhead Ave
San Bernardino, CA 92415

***P8. Recorded by:** (Name, affiliation, and address) Jamie Nord, Kimley-Horn & Associates, Inc. 3801 University Ave, Suite 300, Riverside CA 92501
***P9. Date Recorded:** 02/08/2024
***P10. Survey Type:** (Describe)
Intensive-level
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Cultural and Paleontological Resources Assessment, Camp Switzerland Sewer Lift Station

State of California ◆ The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI #

PRIMARY RECORD

Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 4 ***Resource Name or #:** (Assigned by recorder) KHA-CSS-24-01
P1. Other Identifier:

Project, Crestline, San Bernardino County, California

***Attachments:** □NONE ✠Location Map ✠Continuation Sheet □Building, Structure, and Object Record
□Archaeological Record □District Record □Linear Feature Record □Milling Station Record □Rock Art Record
□Artifact Record □Photograph Record □ Other (List):

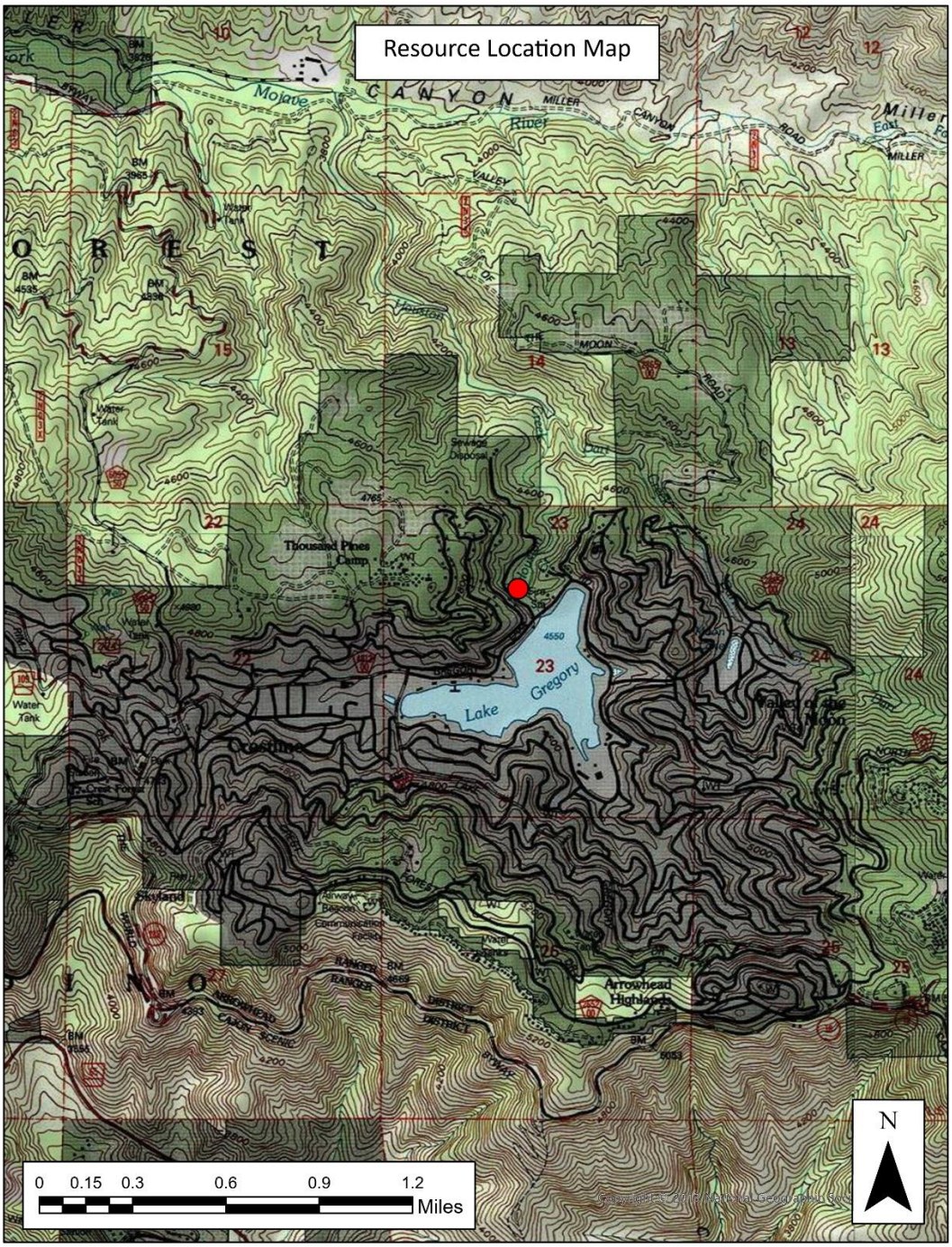
State of California - The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#

LOCATION MAP

Trinomial

Page 2 **of** 4 ***Resource Name or #** (Assigned by recorder) KHA-CSS-24-01

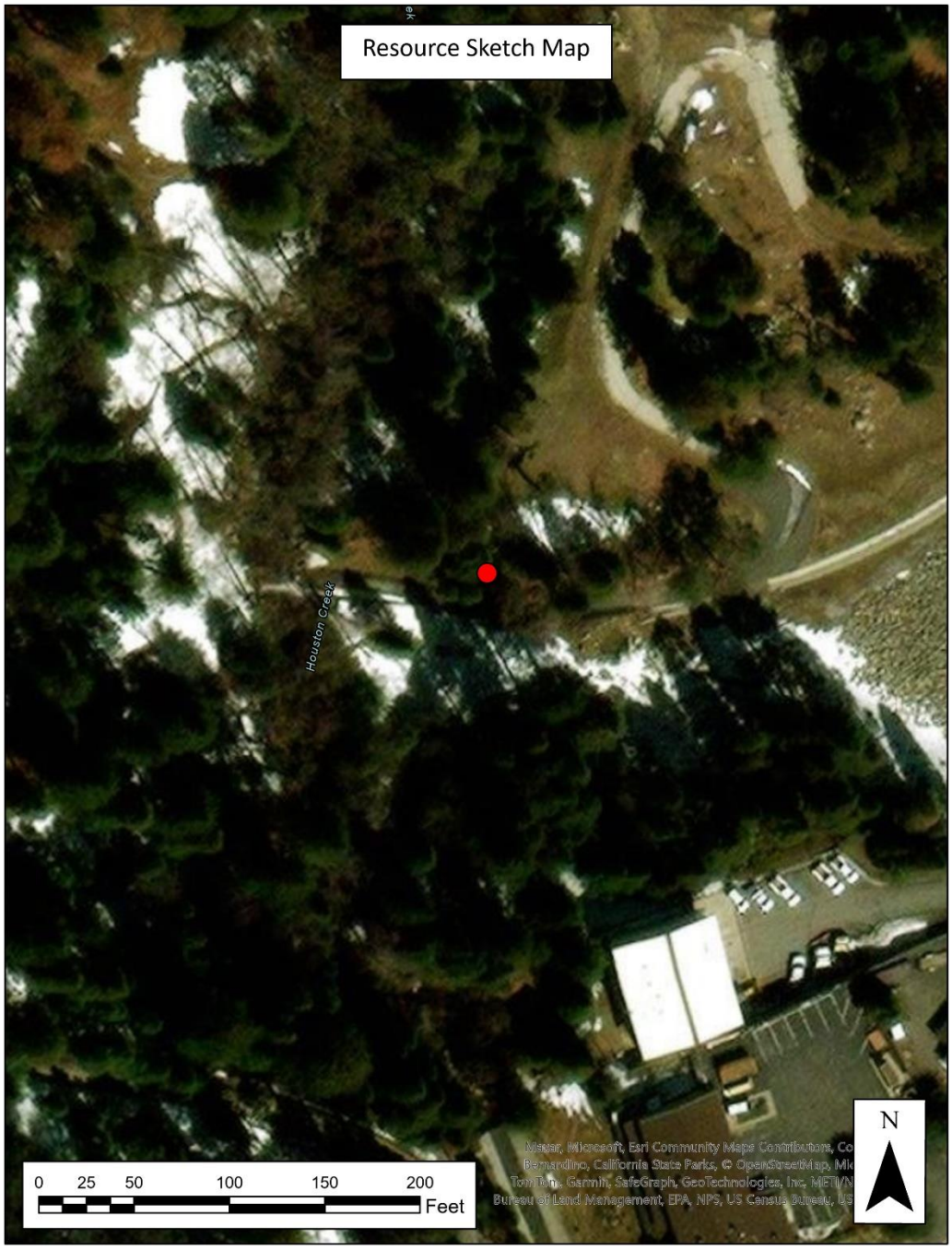
***Map Name:** San Bernardino North 7.5' topo map ***Scale:** 1:24,000 ***Date of map:** 02/08/2024



State of California ♁ The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#
SKETCH MAP
Trinomial

Page 3 **of** 4 ***Resource Name or #** (Assigned by recorder) KHA-CSS-24-01

***Drawn by:** Jamie Nord ***Date of map:** 02/08/2024



DPR 523K (9/2013) **NOTE: Include bar scale and north arrow.**

CONTINUATION SHEET

Property Name: _____

CRHR Evaluation:

Criterion 1: The utility pole may have been constructed in the general context of increased recreational activity and development in the San Bernardino Mountains. The isolated pole may also be associated with the industrialization and electrification of the greater Inland Empire region. However, research has not indicated that the isolated pole contributes to the significance of these important events within the development of the region. It is therefore recommended not eligible for the California Register under Criterion 1.

Criterion 2: The utility pole is not associated with any persons important in local or state history. Therefore, it is recommended not eligible for the California Register under Criterion 2.

Criterion 3: The resource does not possess any distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic value. Its construction method is typical of wooden utility poles from the mid- to late-1900s. Research did not indicate that it was constructed by an important creative individual. For these reasons, it is recommended not eligible for the California Register under Criterion 3.

Criterion 4: Historic-period utility poles are a common resource type, and as such, it is not likely to yield information important in prehistory or history. It is therefore recommended not eligible for the California Register under Criterion 4.

The isolated utility pole is therefore recommended not eligible under any of the four criteria for listing on the California Register, and as such does not qualify as a Historical Resource under the California Environmental Quality Act (CEQA).

Appendix D:
Geotechnical Report

Geotechnical Engineering Services

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

for
Kimley-Horn and Associates, Inc.

August 9, 2023

GeoEngineers
Earth Science + Technology

Geotechnical Engineering Services

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

for

Kimley-Horn and Associates, Inc.

August 9, 2023

GeoEngineers

13220 Evening Creek Drive South, Suite 115
San Diego, California 92128
619.314.5043

Geotechnical Engineering Services

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

File No. 26258-001-00

August 9, 2023

Prepared for:

Kimley-Horn and Associates, Inc.
401 B Street, Suite 600
San Diego, California 92101

Prepared by:

GeoEngineers, Inc.
13220 Evening Creek Drive South, Suite 115
San Diego, California 92128
619.314.5043

CERTIFIED ENGINEERING GEOLOGIST
MATTHEW DAVID MARTINEZ
No. 2758
STATE OF CALIFORNIA

8/9/2023

Amin Azimi, PhD, PE (NV)
Senior Structural Engineer

Matthew D. Martinez, PG, CEG
Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER
LYLE JOSEPH STONE
No. GE 3066
EXP. 6/30/24
GEO TECHNICAL
STATE OF CALIFORNIA

Arash Pirouzi, PhD, PE (NV)
Geotechnical Engineer

Lyle J. Stone, PE, GE
Associate Geotechnical Engineer

AA:MDM:AP:LJS:nld:mce

Table of Contents

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of GeoEngineers, Inc.'s (GeoEngineers) geotechnical engineering services in support of the Camp Switzerland Sewer Lift Station project located in San Bernardino County, California. The project site is shown relative to surrounding physical features on the Vicinity Map (Figure 1) and the Site Plan (Figure 2).

The proposed improvements consist of construction and installation of a sewer lift station servicing new cabin sites, installation of two new High Density Poly Ethelene (HDPE) pipes connecting to an existing polyvinyl chloride (PVC) sewer pipeline, and a Supervisory Control and Data Acquisition (SCADA) communication system with battery backup. Ancillary improvements will include surface structures such as equipment pads. We understand that the maximum depth of excavation associated with the sewer lift station will range between 10 to 15 feet with potential zones of excavation extending to depth of 20 feet below the existing ground surface (bgs).

The purpose of our services is to evaluate subsurface conditions at the site, evaluate potential geologic and seismic hazards that could impact the site and provide geotechnical recommendations in support of the proposed improvements. We understand that the proposed sewer lift station is not critical infrastructure, and therefore, detailed seismic analysis is not required.

GeoEngineers' geotechnical engineering services were completed in general accordance with the Services Authorization Number 195068123 between Kimley-Horn and Associates, Inc. (Kimley-Horn) and GeoEngineers dated November 09, 2022 and as clarified in email communication dated October 31, 2022. We understand that Kimley-Horn is performing this project under contract with The San Bernardino County, Department of Public Works - Special Districts.

2.0 FIELD EXPLORATIONS AND LABRATORY TESTING

GeoEngineers personnel performed a geologic site reconnaissance at the site on May 25, 2023 to identify geological conditions that could cause adverse effects on the lift station and proposed location of pipelines. The reconnaissance consisted of the following:

- Observation of surficial exposed soils within the project area;
- Observation of site topography and surficial slopes within the vicinity of the project
- Evaluation of access roads for drill rig and excavator
- Designating approximate location of test pits and boring.

2.1. Field Explorations

The exploration program for the project consisted of general site reconnaissance, excavation of three exploratory test pits along the proposed alignment of the proposed HDPE connecting pipes and advancement of one exploratory boring in the vicinity of the proposed sewer lift station.

The three exploratory test pits were excavated by GP Excavation on July 10, 2023 along the northern half of proposed sewer pipe alignment. Due to the steep slopes and access limitations, test pits were not excavated along the southern half of the proposed sewer pipe alignment.

The geotechnical boring (B-1) was advanced to a depth of 31.5 feet bgs (10 feet below the anticipated maximum depth of proposed site excavations for the sewer lift station) by Pacific Drilling on July 10, 2023, using a truck mounted rig equipped with hollow stem augers. Due to the presence of groundwater at a depth of 12 feet, a groundwater monitoring well was constructed to measure groundwater at the site. Soil samples were collected by driving Standard Penetration Test (SPT) samplers at 5-foot intervals.

Due to the variably weathered nature of the bedrock materials encountered within B-1, the boring was completed to the full planned depth using hollow stem auger drilling with a collection of drive samples; HQ-wireline rock coring with mud rotary was not required.

2.2. Laboratory Testing

Soil samples were obtained during the explorations and taken to a laboratory for further evaluation. Selected samples were tested for the determination of moisture content and fines content (material passing the U.S. No. 200 sieve). The tests were performed in general accordance with test methods of ASTM International (ASTM). Representative Uniaxial Compressive Strength (UCS) testing could not be conducted on the collected samples due to the high weathering rock. A description of the laboratory testing and the test results are presented in Appendix A.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1. Geology

3.1.1. Regional Geology

The project site is located in the Crestline area within the San Bernadino Mountains of greater San Bernadino County. The San Bernadino Mountains are in turn located within the eastern portion of the Transverse Ranges physiographic province of California. The Transverse Ranges are a long and narrow province characterized by east-west trending, steep side mountain ranges and intervening valleys. This generally east-west trending structure is oblique to the northwest physiographic-structural grain within coastal southern California. The San Garbriel Mountains form the western portion of the province. The San Bernadino Mountain Assemblage is bounded to the south by the San Andreas and Mill Creek Faults and is bounded by the southwestern portion of the Mojave Desert physiographic province to the north. The majority of the bedrock within the San Bernadino Mountains consists primarily of Cretaceous-aged granitic rocks.

3.1.2. Local Geology

Based on the regional geologic map by Morton and Miller (2006) the site is underlain by Mesozoic-aged Mixed Granitic rocks of Silverwood Lake (Geologic Map Unit: Mzsl). Mzsl is a heterogeneous unit that is known to contain a variety of granitic rock types including granodiorite, monzogranite, monzonite, monzodiorite, tonalite and monzonite. Additionally, this collective rock unit is described as being deeply weathered and locally decomposed. Colluvium and alluvium are also present on slopes of canyon walls and in base of alluvial valleys. The location of the site relevant to the local geology is shown on Regional Geologic Map, Figure 3.

3.2. Faulting and Seismicity

3.2.1. Regional Seismicity

The Transverse Ranges have experienced numerous large historical earthquakes, as the area is crisscrossed with faults, many of which are zoned by the Alquist Priolo Earthquake Fault Zoning Act. The eastern extension of the Transverse Ranges, the San Bernadino Mountains, has been historically displaced to the south along the San Andreas Fault. Additionally, intense north-south compression of the Transverse Ranges has resulted in rapid regional tectonic uplift throughout the physiographic province.

3.2.2. Fault Activity

The United States Geological Survey (USGS) have developed a Quaternary Fault and Fold Database of faults and associated folds that are believed to be sources of earthquakes with magnitudes greater than 6.0 that have occurred during the Quaternary (the past 1.6 million years). Class A faults have been categorized based upon the following distinctions:

- Historical faults (activity within last 150 years);
- Latest Quaternary faults (activity within last 15,000 years);
- Late Quaternary (activity within last 130,000 years);
- Middle to late Quaternary (activity within the last 750,00 years); and
- Undifferentiated Quaternary (activity within the last 1.6 million years).

The Class A faults are considered to have the highest potential to generate earthquakes and/or surface rupture, and the earthquakes and the potential for surface rupture increases from oldest to youngest. The evidence for Quaternary deformation and/or tectonic activity progressively decreases for Class B and Class C faults. When a fault is not of tectonic origin, it is considered to be a Class D structure.

The nearest known Historic or Latest Quaternary Class A faults include segments of the San Andreas Fault Zone which are located approximately 5 miles southwest of the project site area. Segments of the San Jacinto Fault Zone are approximately 8 miles southwest of the site.

The nearest known Late Quaternary Class A faults include segments of the Cleghorn Fault Zone, which are located approximately 1.2 miles north of the site, and segments of the Waterman Canyon Fault Zone, which are located approximately 2.1 miles south of the site. Regional faults are presented on Regional Seismicity Map (Figure 4).

The site could be subjected to significant shaking in the event of a major earthquake on any of the faults discussed above or other faults in the southern California area.

3.3. Site Conditions

The project site area is located within the north-south trending Houston Creek canyon, approximately one-quarter mile below the Lake Gregory Dam. The proposed sewer lift station is to be situated in a relatively flat lying area at the base of the canyon, immediately to the west of Houston Creek. The site can be accessed from two different roads—one from the Lake Gregory dam side, which is gated and fully paved until the bottom of the canyon, featuring a steel bridge with a posted 4,000 pounds (lbs) axle weight capacity. Beyond the bridge, the road leading to the lift station is unpaved. The other access road from Houston Drive is also gated and unpaved, with steep slopes leading to the bottom of the canyon where the proposed lift station is to be located.

The proposed alignment for the HDPE sewer pipes runs northeast from the proposed lift station, ascending the slopes, and finally making a left turn of approximately 90 degrees, heading north towards Houston Drive. Half of this path along the proposed HDPE pipe alignment can be accessed using another unpaved road that descends from Houston Drive and covers the upper section of the proposed sewer pipes.

3.4. Subsurface Conditions

Based on our geologic site reconnaissance and recent site explorations, site subsurface conditions are generally consistent with those presented in the regional geologic maps, record drawings and reference documents. The project area is generally underlain by variably weathered granitic rocks. Alluvium soils are present in the generally flat lying area at the base of Houston Creek Canyon in the vicinity of B-1 and the proposed sewer lift station. Colluvial soils are present on canyon slopes and were locally encountered within the exploratory test pits. Both the alluvium and colluvium appear to be derived locally from the underlying weathered igneous rock.

The alluvial soils encountered within B-1 were approximately six to seven feet in thickness and consisted of silty to clayey sands. The underlying granitic bedrock consisted of decomposed (residual soil) to moderately weathered granitic rock, which generally excavated as poorly graded to silty fine to coarse grained sands, particularly within the heavily decomposed materials. As previously discussed, rock coring was not required to reach the maximum depth explored due to the weathered nature of the bedrock. The logs report the disturbed or excavated condition. The in-situ condition is expected to be weathered igneous rock.

The bedrock materials encountered within the exploratory test pits and generally present within the canyon side walls within the project area are also significantly weathered, and readily excavatable using a small to moderate sized excavator. Similar to the material encountered within B-1, the weathered granitic rock encountered within the test pits generally excavated as poorly graded to silty fine to coarse grained sands.

3.5. Groundwater Conditions

Groundwater was first observed within boring B-1 at approximate depth of 12 feet bgs during advancement of geotechnical explorations. A monitoring well was installed, and groundwater was measured at approximate depth of 10.5 feet bgs during pressure transducer sensor installation on July 29, 2023. Groundwater levels likely vary with season and in response to precipitation. The transducer can be retrieved at a later date to provide more detail on seasonal fluctuations.

4.0 GEOLOGIC HAZARDS

Geologic hazards associated with earthquakes include ground rupture, ground shaking, tsunamis, seiches, seismic-induced flooding, liquefaction, seismic-induced ground settlement and seismic-induced slope instability. In addition to geologic hazards associated with earthquakes and faulting, there are other potential geologic hazards that may impact the site. These include landslides, expansive soils, collapsible soils and groundwater. It appears from our research and observations that geologic hazards at the site are limited to those caused by shaking from earthquake-generated ground motions. The following comments are provided with respect to these hazards.

4.1. Surface Fault Rupture

Based on the geologic site reconnaissance and review of referenced literature, the site is not within a State of California-designated Alquist-Priolo Earthquake Fault Zone. In addition, no known active or potentially active fault traces are mapped within the general limits of the recent investigation, nor trend in the direction of the project area. According to the California Geologic Survey (CGS), a fault is considered active if it has offset Holocene sediments less than approximately 11,700 years old. A fault is considered potentially active if fault offsets occurred 11,700 to 2.85 million years ago. As such, the geologic risk associated with ground surface rupture beneath the proposed lift station and surrounding site area is considered to be low.

4.2. Liquefaction Potential

Liquefaction is a phenomenon where soils experience a rapid loss of internal strength as a consequence of strong ground shaking. Ground settlement, lateral spreading and sand boils may result from liquefaction. In general, the soil that is susceptible to liquefaction include very loose to medium dense, clean to silty sands and some silts that are below the groundwater level.

Due to the presence of shallow, dense to very dense variably weathered granitic bedrock, within the project site area, the potential for liquefaction, seismic settlement, lateral spreading and related effects is considered to be low.

4.3. Landsliding

According to regional geologic mapping by Morton, D.M. and Miller, F.K., 2006, no landslides are mapped in the site area. In addition, evidence of landslides or landslide potential was not observed during the geologic site reconnaissance. As such, landsliding is not considered to be a significant geologic hazard at the subject site.

4.4. Compressible and Expansive Soils

Based on the geologic site reconnaissance, the alluvial and colluvial soils, and the variably weathered granitic bed rock within the site vicinity do not appear significantly compressible or subject to hydro-collapse based on the anticipated loading. Based upon regional geologic map relationships, it is our opinion that the potential for the existence of expansive soils at the site is low.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1. Construction and Earthwork Recommendations

5.1.1. Construction Excavations

5.1.1.1. General Considerations

We anticipate that construction of the lift station will require excavation and dewatering down to maximum depth of 20 feet over an approximate 45.5-foot by 36.5-foot area that encompasses the footprint of the lift station. Sewer pipelines will extend approximately 550 feet to the north of the lift station.

There are two general methods to accomplish excavation and provide worker protection: (1) passive shield systems, and (2) positive shoring systems. Shields are systems such as trench boxes that are placed in an excavation to protect workers from cave-ins. Positive shoring systems are structures that are designed to provide lateral support to the sides of the excavation and prevent lateral movement or cave-ins.

With shield systems, the excavation is completed before the shield is in place and the shield is removed before the excavation is backfilled. The excavation sides are unsupported and can be prone to sloughing during construction. Even if the sides of the excavation do not slough, the sidewalls may squeeze and move laterally towards the trench. Typically, the potential for movement is limited to areas directly adjacent to the excavation within a distance equal to the depth of the excavation.

Trench boxes or other shield systems will only be suitable where the excavation can safely remain open and unsupported while the trench box is placed. This could limit the use of trench boxes to shallower pipeline installations. Additionally, the surface soils appear to be loose and will be prone to sloughing. Some benching or sloping could be required to advance to the denser layers that can remain vertical while the trench boxes are placed.

Although the decomposed and weathered rock is dense and could likely hold a steep or vertical cut for an extended period of time, the proposed lift station is large and deep and will likely extend below the groundwater level. These factors make open and unsupported temporary cuts a greater risk for sloughing or caving. We recommend that a shoring system be considered. In our opinion, an internally braced soldier pile and lagging temporary shoring system is likely the most practical method. If the contractor proposes a shoring method that requires portions of the excavation to be temporarily unsupported, we recommend that a contingency be carried for additional dewatering and/or staged construction that only allows smaller portions of the excavation to be unsupported at any time.

Shoring and dewatering systems are interdependent, and their design must be coordinated. We anticipate that an external dewatering system, including dewatering wells installed and operating prior to excavation will likely be most practical. If an internal dewatering system is used, one that uses sumps and pumps to clear water that seeps into the excavation, the shoring system will need to consider hydrostatic forces.

It is the responsibility of the contractor to ensure that excavations deeper than 4 feet for all parts of the construction conform to the provisions of Occupational Safety and Health Administration (OSHA), Section 1926.651 “Specific Excavation Requirements.” Shoring, trench boxes or sloped sidewalls will be required for excavation at the site.

The contract documents must specify that the contractor is responsible for selecting excavation and dewatering methods, monitoring the excavations for safety and providing shoring, as required, to protect personnel and structures. We recommend that all shoring be designed to accommodate at least 2 feet of overexcavation of the subgrade. We recommend that excavation shoring and dewatering systems be designed by a qualified engineer in general accordance with State of California Department of Transportation (Caltrans) *Trenching and Shoring Manual.*

The Caltrans *Trenching and Shoring Manual* requires a shoring plan to be submitted to the Engineer for review prior to excavation where depth of excavation exceeds 5 feet. The submittal must clearly describe the subsurface soil and groundwater conditions assumed in the design and indicate the location and elevation of any shoring elements and include the extent and limit of any slopes. The submittal must specifically indicate what the maximum design groundwater level is, how the groundwater will be monitored, and what actions will be taken to ensure the safety of the excavation should the groundwater approach or rise above the design groundwater level. We recommend GeoEngineers to be retained to review the proposed shoring and dewatering plan before construction.

5.1.1.2. Construction Shoring

Due to the presence of weathered rock, we anticipate that drilled soldier piles and lagging shoring system will be used for support of excavation. The shoring will need to support both the active soil pressures imposed on the wall by the retained soil and any surrounding construction surcharges. Based on the anticipated depth of the excavation (maximum 20 feet), we expect that a cantilevered system might not be practical or cost effective and that some form of a braced system will be required.

The soil pressures on a shoring wall are dependent on the type of wall, the soil retained, the method of construction, and the extent of dewatering. For preliminary purposes, we suggest that loads against a shoring system be estimated using the soil properties in the following table. These values are based on our explorations at the site.

PRELIMINARY SOIL PARAMETERS

Soil Type	Friction Angle (degrees)	Total Unit Weight (pcf)	Active Equivalent Fluid Weight for Un-Saturated Soil[1] (pcf)	Allowable Passive Equivalent Fluid Weight[2] (pcf)
Fill, Alluvium and Colluvium	30	120	40	115
Decomposed to intensely weathered igneous rock	40	135	29	225

Notes:

[1] Active earth pressures should be used in accordance with pressure distribution presented in Caltrans *Shoring and Trenching Manual* Section 7.1.

[2] Soil pressure based on saturated (buoyant) soil and Coulomb earth pressure theory. These values include a factor of safety of 1.5.

pcf = pounds per cubic foot

Our suggested values are for preliminary planning purposes and assume that a yielding shoring system is used. Soil and water pressures used in final design must be appropriate for the specific shoring system that will be constructed and should be determined by the shoring design engineer.

5.1.1.3. Dewatering

We anticipate constructing the below-ground structure will require temporary lowering of the groundwater table by approximately 10 feet within the excavation if the excavation occurs during the summer months. Temporary dewatering may be accomplished using a variety of means. We anticipate a soldier pile and lagging system with dewatering wells will be used at this site. Wells are anticipated to be installed outside the temporary shoring system. The type of temporary dewatering system will depend on the depth of excavation, type of temporary shoring system, constructability considerations, and other factors. It is our understanding that the trenching for HDPE pipes will not extend below groundwater table and do not require dewatering.

The dewatering system should be design by a Professional Engineer experienced in design of such team and constructed by an experience dewatering contractor who is licensed in State of California. The temporary dewatering system should be designed to maintain the groundwater level at least 1 foot below the bottom of excavation or as required to implement the contractors proposed shoring system.

Surface water from rainfall can contribute significantly to the volume of water that needs to be removed from the excavation during construction and will vary as a function of season and precipitation.

5.1.1.4. Open Trench Excavations

The proposed HDPE pipes and electrical line will be installed within a trench. We understand the proposed lines will be installed in a general northeast-southwest alignment and will be connected to the existing manhole and electrical vault in the vicinity of Houston Drive. Temporary trench excavations should be stabilized by sloping back the sides of excavation or using a temporary shoring or shield system. OSHA guidelines allow temporary slopes for excavations less than 20 feet deep, from 0.75H:1V (Horizontal to Vertical) to 1.5H:1V depending upon soil type. The guidelines assume that surface loads such as construction equipment and storage loads will be kept a sufficient distance away from the top of the cut so that the stability of the excavation is not affected. The guidelines also assume that no groundwater is present. Based on our explorations the near surface soils are anticipated to fall under OSHA "Type C" classification and should have a maximum a temporary maximum slope angle of 1.5H:1V. The contractor will be responsible to determine and confirm the actual OSHA soil type during the construction process. It is important to understand that the trench extends approximately 550 feet in length, and the soil conditions could vary along the trench due to the inherent spatial variability of the soil.

The risk of sloughing will increase the longer the trench remains open. Stockpiles of soil or heavy equipment adjacent to the excavation will also increase the risk of sloughs. The potential for sidewall sloughs must be considered in the work plan. The contractor's work plan should include methods for removing sloughed soil from the trench and methods for stabilizing localized unstable areas. In our opinion, methods for stabilizing localized unstable areas could include: dewatering localized perched groundwater, shoring, laying back unstable slopes, or a combination of these or other methods. The surface of the trenched area shall be restored to generally match existing conditions at the other locations.

5.1.1.5. Excavation Methods

We anticipate that the majority of the excavations can be achieved with conventional earth moving equipment such as large excavators. The contractor should be prepared for less weathered areas where excavation will be significantly slower. The contractor should expect to use excavator buckets with reinforced teeth and ripper claws. Excavators with mounted hydraulic breaker attachments could be required in some areas for efficient excavation.

The contractor should also be prepared to remove and/or break apart isolated boulders of relatively unweathered rock, which could be present. This could require the use of mechanical means (i.e., hydraulic breakers) or chemical agents (i.e., drilling and placing expansive grout). Use of explosives will not be permitted without the express consent and approval of the engineer and contracting agency and should not be assumed as an available method for excavation.

5.1.2. Earthwork for Structures and Backfill

5.1.2.1. Footing Subgrade Preparation

The area to be developed with structures should be stripped of all debris, topsoil, sod, vegetation, existing uncontrolled fill and otherwise unsuitable material. Roots larger than about ½ inch in diameter should be grubbed out. The subgrade must be in a firm and unyielding condition prior to the construction of footings. In areas where the subgrade is soft or yielding, overexcavation and replacement with structural fill will be required.

5.1.2.2. Structure Backfill Compaction

Fill and backfill placed around the subsurface structures must consist of structural fill compacted to at least 95 percent of the maximum dry density (MDD) as determined by ASTM Test Method D 1557 (Modified Proctor) with the exception that backfill placed within 2 feet of the wall is compacted by hand-operated equipment to a density of 90 percent of the MDD. In general, structural fill should be placed in loose lifts not exceeding 12 inches in thickness for import material and lifts not exceeding 8 inches in thickness for on-site material. Each lift should be conditioned to near the optimum moisture content and compacted to the specified density before placing subsequent lifts.

5.1.2.3. Structural Fill Materials

Fill and backfill used to support structural elements must consist of a well-graded sand or gravel compacted to a dense condition. Fill should be free of debris and organic soils with fines contents limited to no more than 20 percent. Fill material used should have very low to low expansion index (EI = 20 or less) as defined by ASTM D4829. Other materials or gradations can be considered on a case-by-case basis.

5.1.2.4. On-site Soils

The on-site soil may be considered for use as fill, provided that it can be properly moisture-conditioned and compacted to a dense non-yielding condition. On-site soils that will be used in structural areas must meet the above criteria for structural fill materials. This should be evaluated on-site as the excavation occurs. The on-site soil does contain a significant amount of fines and will be moisture sensitive. Material that is excavated from below the groundwater table could require drying before it can be compacted as structural fill.

5.1.2.5. Select Granular Fill

If imported fill is needed during wet weather conditions or to backfill within wet excavations, we recommend using fill consisting of well-graded sand and gravel or crushed rock with a maximum particle size of 6 inches and less than 5 percent fines by weight based on the minus ¾ -inch fraction. This material will be less moisture sensitive but still must be compacted at or near an optimum moisture content. It will not be suitable for placement underwater or when saturated.

5.1.2.6. Pipe Subgrade, Bedding, and Backfill

Pipe subgrades must be firm and unyielding. If subgrades are soft and cannot be compacted in place, overexcavation and replacement as described for footing subgrade preparation should be used.

Pipe bedding must conform to the pipe manufacturer's recommendations for pipe bedding and support. In the absence of specific recommendations from the pipe manufacturer, we recommend pipe bedding consist of Caltrans Class 2 Permeable material. Pipe bedding material should be compacted to 90 percent of the MDD according to ASTM D1557.

Where the pipe alignment is located in areas that are not sensitive to settlement at the ground surface, for example, in the open natural areas, the trench can be backfilled above the bedding with native soil from the trench spoils. The native soil should be free of debris or large organic material such as tree stumps. The backfill should be placed in lifts not thicker than 12 inches and at a moisture content similar to the in-place moisture content. Each lift of the native backfill should be uniformly compacted. We recommend that the initial lift of backfill over the pipe be thick enough to reduce the potential for damage during compaction. Backfill material should be compacted to about 90 percent of the MDD per to ASTM D1557. Some settlement of the trench backfill may occur and we recommend that the surface be crowned 6 to 12 inches over the trench to account for this settlement.

Where the pipe alignment is located in structural areas or areas that are settlement sensitive, for example adjacent to or under paved roads, the trench should be backfilled with structural fill. All backfill in structural or settlement sensitive areas should be compacted to at least 90 percent of MDD 3 feet and below finish grade and to at least 95 percent of MDD in the upper 3 feet.

Where the pipe alignment is located in areas that are not settlement sensitive, but do require a firm working surface, for example under gravel roads or in maintenance areas, the trench can be backfilled with on-site soil 3 feet and below finish grade and with structural fill compacted to at least 90 percent of MDD in the upper 3 feet. Some settlement of the ground surface should be expected and could occur after construction.

5.2. Structure Design Recommendations and Analysis

5.2.1. Earthquake Engineering

2018 IBC/ASCE 7-16 MAPPED SEISMIC DESIGN PARAMETERS

ASCE 7-16 Parameter	Recommended Value
Site Class	C
Short-period mapped MCE_R spectral response acceleration, S_S (g)	2.242
Long-period mapped MCE_R spectral response acceleration, S_1 (g)	0.762
Short-period site coefficient, F_A	1.2
Long-period site coefficient, F_V	1.4
Design Spectral Acceleration at 0.2 second period (S_{DS})	1.794
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.712
$T_s = S_{D1}/S_{DS}$	0.397

Notes:

Parameters developed based on latitude 34.246686 and longitude -117.268408 using the Applied Technology Council (ATC) Hazards online tool.

5.2.2. Below Ground Structure Buoyancy

Below ground structures should be evaluated and designed to prevent floatation or uplift, which can be caused when the lift station is empty, and the outside groundwater is present. Resistance to uplift can be developed by the dead weight of the structure, friction along the sides of the structure, and the weight of any soil that is located above a floor slab that protrudes beyond the permanent exterior walls. For design purposes, we recommend that hydrostatic uplift pressures be considered for groundwater up to the ground surface which could occur during flood conditions. When calculating the weights available to resist floatation, the submerged unit weight of 57 pcf can be used for fill, backfill, alluvium, and colluvium. Additionally, a frictional resistance can be computed using a friction 0.36 applied to the lateral soil pressure.

Several procedures are available to provide additional uplift resistance, such as tie-downs, adding concrete weight to the structure and/or extending the bottom slab beyond the structure walls to take advantage of the weight of soil above the slab. If the bottom of the slab is extended, the soil directly above the extended slab can be used with the buoyant soil weight given above.

The floor slab of the well must also be designed to resist this uplift force in flexure.

5.2.3. Structure Foundations

Footings for the lift station can be designed using an allowable soil bearing pressure of 3,000 pounds per square foot (psf) provided the bearing surfaces are prepared as recommended. If smaller ancillary structures founded near the ground surface are required, these structures can be supported on spread footings designed with an allowable soil bearing pressure of 2,000 psf.

These bearing pressures should be applied to the total of dead and long-term live loads and may be increased by one-third when considering total loads, including earthquake or wind loads. This is a net bearing pressure; the weight of the footing and overlying backfill can be ignored in calculating footing sizes.

We estimate post-construction footing settlement of 1 inch or less under design load. Differential settlement between comparably loaded isolated column footings or along 50 feet of continuous footing is expected be less than ½ inch. Settlement is expected to occur rapidly as loads are applied. Increased settlement should be expected if subgrades are disturbed.

5.2.4. Lateral Earth Pressures for Subsurface Walls

We recommend that permanent below-grade structures be designed for exterior groundwater level at 8 feet below ground surface or higher for normal operating conditions. We also recommend that full hydrostatic pressure (up to the ground surface) be considered as an extreme case associated with flooding. We recommend that abutment walls backfilled with structural fill placed and compacted as previously recommended be designed using the soil parameters provided in the table below.

LATERAL SOIL PRESSURE PARAMETERS FOR SUBSURFACE WALLS

Soil Parameter	Structural Fill	Submerged Structural Fill	Submerged Highly Weathered Rock[1]
Soil Unit Weight	Total Weight = 130 pcf	Total Weight = 135 pcf Buoyant Weight = 73 pcf	Total Weight = 135 pcf Buoyant Weight = 73 pcf
Friction Angle	34 degrees	34 degrees	40 degrees
Cohesion	0 psf	0 psf	0 psf
Active Earth Pressure[2]	K_a = 0.28 Equivalent Fluid Pressure: K_a*Unit Weight = 36.8 pcf	K_a = 0.28 Total Equivalent Fluid Pressure: (K_a*Buoyant Unit Weight)+hydrostatic = 82.9 pcf	K_a = 0.22 Total Equivalent Fluid Pressure: (K_a*Buoyant Unit Weight)+hydrostatic = 78.2 pcf
At-rest Earth Pressure	K_o = 0.44 Equivalent Fluid Pressure: K_a*Unit Weight = 57.3 pcf	K_o = 0.44 Total Equivalent Fluid Pressure: (K_a*Buoyant Unit Weight)+hydrostatic = 94.4 pcf	K_o = 0.36 Total Equivalent Fluid Pressure: (K_a*Buoyant Unit Weight)+hydrostatic = 88.3 pcf

Notes:

[1] The values for Submerged Highly Weathered Rock are only appropriate where the native weathered rock is located within 3 feet of the exterior face of the wall, otherwise parameters for structural fill should be used.

[2] Active Earth Pressures should only be used where the wall is free to move up to 0.001 times the height of the wall.

If a seismic loading will be considered, we recommend a seismic loading be approximated using a uniform lateral pressure equal to 24*H psf, where H is the depth in feet below grade of the structure. If vehicles will be operated within one-half the height of the wall, a traffic surcharge should be added to the wall pressure. The traffic surcharge can be approximated by a uniform 70 psf horizontal pressure on the wall.

6.0 LIMITATIONS

We have prepared this report for the exclusive use of The San Bernardino County, Department of Public Works - Special Districts, Kimley-Horn, and their authorized agents for the Camp Switzerland Lift Station and Pipes project located in San Bernardino County, California. The data and geotechnical report should be provided to prospective contractors for their bidding or estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile, or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix B, Report Limitations and Guidelines for Use, for additional information pertaining to use of this report.

7.0 REFERENCES

American Society of Civil Engineers, "ASCE 7-16, Minimum Design Loads for Buildings and Other Structures," 2016.

California Geologic Survey, 2002, "California Geomorphic Provinces," California Division of Mines and Geology, Note 36.

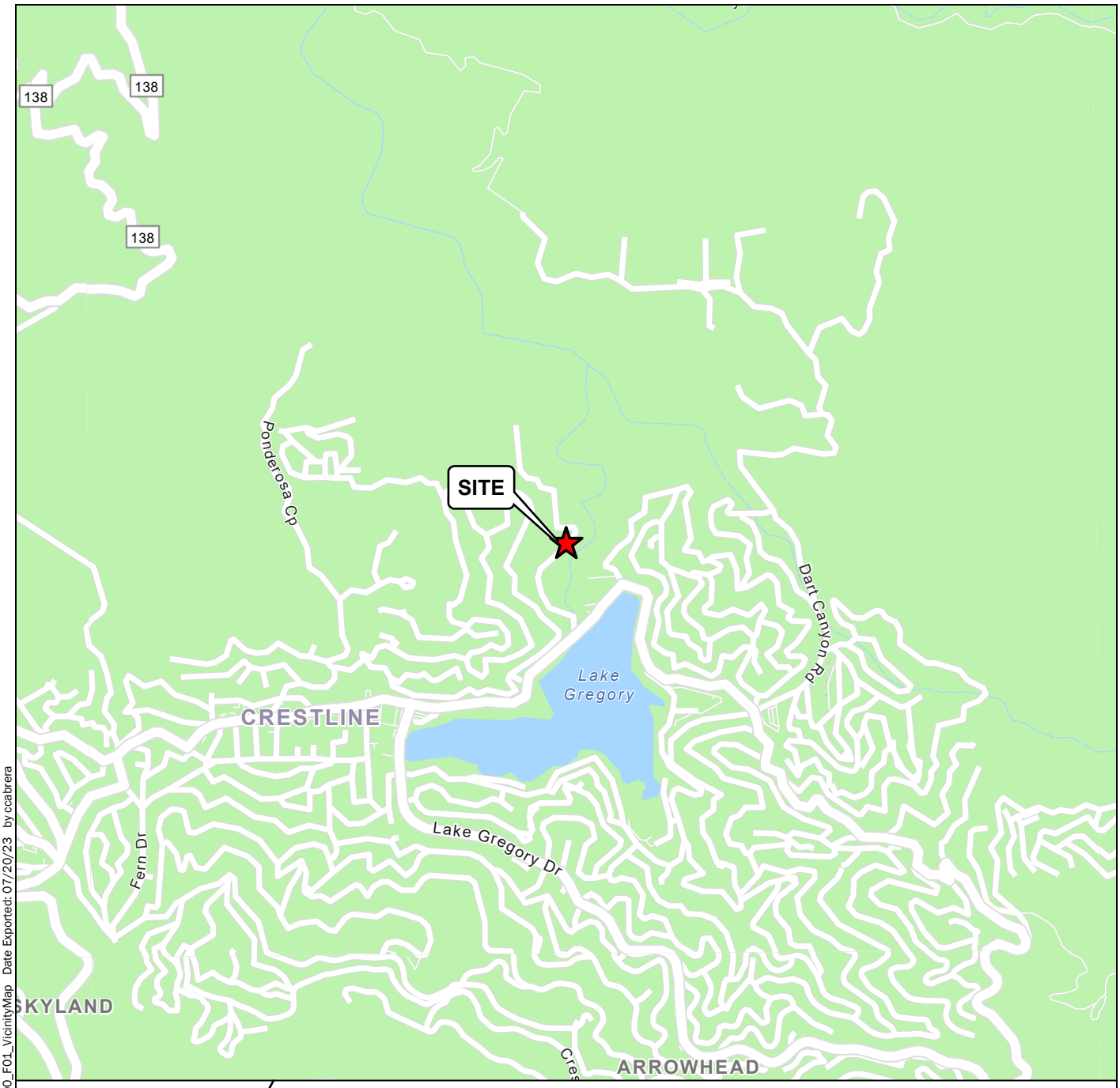
Hart, Earl W., and Bryant, William A., Revised 2007, "Fault-Rupture Hazard Zones in California, Alquist Priolo, Special Studies Zones Act of 1972," California Division of Mines and Geology, Special Publication 42.

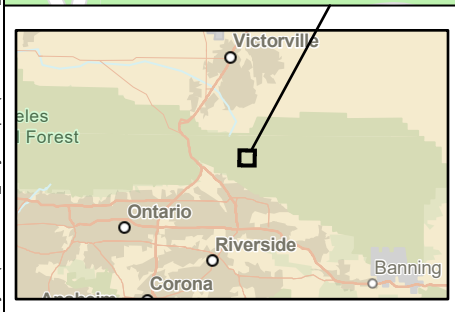
Morton, D.M. and Miller, F.K., 2006, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangle, California," US Geological Survey.

U.S. Geological Survey (California Geologic Survey), 2006, Quaternary fault and fold database for the United States, accessed July 2022, from USGS web site: http//earthquake.usgs.gov/hazards/qfaults/.

FIGURES

GeoEngineers





N
W E
S

2,000 0 2,000

Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 StatePlane California V FIPS 0405 Feet

Vicinity Map

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

GeoEngineers

Figure 1

P:\26\26258001\GIS\26258001_Project\26258001_Project.aprx\2625800100_F01_VicinityMap Date Exported: 07/20/23 by ccabrera

Legend

- Approximate Boring Number and Approximate Location
- Test Pit Number and Approximate Location

200 0 200

Feet

N W E S

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: San Diego County GIS.

Projection: NAD 1983 StatePlane California V FIPS 0405 Feet

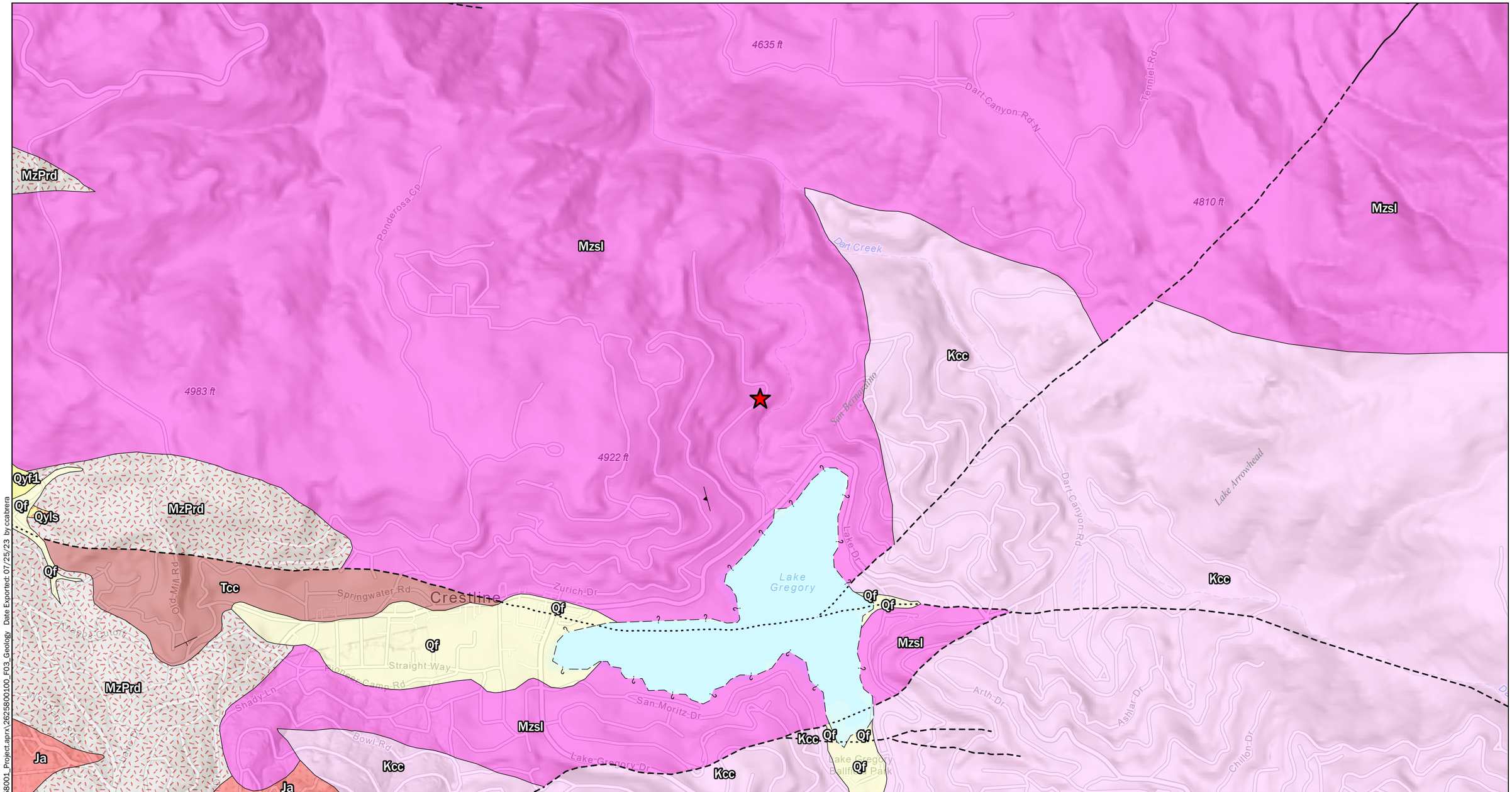
Site Plan

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

GeoEngineers

Figure 2

P:\26\26258001\GIS\26258001_Project\26258001_Project.aprx\2625800100_F02_SitePlan Date Exported: 08/03/23 by ccabrera



P:\26\26258001\GIS\26258001_Project\26258001_Project.aprx\26258001_F03_Geology Date Exported: 07/25/23 by:ccabrera

Camp Switzerland Lift Station

Surficial Geologic Unit
- Qf: Very young alluvial-fan deposits
- Qyf1: Young alluvial-fan deposits, Unit 1
- Qyls: Young landslide deposits
- Qvof: Very old alluvial-fan deposits
- Tcc: Conglomerate of Crestline
- Mzsl: Mixed granitic rocks of Silverwood Lake
- MzPrd: Gneiss of Devil Canyon
- Kcc: Monzogranite of City Creek
- Ja: Granodiorite of Arrowhead Peak
- water body

Data Source: Morton, D.M. and Miller, F.K., 2006, "San Bernardino and Santa Ana 30' x 60' quadrangles, California". USGS.

N W E S

1,000 0 1,000

Feet

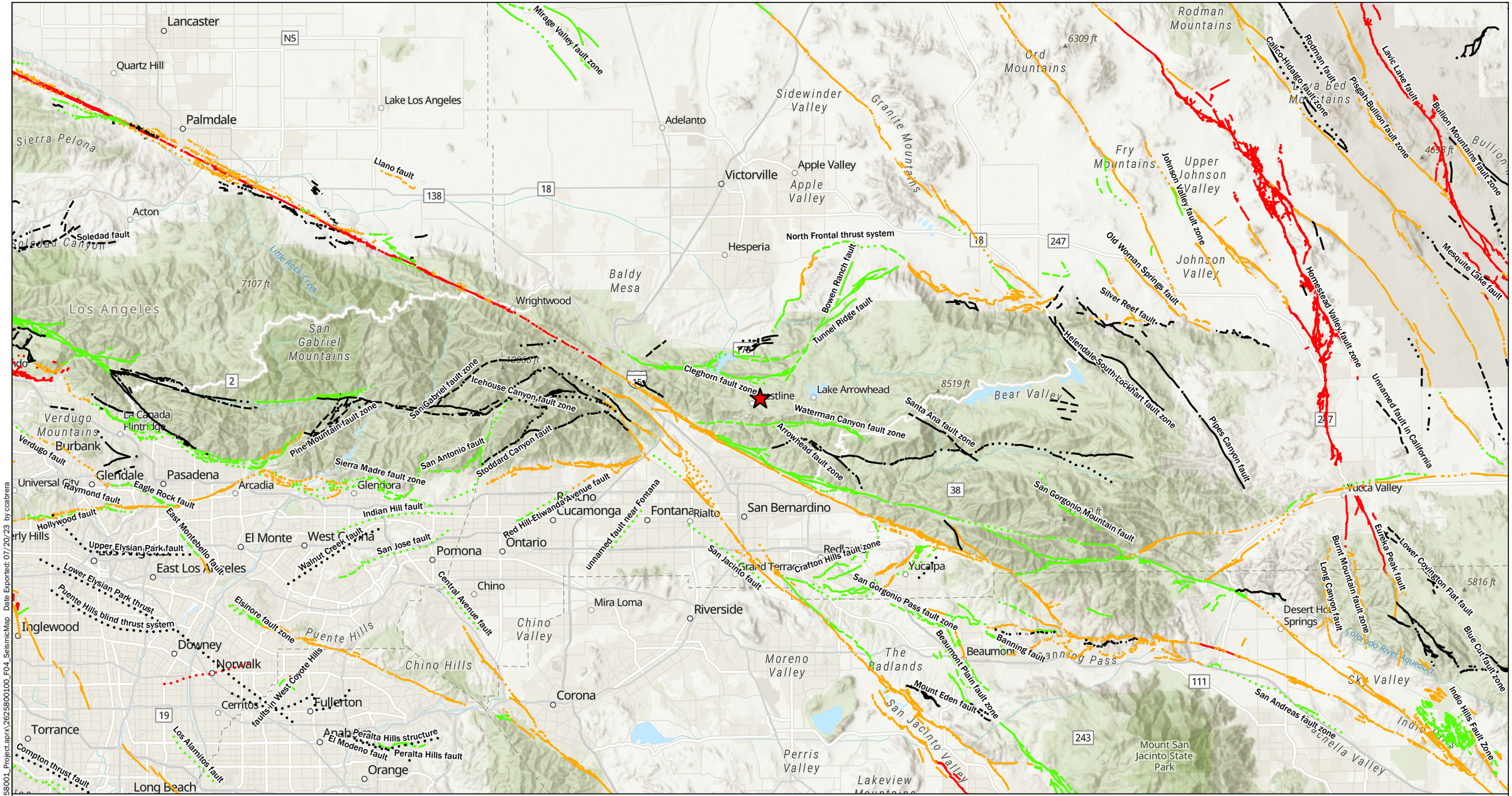
Regional Geologic Map

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

GeoEngineers

Figure 3

Legend



Data Source: USGS. ESRI.

P:\26\26258001\GIS\26258001_Project\26258001_Project.aprx\26258001_F04_SeismicMap Date Exported: 07/20/23 by ccabrera

Regional Seismicity Map

Camp Switzerland Lift Station and Pipes
San Bernardino County, California

GeoEngineers

Figure 4

Legend

APPENDICES

GeoEngineers

APPENDIX A
Field Explorations and Laboratory Testing

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

Subsurface conditions were explored at the site by advancing one geotechnical boring (B-1) and three exploratory test pits (TP-1 through TP-3). The boring was completed to depth of 30.5 feet bgs and the test pits extended to 5 to 12 feet bgs. The explorations were completed on July 10, 2023.

The locations of the explorations were estimated by taping/pacing from existing site features. The approximate exploration locations are shown in the Site Plan, Figure 2.

Borings

Boring B-1 was completed using a truck-mounted, continuous-flight, 8-inch outside-diameter hollow-stem auger drilling equipment. The boring was continuously monitored by an Engineer from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration.

The soils encountered in the borings were continuously sampled in the top 10 feet and generally sampled at 5-foot vertical intervals below that. Samples were obtained using both a 2-inch outside diameter split-barrel standard penetration test (SPT) sampler, and a 3 inch outside diameter Modified California Sampler (ASTM D-3550) lined with twelve 2.5 inch diameter, one inch tall stainless steel rings, and one 2.5-inch-diameter 6-inch-tall waste sleeve in the upper portion of the sampler. The relatively undisturbed samples were obtained by driving the sampler 18 inches into the soil with a 140-pound automatic hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-value") of the soil was calculated as the number of blows required for the final 12 inches of penetration. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. If very dense soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs. The blow counts are shown on the boring logs at the respective sample depths.

Soils encountered in the borings were visually classified in general accordance with the classification system described in Figure A-1. A key to the boring log symbols is also presented in Figure A-1. The logs of the borings/monitoring wells are presented in Figure A-2. The boring logs are based on our interpretation of the field and laboratory data and indicate the various types of soils and groundwater conditions encountered. The logs also indicate the depths at which these soils or their characteristics change, although the change may actually be gradual. If the change occurred between samples, it was interpreted. The densities noted in the boring logs are based on the blow count data obtained in the borings and judgment based on the conditions encountered.

Observations of groundwater conditions were made during drilling. The groundwater conditions encountered during drilling are presented in the boring logs. Groundwater conditions observed during drilling represent a short-term condition and may or may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate.

Laboratory Testing

Soil samples obtained from the explorations were transported to Allied Geotechnical Engineers, Inc. (AGE) laboratory. Representative samples were selected for laboratory testing consisting of the determination of the moisture content, fines content and sieve analyses. The tests were performed in general accordance with test methods of the ASTM International (ASTM) or other applicable procedures and are included within this appendix.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel / Dames & Moore (D&M)

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
7/10/2023	7/10/2023	30.5	AA / LJS	Pacific Drilling Co.	Hollow-stem Auger

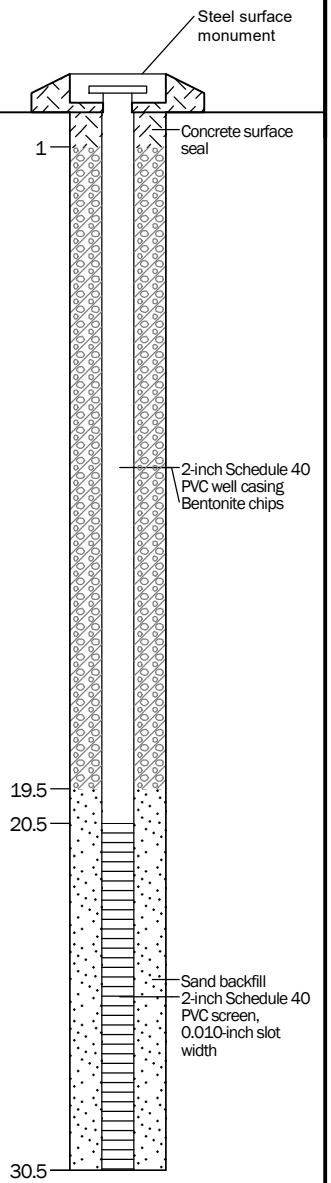
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	Truck-mounted HSA Drill Rig, Saber Cab MTXD
Surface Elevation (ft) Vertical Datum	Undetermined	Top of Casing Elevation (ft)	
Easting (X) Northing (Y)		Horizontal Datum	

A 2-in well was installed on 7/10/2023 to a depth of 30.5 ft.

Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
7/29/2023	10.5	

Notes: A 2.5-inch I.D. split barrel/ Modified California Sampler was used for Sample 5B

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	0					1			SM	Brown silty fine to medium sand with trace angular gravel (loose to medium dense) (Quaternary undocumented fill [Qudf])		
									SM	Dark brown silty to poorly-graded fine to medium sand with trace clay (alluvium [Qal])		
						2						
	5			5		3 MC				Becomes light brown with trace coarse gravel and sand	12.8	
									SM	Excavates as: olive brown to light brown silty fine to medium sand with trace coarse sand and trace clay (decomposed, igneous rock [mixed granitics])		
									SM	Excavates as: olive brown silty fine to coarse sand with trace clay (dense, moist) (decomposed to intensely weathered)		
	10			48		4 MC					8.85	
										Becomes wet		
										Becomes intensely weathered at 14 feet		
	15		6	50/5"		5A				Becomes very dense		
			5	50/4"		5B						
	20		6	50/4"		6			SM	Excavates as: olive brown silty sand (very dense, wet) (intensely weathered, igneous rock [mixed granitics])		
									SM	Excavates as: olive brown to olive gray poorly-graded sand with silt (very dense, wet) (intensely to moderately weathered)		
	25		5	50/4"		7						
	30		10	50/4"		8						



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring with Monitoring Well B-1

GeoEngineers

Project: Camp Switzerland Lift Station and Pipes
Project Location: San Bernadino County, California
Project Number: 26258-001-00

Figure A-2
Sheet 1 of 1

Date Excavated 7/10/2023	Total Depth (ft) 5	Logged By AA/MDM Checked By LJS	Excavator Pacific Drilling Co. Equipment John Deer 310 SL	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum Undetermined		Easting (X) Northing (Y)	Coordinate System Horizontal Datum	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	1				SM	Light brown silty fine to medium sand (loose to medium dense, dry) (colluvium)			
	2				SM	Excavates as: olive brown to gray silty fine to medium sand with trace clay (medium dense, moist) (decomposed to intensely weathered, igneous rock [mixed granitics])			
	3								
	4								
	5		1			Becomes moderately weathered			Difficult excavating

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

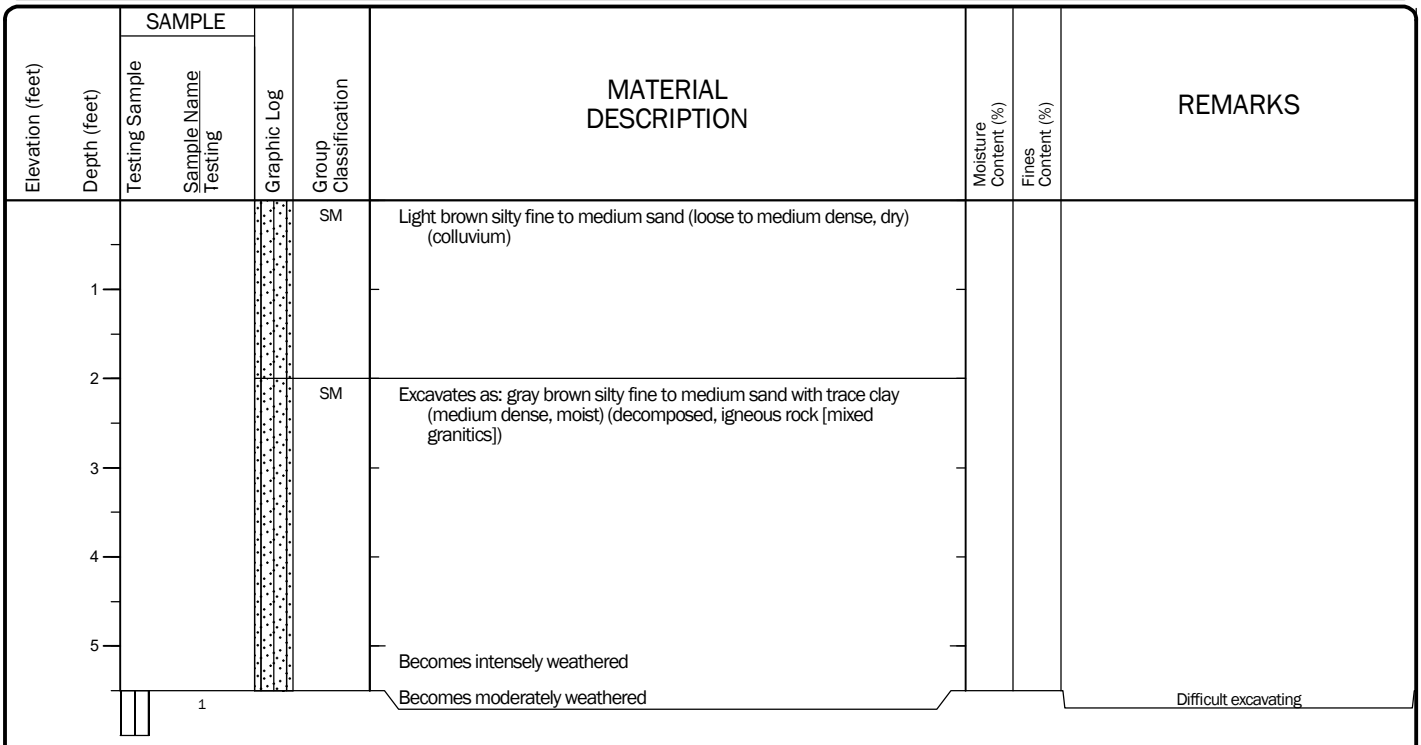
Log of Test Pit TP-1

GeoEngineers

Project: Camp Switzerland Lift Station and Pipes
Project Location: San Bernadino County, California
Project Number: 26258-001-00

Figure A-3
Sheet 1 of 1

Date Excavated 7/10/2023	Total Depth (ft) 5.5	Logged By AA/MDM Checked By LJS	Excavator Pacific Drilling Co. Equipment John Deer 310 SL	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum Undetermined		Easting (X) Northing (Y)	Coordinate System Horizontal Datum	



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Test Pit TP-2

GeoEngineers

Project: Camp Switzerland Lift Station and Pipes
Project Location: San Bernadino County, California
Project Number: 26258-001-00

Figure A-4
Sheet 1 of 1

Date Excavated 7/10/2023	Total Depth (ft) 12	Logged By AA/MDM Checked By LJS	Excavator Pacific Drilling Co. Equipment John Deer 310 SL	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum Undetermined		Easting (X) Northing (Y)	Coordinate System Horizontal Datum	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				SM	Brown silty fine to medium sand with trace angular gravel and cobble (colluvium)			
	1								
	2								
	3		1 %F					17	
	4					Becomes slightly clayey, abundant rootlets, indurated			
					SM	Excavates as: light brown silty sand (medium dense, moist) (decomposed, igneous rock [mixed granitics])			
	5								
	6								
	7								
	8								
	9				SM	Light brown poorly-graded sand (medium dense, moist) (intensely weathered, igneous rock [mixed granitics])			
	10		2 %F					7	
	11								
	12		3			Becomes intensely to moderately weathered			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Test Pit TP-3

GeoEngineers

Project: Camp Switzerland Lift Station and Pipes
Project Location: San Bernadino County, California
Project Number: 26258-001-00

Figure A-5
Sheet 1 of 1

August 4, 2023

Mr. Matt Martinez, PG, CEG
Engineering Geologist
GeoEngineers, Inc.
13220 Evening Creek Drive South, Suite 115
San Diego, CA 92128

Subject: **LABORATORY TEST RESULTS**
GEOENGINEERS - CAMP SWITZER LAND LIFT STATION AND PIPES
AGE Project No. 221 GS-22-E/GEOENGINEERS Project No. 26258-001-00

Dear Matt,

As per your request, we have performed laboratory test to evaluate the moisture content (ASTM D2216), % passing #200 sieve and sieve wash analyses (ASTM D422) of the samples which was delivered to our office.

A summary of the moisture content and % passing #200 sieve test results is shown in Table 1 on the next page. The particle size distribution curves for the sieve wash analysis are attached.

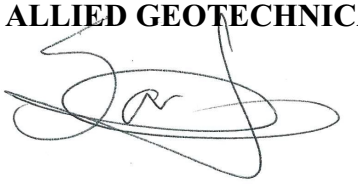
Table 1
Summary of Laboratory Test Results

Sample ID	Sample Type	Moisture Content (%)	% Passing #200
B-1 - S-3 @5'	SPT	12.8	Not requested
B-1 - S-4 @10'	SPT	8.8	Not requested
TP-3 - S-1	Bulk	Not requested	17%
TP-3 - S-2	Bulk	Not requested	7%

We appreciate the opportunity to be of service on this project. If you have any questions regarding the contents of this letter or need further assistance, please feel free to contact our office.

Sincerely,

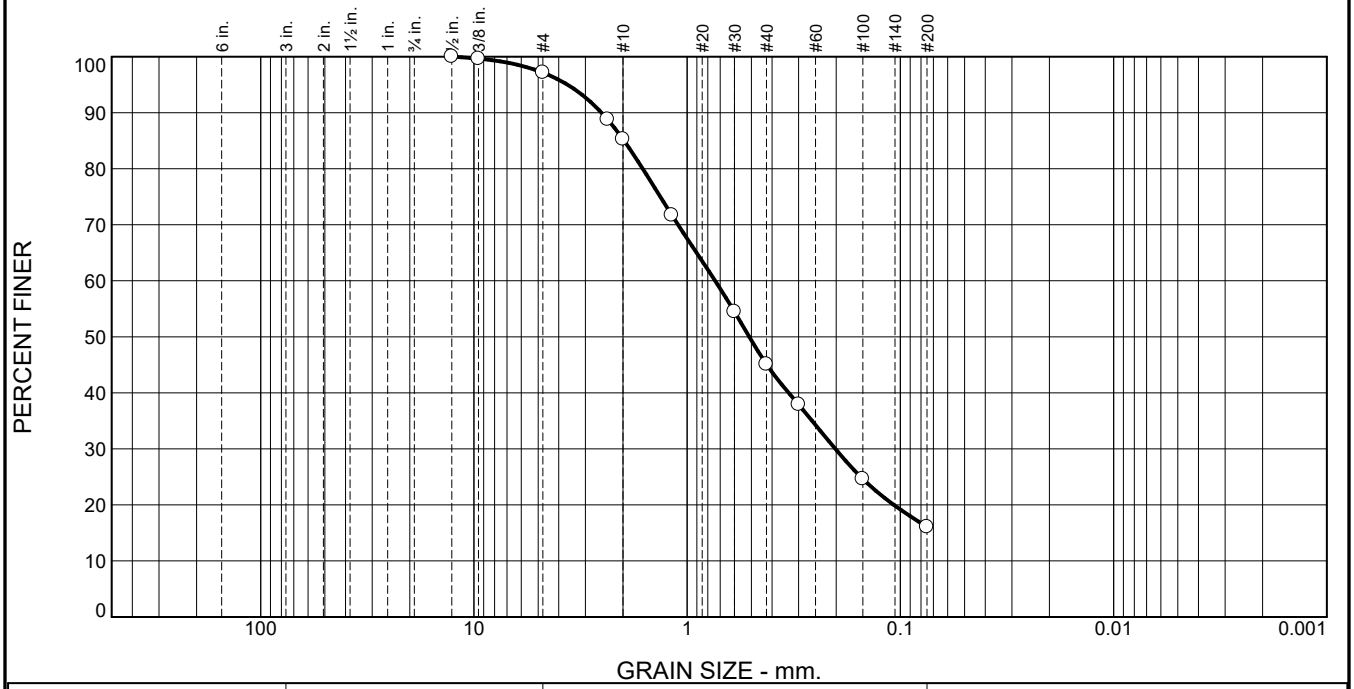
ALLIED GEOTECHNICAL ENGINEERS, INC.



Sani Sutanto P.E., G.E.
Project Manager/Principal

NEB/SS/TJL:cal
Distr. (1 electronic) Addressee

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.8	11.9	40.2	29.0	16.1	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.5	100.0		
0.375	99.6		
#4	97.2		
#8	88.8		
#10	85.3		
#16	71.7		
#30	54.5		
#40	45.1		
#50	37.9		
#100	24.6		
#200	16.1		

* (no specification provided)

Material Description

Silty Sand (SM)

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 2.5197 D_{85}= 1.9765 D_{60}= 0.7398
D_{50}= 0.5114 D_{30}= 0.2020 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 07/20/2023 **Date Tested:** 08/01/2023

Tested By: NEB

Checked By: SS

Title: PM

Sample Number: B-1, S-4 **Depth:** 10' **Date Sampled:** 07/20/2023

Allied Geotechnical Engineers, Inc.

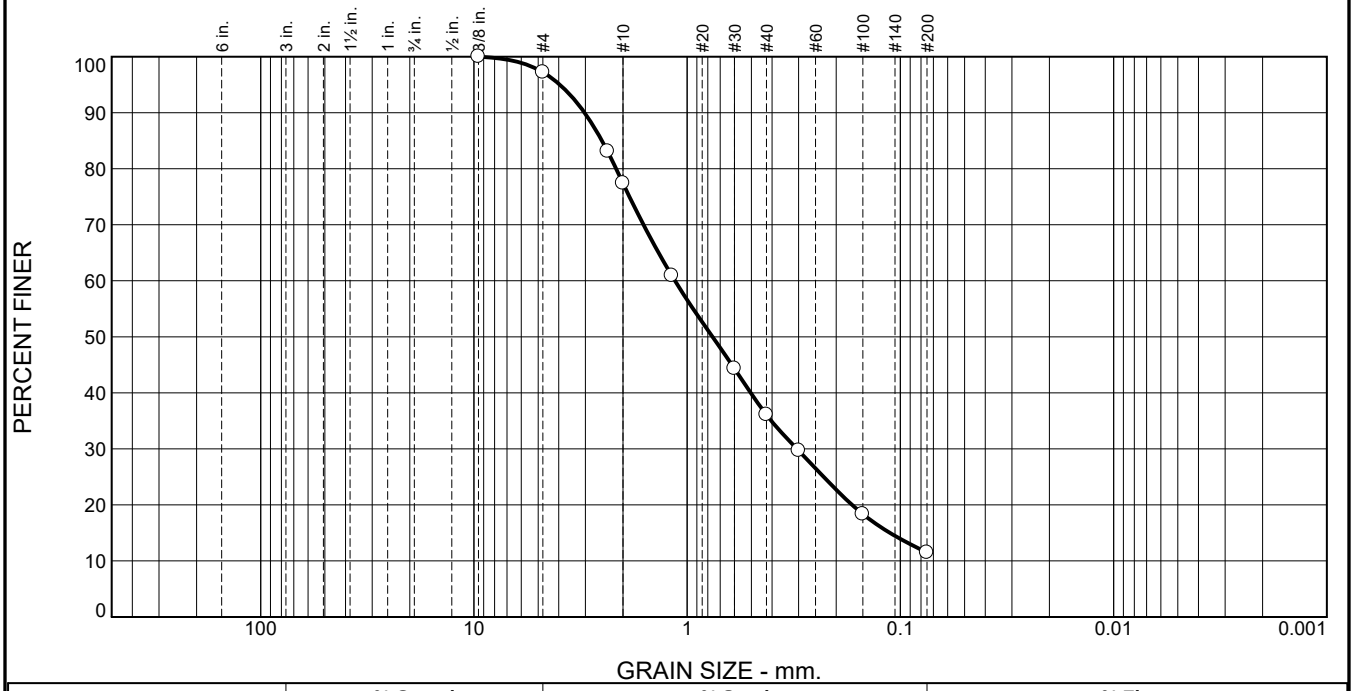
Santee, CA

Client: GEOENGINEERS

Project: CAMP SWITZERLAND LIFT STATION AND PIPES

Project No: 221GS **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.8	19.8	41.3	24.6	11.5	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.375	100.0		
#4	97.2		
#8	83.1		
#10	77.4		
#16	60.9		
#30	44.3		
#40	36.1		
#50	29.7		
#100	18.4		
#200	11.5		

* (no specification provided)

Material Description

Poorly Graded Sand With Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 3.0298 D_{85}= 2.5088 D_{60}= 1.1409
D_{50}= 0.7607 D_{30}= 0.3054 D_{15}= 0.1119
D_{10}= C_u= C_c=

Remarks

Date Received: 07/20/2023 **Date Tested:** 08/01/2023

Tested By: NEB

Checked By: SS

Title: PM

Sample Number: B-1, S-7 **Depth:** 20' **Date Sampled:** 07/20/2023

Allied Geotechnical Engineers, Inc.

Santee, CA

Client: GEOENGINEERS

Project: CAMP SWITZERLAND LIFT STATION AND PIPES

Project No: 221GS **Figure**

APPENDIX B
Report Limitations and Guidelines for Use

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of The San Bernardino County, Department of Public Works - Special Districts, Kimley-Horn, and their authorized agents. This report may be made available to prospective contractors for their bidding or estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with which there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the Camp Switzerland Lift Station and Pipes project located in San Bernardino County, California. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- Not prepared for you;
- Not prepared for your project;
- Not prepared for the specific site explored; or
- Completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- The function of the proposed structure;
- Elevation, configuration, location, orientation or weight of the proposed structure;
- Composition of the design team; or

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- Project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the geologic site reconnaissance and geophysical survey was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on the recent geologic site reconnaissance and geophysical survey at the site, as described herein. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of

Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

GeoEngineers

Appendix F:
Noise Modeling

Project:
Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
Leq to L10 factor		3

	Receptor (Land Use)	Distance (feet)	Shielding	Direction
1	Residence	512	0	W

					RECEPTOR	1
Construction Phase	**Equipment Type**	**No. of Equip.**	**Acoustical Usage Factor**	**Reference Noise Level at 50ft per Unit, Lmax**	**Noise Level at Receptor 1, Lmax**	**Noise Level at Receptor 1, Leq**
Site Preparation						
	Grader	1	40%	85	64.8	60.8
	Tractor	1	40%	84	63.8	59.8
Combined LEQ						**63.4**
Grading and Building Construction						
	Grader	1	40%	85	64.8	60.8
	Dozer	1	40%	82	61.5	57.5
	Tractor	3	40%	84	68.6	64.6
	Crane	1	16%	81	60.4	52.4
	Backhoe	2	40%	78	60.4	56.4
Combined LEQ						**67.2**