Initial Study and Mitigated Negative Declaration

Extension of Sewer to Highway 74 Project

Prepared by:

Eastern Municipal Water District
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April 2024

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Acronyms

Acronym	Definition
AB	Assembly Bill
AQMP	Air Quality Management Plan
Basin Plan	Water Quality Control Plan for the Santa Ana River Basin
BMPs	best management practices
CAAQS	California Ambient Air Quality Standards
Cal Fire	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CH_4	methane
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
Connect SoCal	2020-2045 Regional Transportation Plan/Sustainable Communities Strategy
dB	decibel
dBA	A-weighted decibel
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
GHG	greenhouse gas
GSA	groundwater sustainability agency

Acronym	Definition
GSP	groundwater sustainability plan
GWP	global warming potential
H_2S	hydrogen sulfide
Highway 74	California State Route 74
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
Ldn	Day-Night Average Level
LF	linear feet
LHMP	Local Hazard Mitigation Plan
Lmax	maximum sound level
LST	localized significance threshold
LUST	leaking underground storage tank
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MRZ	mineral resource zone
$MTCO_2e$	metric tons of carbon dioxide equivalent
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
ND	Negative Declaration
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
O_3	ozone
OPR	Office of Planning and Research
Pb	lead
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
PPV	peak particle velocity
RCFC&WCD	Riverside County Flood Control and Water Conservation District
RMS	root mean square
ROG	reactive organic gas
ROW	right-of-way

Acronym	Definition
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SGMA	Sustainable Groundwater Management Act
SO_2	sulfur dioxide
SO_4^{2-}	sulfates
SRA	source receptor area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
U.S. EPA	United States Environmental Protection Agency
VCP	vitrified clay pipe
VdB	vibration decibels
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles travelled
VOC	volatile organic compound
WRCOG	Western Riverside Council of Governments
WR-MSHCP	Western Riverside County Multiple Species Habitat Conservation Plan

1. INTRODUCTION

1.1 Purpose of this Document

Eastern Municipal Water District (EMWD) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) to evaluate the potential environmental impacts related to implementation of the Extension of Sewer to Highway 74 project (the "proposed Project," "proposed action," or "Project"), which consists of construction and operation of sewer mains in an area south of downtown City of Perris and Planning Area 6 of unincorporated Riverside County.

EMWD is the lead agency under the California Environmental Quality Act (CEQA) for the proposed Project. CEQA requires that the lead agency prepare an initial study (IS) to determine whether an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND) is needed. EMWD has prepared this IS to evaluate the potential environmental consequences associated with the proposed Project and to disclose to the public and decision makers the potential environmental effects of the proposed Project. Based on the analysis presented herein, an MND is the appropriate level of environmental documentation for the proposed Project.

1.2 Scope of this Document

This IS/MND has been prepared in accordance with CEQA (as amended) (Public Resources Code Section 21000 et. seq.) and the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15000 et. seq.), as updated on December 28, 2018. CEQA Guidelines Section 15063 describes the requirements for an IS and Sections 15070–15075 describe the process for the preparation of an MND. Where appropriate, this document refers to either the CEQA Statute or State CEQA Guidelines (as amended in December 2018). This IS/MND contains all of the contents required by CEQA, which includes a project description, a description of the environmental setting, potential environmental impacts, mitigation measures for any significant effects, consistency with plans and policies, and names of preparers.

This IS/MND evaluates the potential for environmental impacts to resource areas identified in Appendix G of the State CEQA Guidelines (as amended in December 2018). The environmental resource areas analyzed in this document include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation

- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

1.3 CEQA Process

In accordance with CEQA Guidelines Section 15073, this IS/MND will be circulated for a 30-day public review period (April 11 – May 13, 2024) to local and state agencies, and to interested organizations and individuals who may wish to review and comment on the report. EMWD will circulate the IS/MND to the State Clearinghouse for distribution to State agencies. In addition, EMWD will circulate a Notice of Intent to Adopt a Mitigated Negative Declaration to the Riverside County Clerk, responsible agencies, and interested entities. A Notice of Intent was also published in the Press-Enterprise on April 11, 2024. A copy of the IS/MND is available for review at https://www.emwd.org/public-notices.

Written comments can be submitted to EMWD by 5:00 pm on May 13, 2024 and addressed to:

Joseph Broadhead, Principal Water Resources Specialist – CEQA/NEPA
Eastern Municipal Water District
2270 Trumble Road
P.O. Box 8300
Perris, CA 92572-8300
broadhej@emwd.org

Following the 30-day public review period, EVMWD will evaluate all comments received on the IS/MND and incorporate any substantial evidence that the proposed project could have an impact on the environment into the Final IS/MND and prepare a Mitigation Monitoring and Reporting Program (MMRP).

The IS/MND and MMRP will be considered for adoption by the EVMWD Board of Directors in compliance with CEQA at a future publicly noticed hearing, which are held on the 1st and 3rd Wednesday of each month at EMWD's headquarters.

1.4 Impact Terminology

The level of significance for each resource area uses CEQA terminology as specified below:

No Impact. No adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable.

Less than Significant Impact. Potential adverse environmental consequences have been identified. However, they are not adverse enough to meet the significance threshold criteria for that resource. No mitigation measures are required.

Less than Significant Impact with Mitigation Incorporated. Adverse environmental consequences that have the potential to be significant but can be reduced to less than significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.

Potentially Significant. Adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared to meet the requirements of CEQA.

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2. PROJECT DESCRIPTION

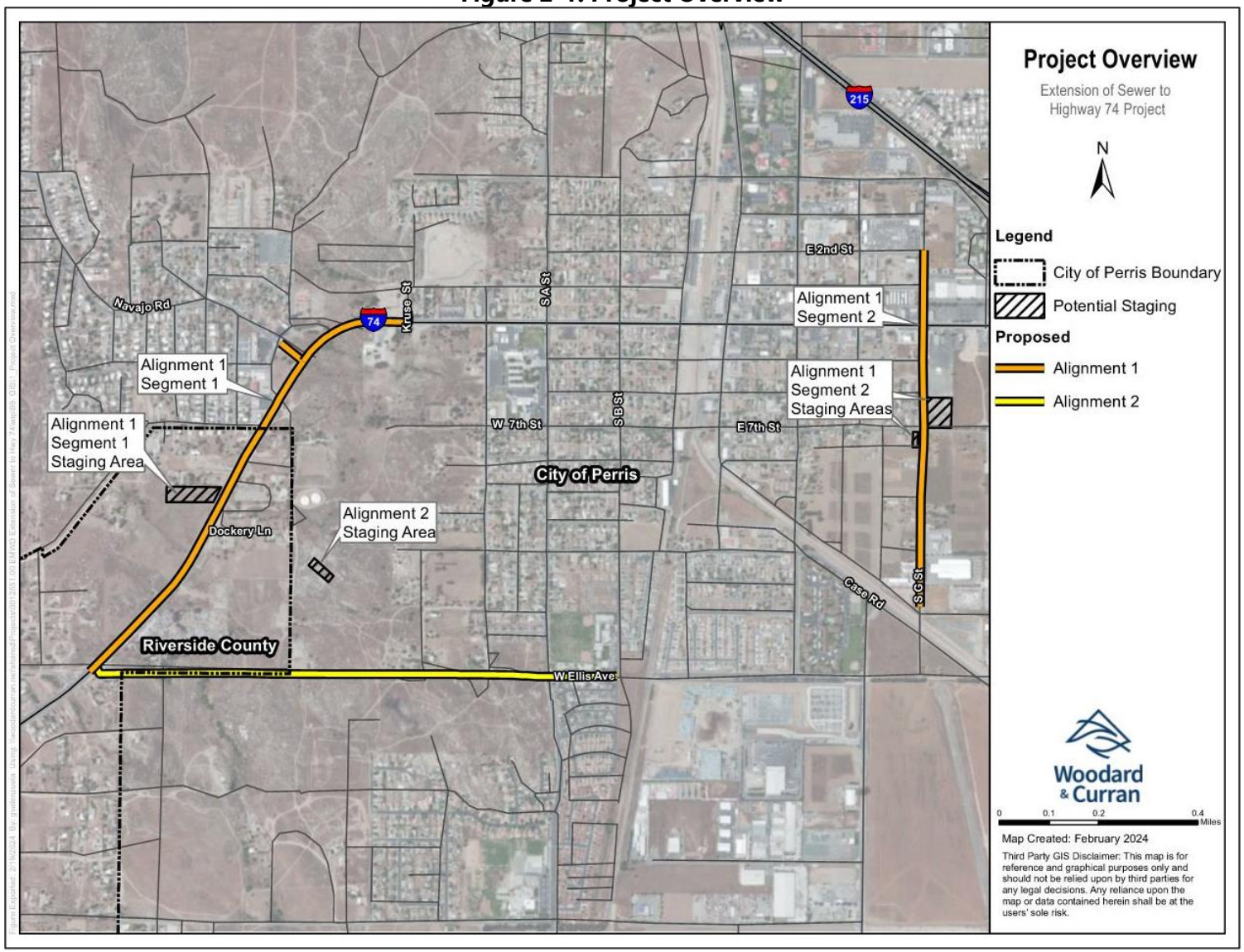
2.1 Project Overview

The Extension of Sewer to Highway 74 Project (the "proposed Project," "proposed action," or "Project") involves construction and operation of sewer lines that will serve customers in unincorporated Riverside County located in Riverside County Planning Area 6 in the vicinity of Dockery Lane (**Figure 2-1**). The Project is considering two alternative alignments, both of which are evaluated in this IS/MND:

- Alignment 1: Upsize 3,825 linear feet (LF) of existing sewer line along Johnson Avenue/South G Street from north of Case Road to 2nd Street from 12-inch to 18-inch sewer line. Construct 5,800 LF of new 15-inch gravity sewer on Highway 74 from West Ellis Avenue north through Navajo Road to Kruse Street. This alignment would fall entirely within the existing public right-of-way (ROW).
- Alignment 2: Construct 5,660 LF of new 15-inch gravity sewer on West Ellis Avenue from Highway 74 in the west to B Street in the east. This portion of West Ellis Avenue is currently unpaved, and the new sewer line would be located within a public ROW that may not have been dedicated. Approximately 530 LF of this alignment would run through APN 330-020-009, requiring an easement.

Refer to *Section 2.4 Proposed Project Description* for a detailed description of the Project components.

Figure 2-1: Project Overview



2.2 Project Purpose

Riverside County is the fastest growing county in California, resulting in the need to upsize existing utilities or construct new utilities to meet the needs of these growing areas in the county. EMWD's existing wastewater conveyance system does not currently serve the portion of Planning Area 6 along Highway 74 that is being developed. Additionally, EMWD's existing wastewater conveyance system located in the City of Perris is not adequately sized to accommodate the planned growth in Riverside County's Planning Area 6.

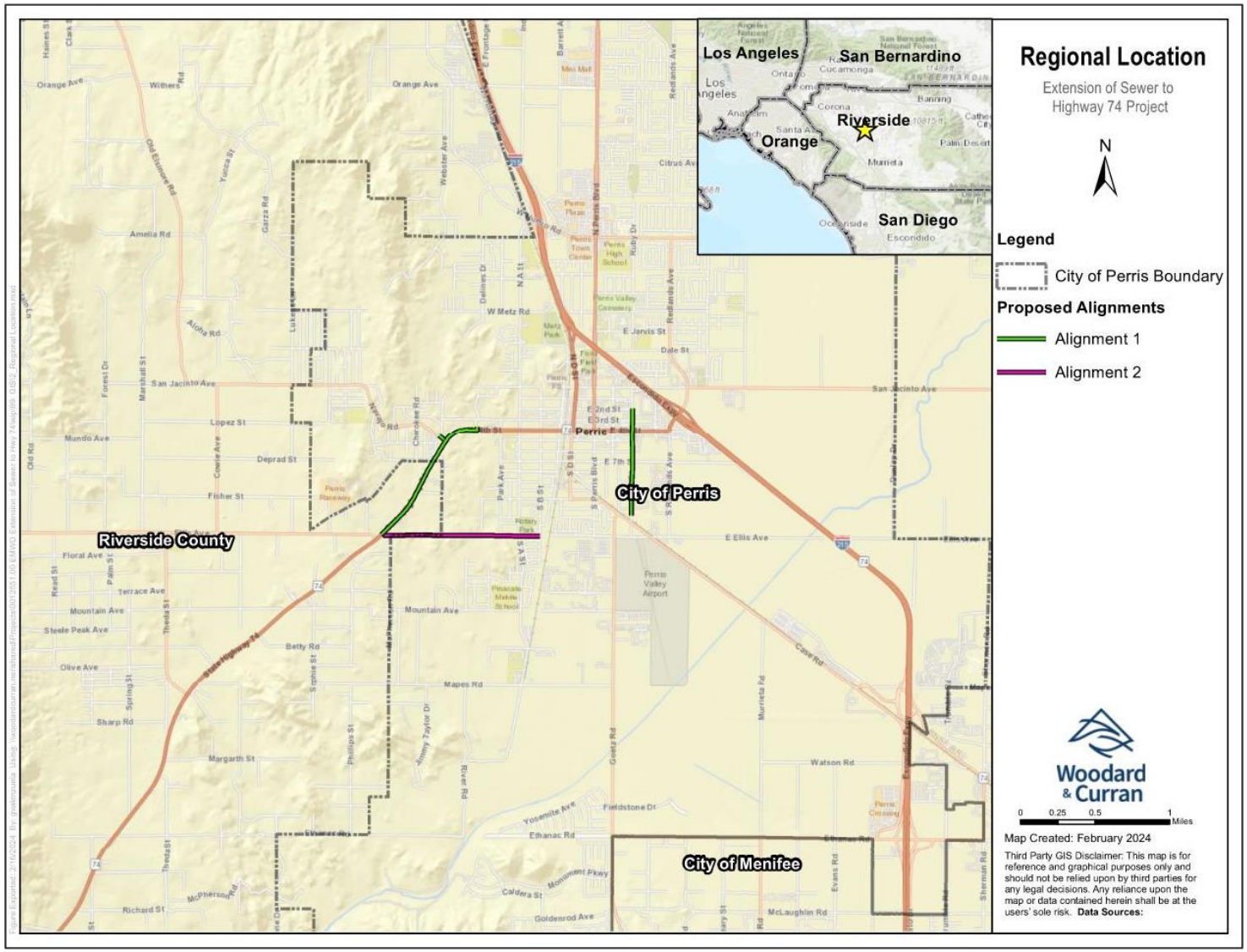
The overall objectives of the proposed Project include:

- Provide wastewater conveyance to developing areas in the unincorporated County of Riverside, specifically Planning Area 6.
- Meet existing and projected demands for wastewater conveyance in EMWD's service area.
- Comply with existing regulations governing wastewater treatment and disposal.

2.3 Project Location

The proposed Project is located in the City of Perris and in unincorporated areas within Riverside County, California (see **Figure 2-2**). The Project would be constructed primarily within the existing public ROW, depending on which of the two alignments is selected during final planning and design. Pipelines would be constructed or upsized along Highway 74, Navajo Road, Kruse Street, South G Street, and Johnson Avenue if Alignment 1 is selected, and along West Ellis Avenue if Alignment 2 is selected. Alignment 1 would cross under an existing storm drain culvert along Highway 74. Neither alignment would require crossing of railways, bridges, or other freeways.

Figure 2-2: Regional Location



2.4 Proposed Project Description

The proposed Project involves construction and operation of new and upsized sewer lines that would serve customers in unincorporated Riverside County located in Riverside County Planning Area 6 in the vicinity of Dockery Lane (**Figure 2-1**). Only one of two proposed alignments would be constructed and would connect to EMWD's existing wastewater conveyance system for treatment at the Perris Valley Regional Water Reclamation Facility. The two proposed alternative alignments, both of which are evaluated in this IS/MND, are as follows:

- Alignment 1 Highway 74 to Kruse Street and Johnson Avenue/South G Street (two segments): Construct 5,800 LF of new 15-inch gravity sewer on Highway 74 from West Ellis Avenue north through Navajo Road to Kruse Street (Segment 1). Upsize 3,825 LF of existing sewer line along Johnson Avenue/South G Street from north of Case Road to 2nd Street from 12-inch to 18-inch sewer line (Segment 2). Both segments of this alignment would fall entirely within the existing public ROW.

- Alignment 2 West Ellis Avenue: Construct 5,660 LF of new 15-inch gravity sewer on West Ellis Avenue from Highway 74 in the west to B Street in the east. This portion of West Ellis Avenue is currently unpaved, and would be located within a public ROW that may not have been dedicated. Once construction is complete, the unpaved portion of the roadway would be paved. Approximately 530 LF of this alignment would run through APN 330-020-009, requiring an easement.

Potential construction staging areas have been identified within three nearby parcels, also shown in **Figure 2-1,** and are described in detail in Section 2.4.5.

2.4.1 Project Details by Alignment Segment

Alignment 1: Highway 74 to Kruse Street (Segment 1). The Project would construct 5,800 LF of new 15-inch vitrified clay pipe (VCP) sewer on Highway 74 from West Ellis Avenue north through Kruse Street where it would connect with EMWD's existing sewer system. Should the option of continuing along Highway 74 to Kruse Street be selected, a stubout at Navajo Road would be constructed to bring flow into the new pipeline. The total length of new 15-inch VCP sewer installation along Highway 74 in between West Ellis Avenue and Kruse Street is 5,450 LF, with an additional 300 LF of new 15-inch VCP installation within Navajo Road to connect to the stubout. This segment of Alignment 1 would fall entirely within the existing public ROW. Open cut construction methods would be used for this segment of the alignment, and tunneling would be used to cross under existing culverts without disturbing them. Dewatering may be required and would be determined in the geotechnical report, though is expected to be limited in volume. Should dewatering be required, the desilted water would be spread on land within the potential staging area. Alignment 1 Segment 1 would require the construction of approximately 16 new manholes using precast concrete.

Alignment 1: Johnson Avenue/South G Street (Segment 2). The project would upsize 3,825 LF of existing sewer line along Johnson Avenue/South G Street from north of Case Road to 2nd Street from 12-inch to 18-inch PVC sewer line. This segment would be constructed using open trench methods. It has not yet been determined whether this segment would construct the upsized pipe in parallel with the existing sewer or if it would replace in place the existing sewer line. Should replace in place be used, a sewer bypass would be used during construction to avoid interruption in sewer service. Dewatering may be required and would be determined in the geotechnical report, though is expected to be limited in volume. Should dewatering be required, the desilted water would be spread on land within the potential staging area. Alignment 1 Segment 2 would require the construction of approximately 12 new manholes using precast concrete. This segment of the alignment would include evaluation of and upgrades to approximately 28 sewer lateral connections, and 11 influent sewer mains. Eleven existing manholes on South G Street would be removed.

Alignment 2: West Ellis Avenue. If Alignment 2 is selected the Project would construct 5,660 LF of new 15-inch VCP gravity sewer on West Ellis Avenue from Highway 74 in the west to B Street in the east. This portion of West Ellis Avenue is currently unpaved, and the Project would be located within a public ROW that may not have been dedicated. Approximately 530 LF of this alignment would run through APN 330-020-009, requiring an easement. It is possible that there is a Southern California Edison easement that could be used for the alignment and would be determined during further stages of Project design. Although the majority of Alignment 2 would be constructed using open trench methods, approximately 1,250 LF may use trenchless construction to avoid deep over excavation in the vicinity of Bellamo Lane and West Ellis Avenue. Trenchless construction, if used, would use pilot-tube guided auger boring. Once construction of Alignment 2 is complete, the unpaved portion of West Ellis Avenue would be paved.

Construction of each pipeline segment would proceed in the following sequence with average trench invert depths as shown in **Table 2-1**.

Table 2-1: Construction Sequencing and Average Depth of Cover

Alignment	Location	Activity	Length (LF)	Maximum Invert Depth (ft)	Construction Hours
1 (segment 1)	Highway 74 to Kruse Street	Construct 15-inch VCP sewer	5,800	28	Day-time, Monday – Friday, 7:00 am-5:00 pm
1 (segment 2)	Johnson Avenue/South G Street	Replace 12-inch sewer with 18-inch VCP sewer	3,825	10	Day-time, Monday – Friday, 7:00 am-5:00 pm
2	West Ellis Avenue	Construct 15-inch VCP sewer	5,660	40	Day-time, Monday – Friday, 7:00 am-5:00 pm

2.4.2 Manhole Construction

Along Alignment 1, a total of 28 new 60-inch manholes would be constructed, and 11 existing manholes on South G Street would be removed. Up to 16 new 60-inch manholes would be installed within Segment 1 along Highway 74 to Kruse Street, and 12 new manholes would be installed within Segment 2 along Johnson Avenue/South G Street. Along Alignment 2, up to 15 new 60-inch manholes would be constructed.

2.4.3 Pipeline Construction

The proposed alignments would use either open-trench (Alignment 1) or a combination of open-trench and trenchless construction methods (Alignment 2). For Alignment 1, the trench width would be 4 to 6 feet, while the depth would range from 6 to 28 feet depending on the segment. The pipeline alignment would be designed to avoid conflict with existing utilities. For Alignment 2, the trench width would be 4 to 6 feet, while the depth would range from 10 to 25 feet. For both alignments, open cut cross-section for the pipeline would follow EMWD standards (see **Figure 2-3**). Native soil would be processed for reuse as backfill to the greatest extent possible. In the event that existing soils are not suitable for reuse, clean sand would be imported for backfilling. Trenchless methods would be used for a portion of Alignment 2 where the depth for an open trench would have had to be between 25- to 35-feet. Pilot-tube guided auger boring would be used for the trenchless construction, which requires excavation of launch pits every 200 to 500 feet for the length of the trenchless portion depending on the soil type, and a single reception pit at the end of the trenchless section. The number of launch pits would be determined as part of the geotechnical study, but is assumed to be six for purposes of this analysis. The launch pits would measure 25 feet by 10 feet, while the reception pit would be 12 feet by 10 feet. All pits would be excavated to the necessary depth for pipeline installation, between 25 and 35 feet. For both alignments, existing culverts would be avoided by tunneling under the culverts or as part of the trenchless construction.

After construction is complete, all pipeline construction areas would be restored to pre-construction conditions for Alignment 1 and the paved areas of Alignment 2. For the unpaved portion of Alignment 2, the existing unpaved roadway would be paved. Replacement of pavement would follow Riverside County standards (see **Figure 2-4**) and City of Perris standards, if different from Riverside County standards.

Figure 2-3: EMWD Standards for Open Cut Pipeline Construction

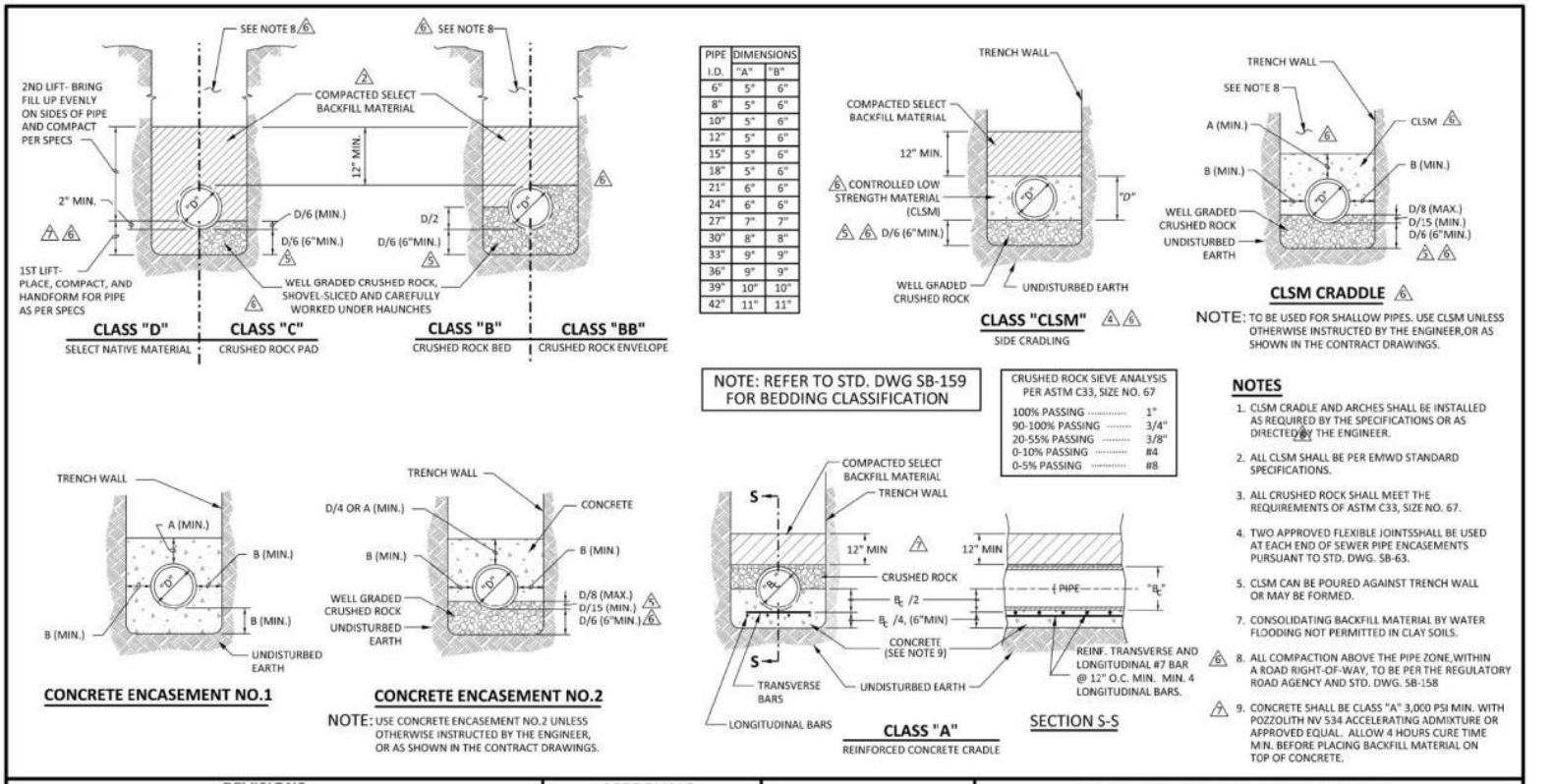
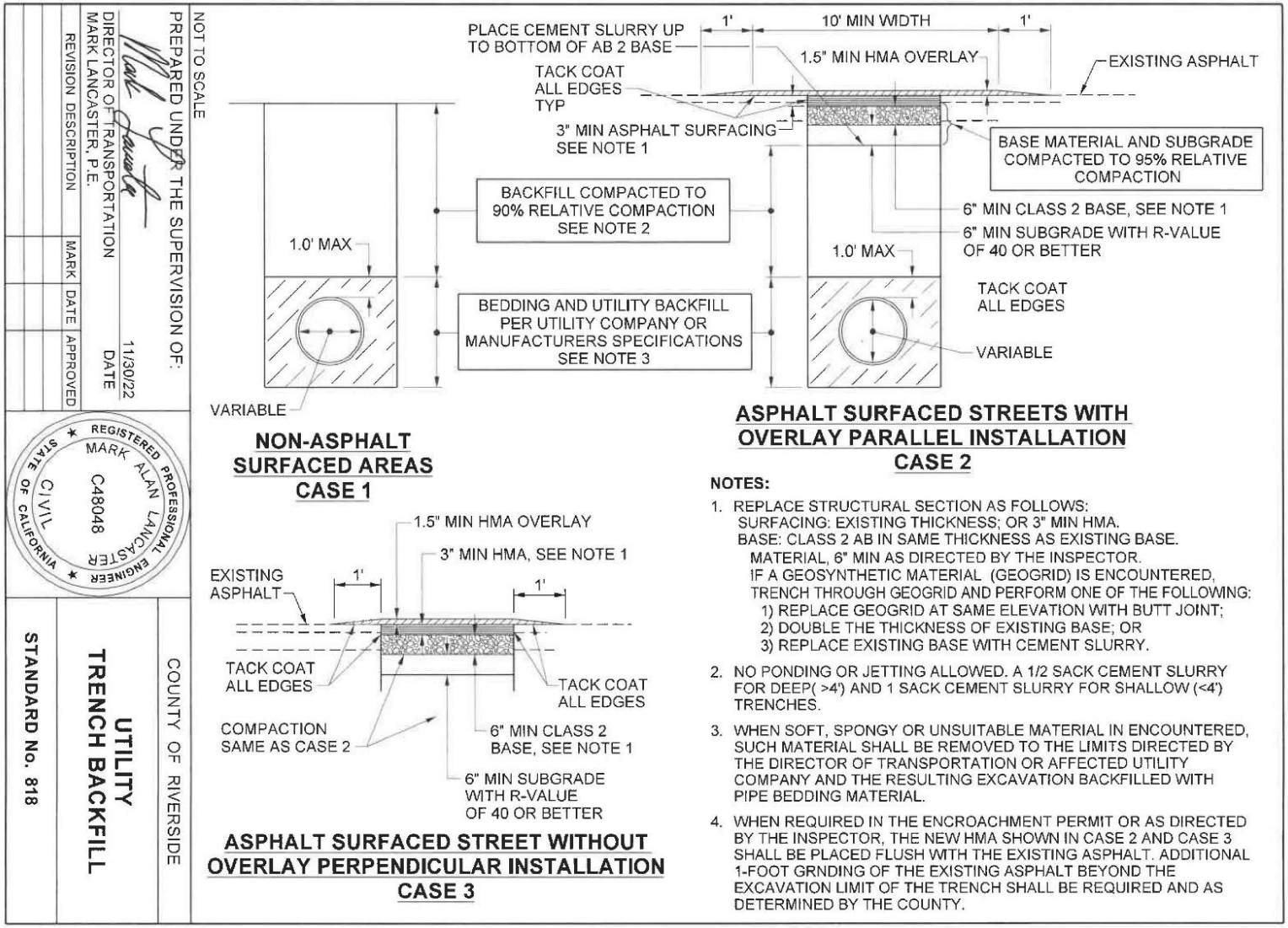


Figure 2-4: Riverside County Standards for Pavement Resurfacing



Construction of the pipelines would require the estimated construction equipment shown in **Table 2-2**.

Table 2-2: Construction Vehicle Fleet for Pipelines

Equipment	Number Required for Pipelines
Air Compressor	2
Bore/Drill Rig*	1
Cement and Mortar Mixer	1
Concrete Saw	1
Crane*	1
Dumper/Tender	2
Excavator	1
Generator Set	1
Off-Highway Truck (Utility Truck, Water Truck)	5
Pavement Breaker	1
Paver	1
Paving Equipment	1
Pump	2
Roller	1
Sweeper	1
Tractor/Loader/Backhoe	2

*If Alignment 2 is selected and trenchless construction required.

For Alignment 1, the total estimated volume of material to be excavated for construction of the pipeline is approximately 44,600 cubic yards, based on maximum trench width (6 feet), depth (28 feet for Segment 1 and 10 feet for Segment 2), and total length (5,800 LF for Segment 1 and 3,825 LF for Segment 2). For Alignment 2, an estimated 24,200 cubic yards of excavated materials are expected to be removed, based on the open trench portion of the alignment's maximum trench width (6 feet), depth (25 feet), and total length of open trench (4,110 LF) and the number of launch pits (6) measuring 25-feet by 10-feet and a single reception pit measuring 12-feet by 10-feet, at a depth of 35 feet for all pits for the trenchless portion of the alignment. Excavated material would be reused onsite as trench backfill to the maximum extent possible; however, for the purposes of this analysis, it is conservatively assumed that 50 percent of excavated trench material would be hauled off site and imported fill material would be used as backfill. After construction is complete, pipeline construction areas for Alignment 1 would be restored to pre-construction conditions (i.e., no permanent disturbance footprint), while Alignment 2 would install pavement where a dirt road currently exists along West Ellis Avenue.

For the Johnson Avenue/South G Street segment of Alignment 1, parallel construction would be used to install the new sewer line, and the existing line would be abandoned-in-place per EMWD standards once the new pipeline is completed. The area would be backfilled and restored to pre-

construction conditions. If the Johnson Avenue/South G Street segment of Alignment 1 uses replace in place construction, temporary bypass pumping would be installed between key upstream and downstream manholes, using self-priming pumps near the upstream manhole location. Where possible, based on the segment location, the aboveground bypass line would follow the sewer line and would be laid in street gutters on the road shoulder within the street ROW, or it would be placed within the contractor's work-zone. The bypass system is expected to be relatively small and unobtrusive, because the new alignment would be in place prior to connecting to the existing manhole to start diverting flow. Once construction of the sewer pipeline is complete, the temporary bypass infrastructure would be removed and the roadway or sidewalk would be restored to original conditions.

2.4.4 Construction Schedule

Project construction is anticipated to begin in approximately October 2024 and last approximately 18 months. The pipelines would be constructed at a rate of approximately 80 to 100 LF per day for open trenching, though portions of the alignment are considered deep sewer, which would result in construction at a rate of approximately 30 to 40 LF per day. The actual rate of construction would depend on soil conditions, extent of existing utilities, traffic control, and permitted work hours. Construction would take place during daylight hours only. EMWD anticipates the new sewer lines would be operational by March 2026.

2.4.5 Equipment Staging Areas

Three construction staging area options are included in this environmental analysis; however, the size, location, and number of staging areas would be finalized as part of pre-construction, as the contractor would have the option to obtain their own staging areas. The construction staging areas identified in this document include four vacant and already graded properties. The first is APN 326-240-079, located at the northwest corner of Highway 74 and Dockery Lane, and is currently owned by a developer. The second is APN 310-123-006, located at the southwest corner of South G Street and East 7th Street, and is privately owned. The third is APN 310-090-014, located at the northeast corner of South G Street and East 7th Street, owned by the County of Riverside. These parcels would require agreements with the property owners to use for staging. The fourth staging area would only be used if Alignment 2 is selected, and includes a portion of APN 313-180-013, located east of the intersection of Highway 74 and West Ellis Avenue, and is owned by the City of Perris. These potential staging areas are shown in **Figure 2-1**.

For the purposes of this analysis, it was assumed the total construction staging area (across all four potential staging areas) would require no more than 2 acres for storage and staging of equipment. Access to APN 310-123-006 and APN 310-090-014 would be from Johnson Avenue. Access to APN 326-240-079 would be from Highway 74, and access to APN 313-180-013 would be from Bellamo Lane.

If the contractor does not want to use the identified staging areas, the contractor would be responsible for securing suitable temporary equipment storage/staging site(s) prior to

construction and implementing applicable EMWD standard construction practices (see *Section 2.6*) at the staging area(s).

2.5 Operations

The pipeline and manholes would not be associated with long-term energy usage or additional unplanned EMWD operations and maintenance (O&M) activities. Project O&M activities would include inspection and repair, as necessary, of pipeline and manholes, and would be incorporated into EMWD's existing O&M activities.

2.6 EMWD Standard Construction Practices

EMWD maintains standard construction specifications, practices and procedures for incorporation into the design and construction of all EMWD projects. The following standard construction specifications, practices and procedures, would be implemented as part of the proposed Project:

- The design and construction of the facilities would be based on a soils report and geotechnical investigation prepared for the Project (Inland Foundation Engineering [IFE]'s 2024 Geotechnical Investigation Report and Converse Consultants' 2024 Geotechnical Investigation Report) to minimize geological risk. Design and construction would also be in compliance with applicable standards the American Water Works Association, the Greenbook" Standard Specifications for Public Works Construction (Greenbook Committee of Public Works Standards, Inc. 2021), the International Building Code (International Code Council 2021), and the California Building Code (California Code of Regulations, Title 24, Part 2.
- EMWD would comply with all applicable federal, state, and local regulations pertaining to hazardous materials, including Federal Code Title 40 and 49; Occupational Safety and Health Administration 29 Code of Federal Regulations 1910; California code section 5001, 5401, 5701, and 25507; California Health and Safety Code Division 20, Chapter 6.5, Article 6.5, Article 6.6, and Article 13; and Riverside County ordinance 651.5. Additionally, the contractor would be required to comply with EMWD Detailed Provisions Section 02201 – Construction Methods & Earthwork of the Standard Detailed Provisions for Flammable or Toxic Materials to prevent spontaneous combustion or dispersion.
- EMWD and its contractors would be required to adhere to EMWD's General Safety Requirements for Hazardous Materials and Hazardous Waste (Specification 1.15 of Section 01000-7) which require proper communication of hazardous substances on a project site, proper storage and disposal of hazardous substances on the site, and clean-up of any spills in accordance with manufacturer's, and/or EPA requirements.
- EMWD would comply with federal hazardous materials transportation law (49 U.S.C. 5101 et seq.), and California Health and Safety Code Division 20, Chapter 6.5, Article 6.5 which require precautionary measures be taken during the routine transport of hazardous materials, such as testing and preparation of a transportation safety plan.

According to California Health and Safety Code Division 20, Chapter 6.5, Article 13, used oil that may be produced from construction or operation of the Project would be recycled.

- Groundwater encountered during construction would be discharged to land within the potential staging areas, as well as used to wet soil during trench backfilling or for general dust control. Discharges would be conducted in accordance with applicable NPDES discharge permits.

- Prior to Project construction, EMWD would require its construction contractor to prepare a Traffic Control and Detour Plan in accordance with US Department of Transportation Manual of Uniform Traffic Control Devices and the California Department of Transportation Manual of Uniform Traffic Control Devices, and Permit requirements, and local Riverside County traffic control requirements. At a minimum, the plan would:

    - Identify staging locations to be used during construction;
    - Identify safe ingress and egress points from staging areas;
    - Identify potential road closures;
    - Establish haul routes for construction-related vehicle traffic;
    - When work is not being performed, require trenches to be covered with an appropriate cover to restore normal traffic flow;
    - Include a detour plan that identifies alternative safe routes to maintain pedestrian and bicyclist safety during construction; and
    - Identify roadways and access points for emergency services; and require that disruptions to or closures of these lanes be minimized.
    - Include provisions for traffic control measures such as barricades, warning signs, cones, lights, and flag persons, to allow safe circulation of vehicle, bicycle, pedestrian, and emergency response traffic.

  The Traffic Control and Detour Plan would be reviewed and approved by EMWD's project manager and the construction inspector prior to Project construction. EMWD's construction inspector would also provide the construction schedule and Traffic Control and Detour Plan to the County of Riverside for review to ensure that construction of the proposed Project does not conflict with other construction projects that may be occurring simultaneously in the Project vicinity.

- All construction work would require the contractor to implement fire hazard reduction measures. In accordance with EMWD Specifications Detailed Provisions Section 02201 – Construction Methods & Earthwork of the Standard Detailed Provisions, the entire work and site, including storage areas, are inspected at frequent intervals to verify that fire prevention measures are constantly enforced; fully charged fire extinguishers of the appropriate type, supplemented with temporary fire hoses wherever an adequate water supply exists, are furnished and maintained; and flammable materials are stored in a manner that prevents spontaneous combustion or dispersion.

- Construction would comply with SCAQMD Rule 403 Fugitive Dust Control requirements as per EMWD's Dust Abatement procedures outlined in EMWD Specifications Detailed Provisions Section 02201 – Construction Methods & Earthwork of the Standard Detailed Provisions.
- EMWD's construction contractor would adhere to Engineering Special Provisions, Special Condition 09, which requires compliance with the California General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2022-0057 DWQ (NPDES General Permit No. CAS000002), including preparation of a Stormwater Pollution Prevention Plan (SWPPP). Construction would implement BMPs to control water quality of stormwater discharges offsite, according to the SWPPP, such as site management "housekeeping," erosion control, sediment control, tracking control and wind erosion control.
- Staging areas selected by the Project contractor would be located on parcels that avoid adverse environmental impacts, and would be required to comply with EMWD's Standard Construction Practices.

2.7 Required Permits and Approvals

Anticipated permits are identified in **Table 2-3**. A California State Water Resources Control Board Division of Drinking Water Waiver may be required if Alignment 1 uses parallel construction to install the new pipeline along Johnson Avenue and South G Street due to the location of existing utilities within the ROW. If replace in place or a combination of parallel construction and replace in place is used, then no waiver would be required because the proposed Project's pipelines would be compliant with California's Waterworks Standards (CCR Section 64572, Title 22) parallel and perpendicular separation criteria; however, the need to apply for a waiver would be determined later in the design stage.

Table 2-3: Permits and Approvals

Agency	Permit/Approval
City of Perris	Encroachment Permit
City of Perris	Agreement to use APN 313-180-013 and APN 310-090-014 for staging (Alignment 1)
County of Riverside*	Encroachment Permit
State Water Resources Control Board	NPDES Construction General Permit for Storm Water Discharges (SWPPP)
State Water Resources Control Board	Division of Drinking Water Title 22 permit for pipeline separation
California Occupational Safety and Health Administration	Trenching/Shoring Permit
Private landowner	Easement to use APN 330-020-009 (Alignment 2)

*The County of Riverside is responsible for issuing the encroachment permit for the portion of Highway 74 south of 7th Street

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3. ENVIRONMENTAL CHECKLIST FORM

1. Project title:	Extension of Sewer to Highway 74 Project
2. Lead agency name and address:	Eastern Municipal Water District 2270 Trumble Road P.O. Box 8300 Perris, CA 92572-8300
3. Contact person and phone number:	Joseph Broadhead, Principal Water Resources Specialist broadhej@emwd (951) 928-3777 ext. 4545
4. Project location:	City of Perris, Riverside County, California
5. Project sponsor's name and address:	Same as Lead Agency
6. General plan designations:	City of Perris right-of-way, Unincorporated Riverside County right-of-way, Residential, Commercial
7. Zoning:	City of Perris roadway right-of-way, Unincorporated roadway right-of-way, Mixed Use, Residential, Commercial

8. **Description of project (Alignment 1):** The Extension of Sewer to Highway 74 Project involves the construction and operation of approximately 9,600 LF of vitrified clay sewer pipelines, ranging in size from 12 to 18 inches in diameter, and 28 new manholes (Alignment 1). The Project pipeline would connect to existing EMWD sewer at a manhole within Navajo Road, a manhole within Kruse Street, and at the intersection of East 2nd Street. The Project would also remove 11 existing manholes.

   Description of project (Alignment 2): The Extension of Sewer to Highway 74 Project involves the construction and operation of approximately 6,000 LF of 15-inch diameter sewer pipelines (Alignment 2). The Project pipeline would connect to existing EMWD sewer at the intersection of South B Street and the intersection with Highway 74.

9. **Surrounding land uses and setting (Alignment 1):** The proposed Project area is located within the City of Perris and unincorporated County of Riverside. The Project would be constructed entirely within the existing City of Perris and County of Riverside right-of-way (ROW). Surrounding land uses include commercial, residential, and public facilities.

Surrounding land uses and setting (Alignment 2): The proposed Project area is located within the City of Perris and unincorporated County of Riverside. The Project would be constructed within the existing City of Perris and County of Riverside ROW. However, a portion of West Ellis Avenue is currently unpaved, and the new sewer line would be located within a public ROW that may not have been dedicated. Approximately 530 LF of this alignment would run through undeveloped land of APN 330-020-009, requiring an easement. Surrounding land uses include open space, residential, and public facilities.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

- City of Perris: Encroachment Permit
- City of Perris: Agreement to use APN 313-180-013 and APN 310-090-014 for staging for Alignment 1
- County of Riverside: Encroachment Permit
- State Water Resources Control Board: NPDES Construction General Permit for Storm Water Discharges (SWPPP)
- State Water Resources Control Board: Division of Drinking Water Title 22 permit for pipeline separation
- California Occupational Safety and Health Administration: Trenching/Shoring Permit
- Private landowner: Easement to construct in APN 330-020-009 for Alignment 2

11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 2180.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

In October 2023, EMWD sent outreach letters to Native American tribes, who are traditionally and culturally affiliated with the Project area and who have indicated to EMWD that they are interested in receiving notifications. Consultations were held with the Pechanga Band of Indians on January 24, 2024 and Agua Caliente Band of Cahuilla Indians on February 6, 2024. Four other Native American tribes were contacted but declined consultation or did not respond.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

[ ]	Aesthetics	[ ]	Agriculture and Forestry Resources	[ ]	Air Quality
[X]	Biological Resources	[X]	Cultural Resources	[ ]	Energy
[X]	Geology/Soils	[ ]	Greenhouse Gas Emissions	[ ]	Hazards and Hazardous Materials
[ ]	Hydrology/Water Quality	[ ]	Land Use/Planning	[ ]	Mineral Resources
[X]	Noise	[ ]	Population/Housing	[ ]	Public Services
[ ]	Recreation	[ ]	Transportation	[X]	Tribal Cultural Resources
[ ]	Utilities/Service Systems	[ ]	Wildfire	[X]	Mandatory Findings of Significance

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial evaluation:

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

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

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

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

[ ] I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Joe Broadhead
Signature

4/11/24
Date

Joe Broadhead
Printed Name

Principal Water Resources Specialist
Title

3.1 Aesthetics

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Except as provided in Public Resources Code Section 21099, would the Project:				
a) Have a substantial adverse effect on a scenic vista?	[ ]	[ ]	[X]	[ ]
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	[ ]	[ ]	[ ]	[X]
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	[ ]	[ ]	[X]	[ ]
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	[ ]	[ ]	[X]	[ ]

Discussion

The proposed Project area is located in unincorporated Riverside County and the western portion of the City of Perris.

The City of Perris is located in a flat, broad basin flanked by the foothills of the Santa Ana Mountains to the west and the foothills of the San Jacinto Mountains to the east. Significant vistas

within the City, as defined by the City of Perris General Plan, include the western, eastern, and northern view of surrounding foothills as well as a view north of the San Bernardino Mountains. Due to the flatness of the basin, view corridors towards the foothills extend for miles along roadways. Additionally, large rock outcroppings scattered throughout the undeveloped, rolling topography in the west-central area of the City offer visual variation to the landscape and have been incorporated into the City's development plan (City of Perris 2004).

The policies of Riverside County General Plan Land Use Element (County of Riverside 2021) are intended to promote development that blends in with its surrounding environments and preserves view corridors and topographic vistas. Riverside County Ordinance Number 655 regulates light pollution by restricting the permitted use of certain outdoor light fixtures that emit light into the night sky which have a detrimental effect on astronomical observation and research. It defines various zones relative to the distance between the light source and Palomar Observatory and sets requirements for shielding for various types of outdoor lighting (e.g., decorative, parking lots, walkways, security) (County of Riverside 1988).

The City's and County's zoning codes identify allowable land uses and define the development allowed for different land uses to support the growth and development of the community in a manner consistent with their respective General Plans. This includes visual requirements for different property types related to building height, setbacks, and property maintenance. None of the zoning regulations related to aesthetics apply to the proposed Project's components which will be underground once completed (City of Perris 2010, County of Riverside 2007).

The State of California Department of Transportation (Caltrans) manages the State Scenic Highway Program, which was created by the State Legislature in 1963 for the purpose of protecting the natural scenic beauty of California highways. State-designated scenic highways have locally adopted policies to preserve the scenic quality of the corridor. Highways receive designation based on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The portion of Highway 74 that runs through the Project Area is a state eligible scenic highway but is not a designated scenic highway. The nearest state-designated scenic highway is a section of State Route 74 east of Hemet, that begins near the intersection with Blackburn Road, and extends eastward for approximately 47 miles (Caltrans 2023). This portion of scenic highway is located approximately 20 miles east of the Project area.

The Proposed Project's Alignment 1 would be constructed along California State Route 74 (Highway 74) from West Ellis Avenue through Navajo Road to Kruse Street as well as upsizing on South G Street and Johnson Avenue. Alternatively, under Alignment 2 the sewer line extension would be constructed along West Ellis Street between Highway 74 and B Street. These roadways support intermittent, distant views of surrounding foothills for motorists and pedestrians.

a) Have a substantial adverse effect on a scenic vista?

The primary scenic impairments associated with the Project would occur during construction of the Project, and would be temporary. During construction, scenic views of surrounding hills and mountains near the staging area(s) and along the Project alignment would be temporarily altered by construction equipment such as cranes, excavators, and trucks. However, after construction is completed, all disturbed surfaces would be restored to pre-construction conditions (Alignment 1) or paved (Alignment 2). Thus, the Project would have no long-term impact on scenic vistas. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Although construction of the Project's Alignment 1 would occur within a stretch of Highway 74 that is identified as an eligible state scenic highway, the nearest officially designated state scenic highway is located approximately 20 miles southeast of the Project alignment (Caltrans 2023), outside of the view of temporary construction activities. Construction of the proposed Project within Highway 74 would occur entirely within the existing ROW, and the completed pipelines would be underground. The proposed Project's Alignment 1 would not result in any damage to adjacent scenic resources. Therefore, there would be no impact to scenic resources associated with an eligible or designated State scenic highway.

Construction of the proposed Project's Alignment 2 would not occur within an eligible or designated state scenic highway. Therefore, there would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced

from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The proposed Project would be located within existing roadway ROW (Alignment 1) and paved and unpaved roadway (Alignment 2) in the City of Perris and unincorporated Riverside County, both of which are urbanized areas. Within the City of Perris, the Project area is zoned Commercial Community, Residential, Employment Plaza, Suburban, Neighborhood, and Urban Village (City of Perris n.d.a). The unincorporated portion of the Project area is zoned for Mixed-Use (County of Riverside 2021). Project implementation may result in short-term impacts regarding the visual character or quality of the Project area as a result of disturbed roadways, excavation, trenching, placement of materials and staging of equipment. Public views in the Project area and vicinity include those from residences, businesses, roads and sidewalks. Public views of the construction activities from sidewalks and roads would be fleeting – on the order of seconds or minutes – while public views of the construction from residences and businesses would be longer. However, this short-term effect on visual continuity is considered less than significant because the pipelines would be constructed at an average rate of 80 to 100 LF per day for open trenching and 30 to 40 LF per day for deep sewer construction. As a result, the visual impacts would not occur in the same place over the entire construction period. In addition, after construction is completed, all disturbed surfaces would be restored to pre-construction conditions. Construction of the proposed Project would not alter the existing visual environment of the Project area and therefore would not conflict with the City of Perris General Plan and Riverside County General Plan or City of Perris Zoning Ordinance design standards and County of Riverside Zoning regulations. As a result, the Project's impact on visual character and public views would be less than significant.

While construction of Alignment 2 may require the removal of large rocks which are an obvious presence in the visual landscape of the Project area, no one rock or collection of rocks in this landscape is notable by virtue of unique formation, size, or character (City of Perris 2004), and removal would not constitute a significant impact. Construction of the Project would not alter the existing visual environment of the Project area and therefore would not conflict with the City of Perris Zoning Ordinance design standards. Therefore, the Project's impact on visual character and public views would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Construction would take place during daytime hours in accordance with the Perris Municipal Code. No construction activities are planned during nighttime hours (7:00 p.m. to 7:00 a.m.).

Further, no new lighting would be installed during construction or as part of the completed Project. Daytime construction could temporarily create a minor new source of glare from construction equipment. However, impacts would be less than significant because construction would be temporary, and equipment would be removed once site restoration is complete. Once construction is complete, the below-ground Project pipelines would not create any permanent lighting or sources of glare in the Project area. Therefore, there would be no impact to daytime and nighttime views in the area. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	[ ]	[ ]	[ ]	[X]
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	[ ]	[ ]	[ ]	[X]
c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code	[ ]	[ ]	[ ]	[X]

	Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	[ ]	[ ]	[ ]	[X]
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project would be located solely on disturbed lands including paved and dirt roads. The proposed Project area is designated primarily as Urban and Built-Up Land and Other Land by the California Department of Conservation (CDOC) Farmland Mapping and Monitoring Program (FMMP) (CDOC 2022). There are no zoning designations or classifications for forestland, timberland, or timberland production on or adjacent to the Project site. CDOC land use designations are shown in **Figure 3-1**. City of Perris and Riverside County zoning designations are shown in **Figure 3-2**.

Figure 3-1: Farmland

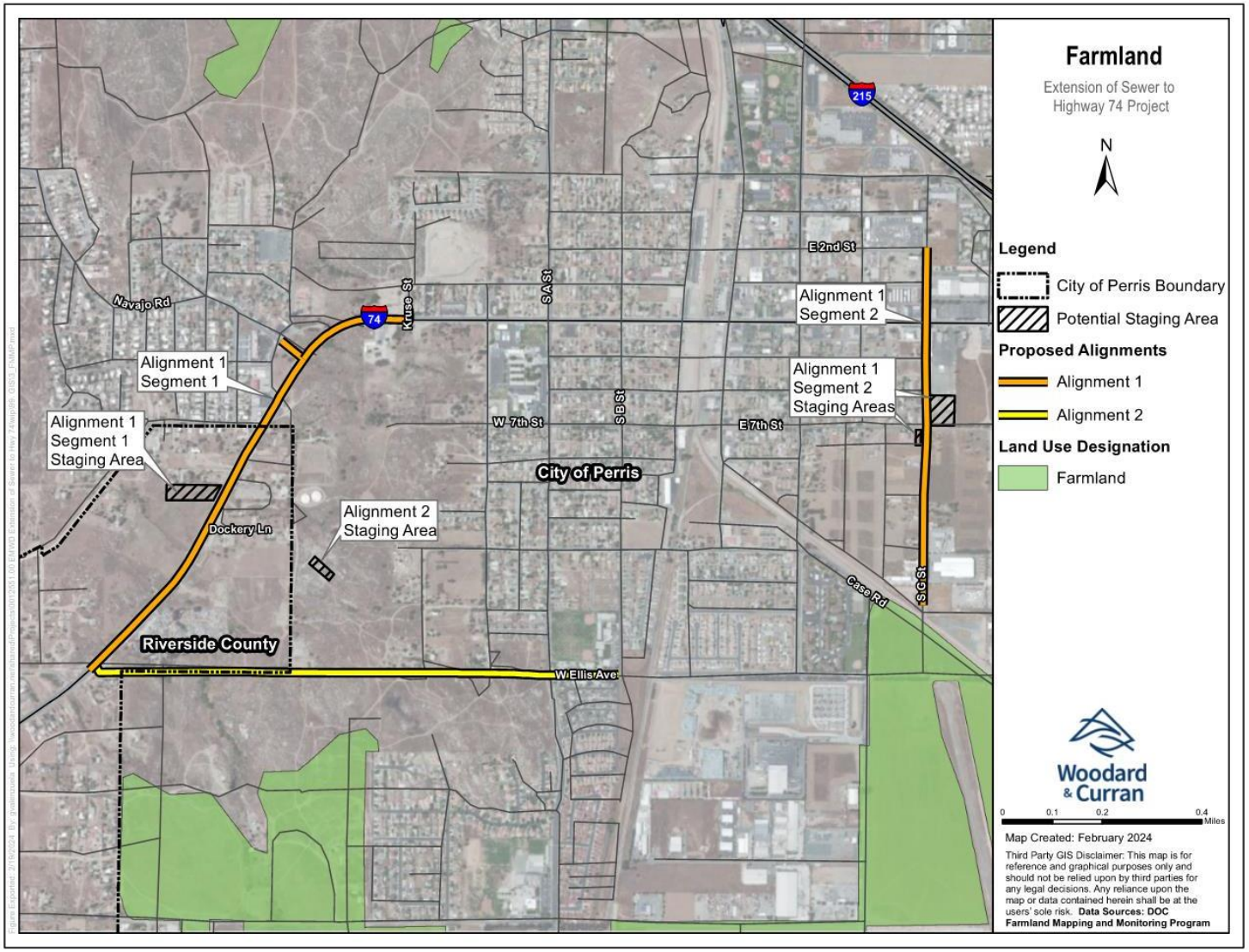
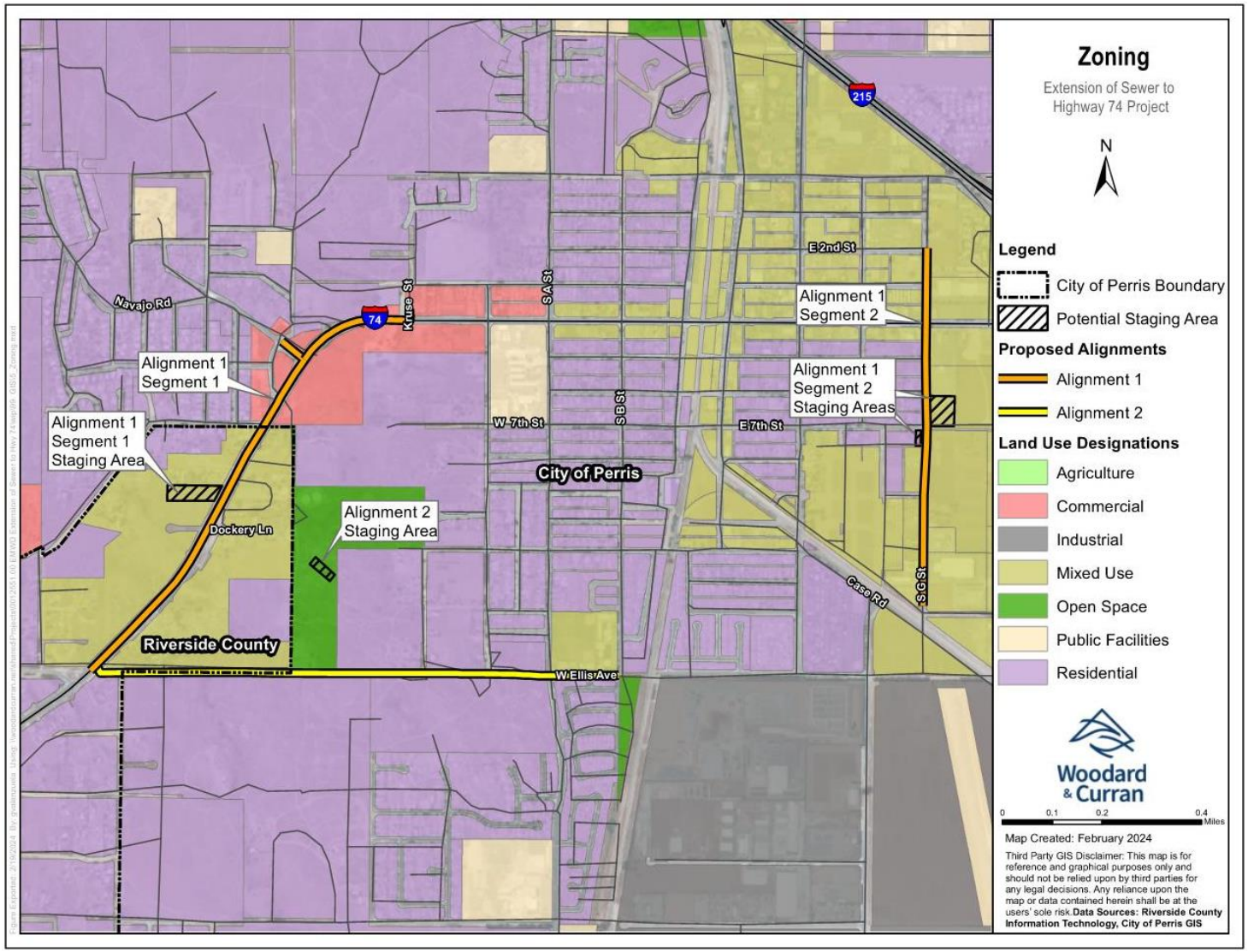


Figure 3-2: Zoning



a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The proposed alignments and staging areas would not be located within or adjacent to any land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use (**Figure 3-1**). Construction activities would not impact or result in the conversion of any farmland to non-agricultural use. Therefore, there would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed Project would not be located on or adjacent to land zoned for agricultural use or protected by a Williamson Act contract (CDOC 2023; County of Riverside 2021). Therefore, no impact would occur as a result of the proposed Project.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

There is no forest land, timberland, or timberland zoned Timberland Production present within the proposed Project area (**Figure 3-2**). Therefore, the proposed Project would have no impact related to the loss of forest land or timberland.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

There is no designated forest land or timberland within proposed Project area (**Figure 3-2**). Therefore, the proposed Project would have no impact related to the loss of forest land or timberland.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

e) Involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The proposed Project would improve EMWD's wastewater distribution system capacity and would accommodate existing and planned wastewater demand within the EMWD service area. The proposed Project would have no impact on groundwater supplies and would not impede the ability of farmers to pump groundwater for irrigation use. Given the absence of agricultural and forest land in the Project area, and the proposed Project's lack of potential impact to groundwater availability, there is no potential for the Project to result in the conversion of farmland to non-agricultural use or the conversion of forest land to non-forest use. There would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.3 Air Quality

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	[ ]	[ ]	[X]	[ ]
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non- attainment under an applicable federal or state ambient air quality standard?	[ ]	[ ]	[X]	[ ]
c) Expose sensitive receptors to substantial pollutant concentrations?	[ ]	[ ]	[X]	[ ]
d) Result in other emissions (such as those leading to odors or adversely affecting a substantial number of people?	[ ]	[ ]	[X]	[ ]

Discussion

The Project area is located within the South Coast Air Basin (SCAB), which is regulated by the South Coast Air Quality Management District (SCAQMD). The SCAQMD monitors air pollutant levels to ensure the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are met and, if they are not met, to develop strategies to meet the standards. The nearest air monitoring station is located on West Flint Street in Lake Elsinore, approximately 9 miles from the proposed Project area (U.S. EPA 2024).

The NAAQS, which are required to be set by the United States Environmental Protection Agency (U.S. EPA) under the Clean Air Act, provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly (U.S. EPA 2023). Similarly, the CAAQS are established to protect the health of the most sensitive groups and are mandated by State law. U.S. EPA has set NAAQS for six pollutants, which are called "criteria pollutants:" carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate

matter less than 10 microns in aerodynamic diameter (PM_{10}), particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition to these, California has added four criteria pollutants: hydrogen sulfide (H_2S), sulfates (SO_4^{2-}), visibility reducing particles, and vinyl chloride (California Air Resources Board [CARB] 2024). In total, the CARB has formally identified over 200 substances and groups of substances as toxic air contaminants.

Depending on whether or not the NAAQS or CAAQS are met or exceeded, the SCAB is classified as being in "attainment" or "nonattainment." The 2022 Air Quality Management Plan (AQMP; SCAQMD 2022) assesses the attainment status of the SCAB and is summarized in **Table 3-1**. As shown therein, the SCAB is in nonattainment for the State ozone (1-Hour and 8-Hour), PM_{10} (24-Hour and Annual), and $PM_{2.5}$ (Annual) requirements, and for the Federal ozone (1-Hour and 8-Hour), $PM_{2.5}$ (24 hour and Annual), and lead (3-Months Rolling) requirements. Thus, the SCAB is required to implement strategies that would reduce pollutant levels to recognized standards, which is done through the Clean Communities Plan (formerly known as the Air Toxics Control Plan). The Clean Communities Plan is designed to examine the overall direction of the SCAQMD's air toxics control program and includes control strategies aimed at reducing toxic emissions (SCAQMD 2010).

Table 3-1: Criteria Pollutant Attainment Status – SCAB

Criteria Pollutant	Averaging Time	State (CAAQS)	Federal (NAAQS)
Ozone (O_3)	1-Hour	Nonattainment	Nonattainment (extreme)
	8-Hour	Nonattainment	Nonattainment (extreme)
Carbon Monoxide (CO)	1-Hour	Attainment	Attainment (maintenance)
	8-Hour	Attainment	Attainment (maintenance)
Nitrogen Dioxide (NO_2)	1-Hour	Attainment	Unclassifiable/Attainment
	Annual	Attainment	Attainment (maintenance)
Sulfur Dioxide (SO_2)	1-Hour	Attainment	Unclassifiable/Attainment
	24-Hour	Attainment	Unclassifiable/Attainment
Particulate Matter (PM_{10})	24-Hour	Nonattainment	Attainment (maintenance)
	Annual	Nonattainment	No Criteria Defined
Particulate Matter ($PM_{2.5}$)	24-Hour	No Criteria Defined	Nonattainment (serious)
	Annual	Nonattainment	Nonattainment (serious)
Lead (Pb)	30-Day	Attainment	No Criteria Defined
	3-Months Rolling	No Criteria Defined	Nonattainment (partial)
Hydrogen Sulfide (H_2S)	1-Hour	Unclassified/Attainment	No Criteria Defined
Sulfates (SO_4^{2-})	24-Hour	Attainment	No Criteria Defined

Source: SCAQMD 2022

The SCAQMD provides numerical thresholds to analyze the significance of a project's construction and operational emissions on regional air quality. These thresholds are designed such that a project consistent with the thresholds would not have an individually or cumulatively significant impact on the SCAB's air quality. In addition to criteria air pollutants, thresholds have been set for nitrogen oxides (NO_X) and volatile organic compounds (VOCs), also referred to as reactive organic gases (ROG), which are O_3 precursors. These thresholds are listed in **Table 3-2**.

Table 3-2: SCAQMD Air Quality Significance Thresholds

Pollutant	Mass Thresholds – Construction Thresholds (lbs/day)	Mass Thresholds – Operation Thresholds (lbs/day)
Nitrogen Oxides (NO_x)	100	55
Volatile organic compounds (VOC)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Sulfur Oxides (SO_x)	150	150
Carbon Monoxide (CO)	550	550
Lead (Pb)	3	3
Toxic Air Contaminants	• Maximum Incremental Cancer Risk $\geq$ 10 in 1 million • Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million) • Chronic & Acute Hazard Index $\geq$ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	

Source: SCAQMD 2023

In addition, the SCAQMD has developed localized significance thresholds (LSTs) in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs are only applicable to the following criteria pollutants: NO_X, CO, PM_{10} and $PM_{2.5}$. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area, distance to the nearest sensitive receptor, and project size. For PM_{10} LSTs were derived based on requirements in SCAQMD Rule 403 – Fugitive Dust. For the purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a receptor such as residence, hospital, convalescent facility where it is possible that an individual could remain for 24 hours. The use of LSTs is voluntary, to be implemented at the discretion of local agencies.

The LSTs are defined for 38 source receptor areas (SRAs). The proposed Project is located in source receptor area 24 (SRA-24), Perris Valley. LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for sites that measure up to one, two, or five acres. The proposed Project is limited to pipeline and manhole

construction; the area under active construction at any given time would not be expected to exceed one acre per day. Pursuant to SCAQMD guidance, LSTs for the one-acre site should be used for sites that are less than one acre in size. LSTs for construction on one-acre sites in SRA-24 are shown in **Table 3-3**. LSTs are provided for a distance of 25 meters (82 feet) from the proposed Project alignment, which is the most conservative LST distance (LSTs range from 25 to 500 meters). The proposed Alignment 1 along Navajo Road and Johnson Avenue/South G Street would be within a two-lane road in a residential neighborhood, therefore the more conservative LSTs for sensitive receptors within a distance of 25 meters are assumed to be applicable to the entire Project. Segments of the proposed Alignment 2 along West Ellis Avenue would be within a two-lane road in a residential neighborhood, therefore the more conservative LSTs for sensitive receptors within a distance of 25 meters are assumed to be applicable to the entire Project.

Table 3-3: SCAQMD LSTs for Construction and Operation

Pollutant	Allowable emissions (lbs/day) from a one-acre site in SRA-24 for a receptor within 25 meters (82 feet)
Gradual Conversion of NO_x to NO_2	118
CO	602
PM_{10} (operation)	1
PM_{10} (construction)	4
$PM_{2.5}$ (operation)	1
$PM_{2.5}$ (construction)	3

Source: SCAQMD 2009

a) Conflict with or obstruct implementation of the applicable air quality plan?

The SCAQMD's 2022 AQMP assesses the attainment status of the SCAB, which includes the proposed Project area, and provides a strategy for attainment of State and federal air quality standards. The AQMP strategies are developed based on population, housing, and employment growth forecasts anticipated under local city general plans and the Southern California Association of Government (SCAG)'s 2020 Regional Transportation Plan/Sustainable Communities Strategy, referred to as Connect SoCal (SCAG 2020).

A project would conflict with or obstruct an applicable air quality plan if it would lead to population, housing or employment growth that exceeds the forecasts used in the development of the applicable air quality plan.

The proposed Project's Alignment 1 would construct approximately 5,800 LF of new 15-inch VCP sewer line, upsize approximately 3,825 LF of existing sewer line, and construct 28 new manholes, and Alignment 2 would construct approximately 5,660 LF of new 15-inch gravity sewer line and up to 15 manholes. These alignments are proposed in order to provide wastewater conveyance to developing areas in the unincorporated County of Riverside, specifically Planning Area 6, and to meet existing and projected demands for wastewater conveyance in the City of Perris. Riverside

County is the fastest growing county in California, resulting in the need to upsize existing utilities or construct new utilities to meet the needs of these growing areas in the county. The proposed Project would improve operational benefits to accommodate existing and planned demands for wastewater conveyance in EMWD's service area that would occur with or without the Project. Construction would not require personnel to relocate from outside the area; jobs would be filled by local workers. The proposed Project would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the AQMP. Potential conflicts with the AQMP would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non- attainment under an applicable federal or state ambient air quality standard?

The proposed Project would result in emissions of criteria pollutants from short-term construction activities. The pipeline and manholes would not be associated with long-term energy usage or additional EMWD O&M activities. Inspection of the pipeline and manholes would be incorporated into EMWD's existing O&M activities. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) 2022.1.1.21, which is used throughout California to quantify criteria pollutant emissions.

The CalEEMod emissions scenarios were based on Project-specific information, found in *Section 2 Project Description*. In instances where Project-specific information was not available (e.g., construction equipment horsepower, length of worker trips, soil moisture content), the analysis relied on CalEEMod default values. As explained in *Section 2.4 Proposed Project Description*, it is assumed that construction would begin in October 2024 and have a duration of 18 months. The model also assumes compliance with SCAQMD's Rule 403 (Fugitive Dust) which requires construction projects to implement measures to suppress fugitive dust emissions, such as watering of exposed soils, limiting vehicle speeds on unpaved areas, and covering haul trucks. The complete CalEEMod Air Quality Data Sheets are provided in **Appendix A**.

Construction Emissions

Air emissions of criteria pollutants during construction of the proposed Alignment 1 and Alignment 2 would result from the use of construction equipment with internal combustion engines, and offsite vehicles to transport workers, deliver materials to the site, and haul import and export material to and from the site. Project construction would also result in fugitive dust emissions, which would be lessened through the implementation of the fugitive dust control

measures required by SCAQMD Rule 403. **Table 3-4** and **Table 3-5** summarize the maximum daily pollutant emissions during construction of the proposed Alignment 1 and Alignment 2, respectively. As shown in **Table 3-4 and Table 3-5,** construction of Alignment 1 and Alignment 2 would not exceed SCAQMD regional thresholds for any criteria pollutant.

Table 3-4: Proposed Project Alignment 1 Maximum Daily Construction Emissions Compared to Regional Thresholds (lbs/day)

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Total onsite and mobile sources	4.10	29.5	34.6	0.1	2.1	1.3
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: Emissions represent the maximum of winter or summer and are rounded to the nearest whole number. In CalEEMod, EMWD's standard construction practices , including measures to control fugitive dust, must be input as "mitigation measures." Therefore, these results reflect the mitigated scenario in the output tables in Appendix A.

Table 3-5: Proposed Project Alignment 2 Maximum Daily Construction Emissions Compared to Regional Thresholds (lbs/day)

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Total onsite and mobile sources	6.52	50.7	57.2	0.2	3.4	2.1
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: Emissions represent the maximum of winter or summer and are rounded to the nearest whole number. In CalEEMod, EMWD's standard construction practices, including measures to control fugitive dust, must be input as "mitigation measures." Therefore, these results reflect the mitigated scenario in the output tables in Appendix A.

Operation Emissions

The Alignment 1 and 2 pipelines and manholes would not be associated with long-term energy usage or additional EMWD O&M activities. Inspection and maintenance of the pipelines and manholes would be incorporated into EMWD's existing O&M activities and would not be expected to require additional vehicle trips. Thus, no new emissions would be associated with operation of the proposed Project.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c) Expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are typically defined as schools (preschool–12th grade), hospitals, resident care facilities, senior housing facilities, day care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality (CARB 2018).

Alignment 1 Highway 74 and Johnson Avenue/South G Street

Sensitive receptors within one-half mile of Alignment 1 consist of single-family and multi-family residences, as well as public and private schools (**Table 3-6**).

Table 3-6: Schools Within One-Half Mile of Alignment 1

School	Address
The Academy	515 East Seventh St., Perris, CA 92570
California Military Institute	227-C North D St., Perris, CA 92570
Choice 2000 On-Line	11 South D St., Perris, CA 92570
Perris Elementary	500 A St., Perris, CA 92571
Palms Elementary	255 East Jarvis St., Perris, CA 92571
Park Avenue Elementary	445 South Park Ave., Perris, CA 92570
Redeemer Lutheran School	555 N. Perris Blvd., Perris, CA 92570
St James Catholic School	250 West 3rd St., Perris, CA 92570

Source: City of Perris n.d

LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor. The CAAQS and NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. If a project is consistent with the latest adopted clean air plan and does not exceed the SCAQMD significance thresholds, it can be assumed that it will not have a substantial adverse impact on public health. Therefore, projects that conform to the LSTs and SCAQMD regional thresholds are assumed to have a less than significant impact on nearby sensitive receptors.

Additionally, while the use of LSTs is voluntary, the proposed Project emissions were compared to LSTs for the Project area and are provided in **Table 3-7**. LSTs are only applicable to emissions within a fixed, stationary location, such as construction sites, and vary based on project site size. **Table 3-7** provides LSTs that are applicable to the onsite construction activities for Alignment 1, including pipeline trenching, installation of pipeline and manholes, and roadway resurfacing. As explained under the discussion above, SCAQMD provides LST lookup tables for sites that measure up to one, two, or five acres; LSTs for construction sites smaller than one acre should use the one-acre threshold.

Table 3-7: Proposed Project Alignment 1 Maximum Daily Construction Emissions Compared to Localized Significance Thresholds (lbs/day)

Emissions Source	NO_x	CO	$PM_{2.5}$	PM_{10}
Total onsite sources	29.5	34.6	1.3	2.1
Localized Significance Threshold (one-acre, 25 meters)	*118*	*602*	*4*	*3*
Threshold exceeded?	**No**	**No**	**No**	**No**

As shown in **Table 3-7**, construction of the Alignment 1 would not have a significant air pollution impact on sensitive receptors. Furthermore, as discussed under "b" above, the construction and operational emissions of Alignment 1 would not exceed SCAQMD regional thresholds or LSTs. Therefore, sensitive receptors would not be subjected to substantial pollutant concentrations and impacts would be less than significant.

Alignment 2 West Ellis Avenue

Sensitive receptors within one mile of the Alignment 2 consist of single-family and multi-family residences, as well as public and private schools (**Table 3-8**).

Table 3-8: Schools Within One-Half Mile of Alignment 2

School	Address
Perris Lake High School	418 West Ellis Ave., Perris, CA 92570
Perris Elementary	500 A St., Perris, CA 92571
Pinacate Middle	1990 South A St., Perris, CA 92570

Source: City of Perris n.d

Alignment 2 emissions were compared to LSTs for the Project area and are provided in **Table 3-9**. **Table 3-9** provides LSTs that are applicable to the onsite construction activities for Alignment 2, including pipeline trenching, installation of pipeline and manholes, and roadway resurfacing.

Table 3-9: Proposed Project Alignment 2 Maximum Daily Construction Emissions Compared to Localized Significance Thresholds (pounds/day)

Emissions Source	NO_x	CO	$PM_{2.5}$	PM_{10}
Total onsite sources	50.7	57.2	3.4	2.1
Localized Significance Threshold (one-acre, 25 meters)	*118*	*602*	*4*	*3*
Threshold exceeded?	**No**	**No**	**No**	**No**

As shown in **Table 3-9**, construction of the Alignment 2 would not have a significant air pollution impact on sensitive receptors. Furthermore, as discussed under "b" above, the A construction and operational emissions of Alignment 2 would not exceed SCAQMD regional thresholds or LSTs. Therefore, sensitive receptors would not be subjected to substantial pollutant concentrations and impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Result in other emissions (such as those leading to odors or adversely affecting a substantial number of people)?

The proposed Project would involve emissions of sulfur compounds from use of oil and diesel fuel during construction, which would potentially result in unpleasant odors. Construction would be temporary and odorous emissions from construction equipment tend to dissipate quickly within short distances from construction sites. Construction would progress at a rate of between 30 and 100 LF per day and would move along the alignment instead of staying in one place for the duration of construction, further limiting the time a stationary receptor may experience odors. Once the proposed Project is operational, the pipelines would not be associated with odors. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.4 Biological Resources

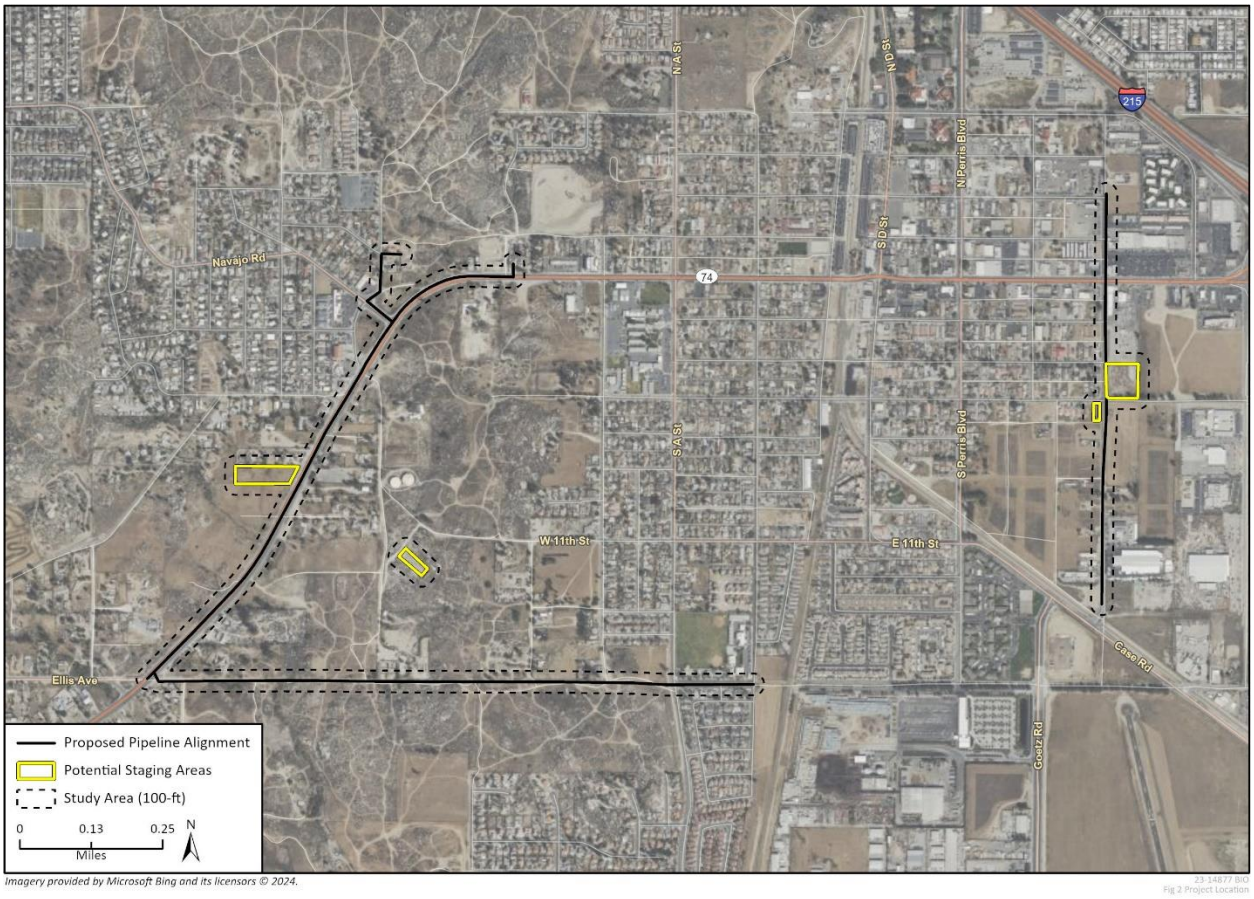
	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or	[ ]	[X]	[ ]	[ ]

	regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	[ ]	[X]	[ ]	[ ]
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	[ ]	[X]	[ ]	[ ]
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	[ ]	[ ]	[X]	[ ]
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	[ ]	[ ]	[ ]	[X]
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	[ ]	[ ]	[ ]	[X]

Discussion

A *Biological Resources Assessment* (BRA) was prepared for the proposed Project by Rincon Consultants (Rincon Consultants 2024a). Biological conditions within the Project's Biological Study Area were evaluated by confirming applicable biological regulations, policies, and standards; reviewing publicly available literature and databases; and conducting a reconnaissance-level biological survey. The Biological Study Area was defined as the approximately 15,300 linear feet proposed construction work area and the potential staging areas, including a 100-foot survey buffer around each component (see **Figure 3-3**). The complete *Biological Resources Assessment* is provided in **Appendix B** and is relied upon for analysis in this MND.

Figure 3-3: Biological Study Area



Regulated or sensitive resources studied and analyzed included special status plant and wildlife species, nesting birds and raptors, wildlife movement corridors and habitat linkages, sensitive plant communities, jurisdictional waters and wetlands, and locally protected resources (i.e., trees). Potential impacts to biological resources were analyzed based on the following statutes:

- Federal Endangered Species Act (FESA)
- Federal Clean Water Act (CWA)

- California Endangered Species Act (CESA)
- California Environmental Quality Act (CEQA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- Western Riverside Multiple Species Habitat Conservation Plan (WR-MSHCP)

The literature review included an evaluation of current and historical aerial photographs of the site, regional and site-specific topographic maps, and climatic data. Field reconnaissance surveys were conducted on December 8, 2023 and February 16, 2024 to document existing conditions of the Biological Study Area. All accessible portions of the Biological Study Area were surveyed on foot. Inaccessible areas included a homeless encampment on W Ellis Avenue, the fenced and inaccessible staging area on the undeveloped land between Highway 74 and W Ellis Avenue, the fenced and inaccessible staging area on the undeveloped land on the northeast corner of South G Street and East 7th Street, and properties in the Biological Study Area with private homes or businesses. The inaccessibility of these areas did not affect the biologists' ability to complete a thorough survey. The biologists mapped vegetation communities and noted all observations of wildlife and plant species. The survey was conducted outside of the typical bird nesting season (February 1 through August 31), with the exception of the southernmost 600 linear feet of Alignment 1 Segment 2 and the staging area on the northwest corner of South G Street and East 7th street, which were surveyed in early February.

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

The literature and database review identified 96 special status plant and wildlife species in the vicinity of the Study Area. Of these, 10 species (four plant and six wildlife species) are considered to have a moderate or high potential to occur in the Biological Study Area and one special status wildlife species was present in the Biological Study Area during the field reconnaissance survey. Special-status species determined to have low or no potential to occur within the Biological Study Area are included in **Appendix B** but are not discussed further in this MND. Each of these 10 special-status species, its listing or rarity status, and its potential to occur is included in **Table 3-10**.

Table 3-10: Special-Status Species with a Moderate or High Potential to Occur within the Biological Study Area

Scientific Name	Common Name	Status[1]	Potential to Occur
Plants			
Abronia villosa var. *aurita*	chaparral sand-verbena	CPRP 1B.1	Moderate
Centromadia pungens ssp. *laevis*	smooth tarplant	CPRP 1B.1	Moderate
Chorizanthe parryi var. *parryi*	Parry's spineflower	CPRP 1B.1	Moderate
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	CPRP 1B.2	Moderate
Invertebrates			
Bombus crotchii	Crotch bumble bee	SCE	High
Birds			
Accipiter cooperii	Cooper's hawk	WL	Moderate foraging Moderate nesting
Athene cunicularia	burrowing owl	SSC	High
Polioptila californica californica	coastal California gnatcatcher	FT/SSC	Present
Mammals			
Dipodomys stephensi	Stephen's kangaroo rat	FT/ST	High
Eumops perotis californicus	western mastiff bat	SSC	Moderate foraging Moderate roosting

FE = Federally Endangered
FT = Federally Threatened
FP = State Fully Protected
SCE = State Candidate Endangered
SE = State Endangered
ST = State Threatened
SSC = CDFW Species of Special Concern
WL = CDFW Watch List
1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B= Rare, Threatened, or Endangered in California, but more common elsewhere

Special Status Plant Species

Four special status plant species are present or have a high or moderate potential to occur within the Biological Study Area. **Table 3-10** includes these species, their listing or rarity status, and their potential to occur. Direct impacts to special status plants are unlikely as the construction impacts would be limited to existing paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street, and the staging areas would be located within vacant, heavily disturbed lots lacking native vegetation. However, indirect impacts could occur if special status plant species are present within the Biological Study Area through habitat modification resulting from the introduction of invasive plants during Project-related activities and/or incidental encroachment of equipment from adjacent construction areas. Potential impacts to special status plant species would be avoided and/or reduced through implementation of **Mitigation Measures BIO-1**, which requires a biological pre-construction survey and monitoring, **Mitigation Measure BIO-2**, which

requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Special Status Wildlife Species

Seven special status wildlife species are present or have a high or moderate potential to occur within the Biological Study Area. **Table 3-10** includes these species, their listing status, and their potential to occur. Direct impacts to these species are unlikely as the Project impacts would be limited to existing paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street, and the staging areas would be located within vacant, heavily disturbed lots lacking native vegetation and suitable habitat. Although indirect impacts to special status wildlife species could occur due to noise and dust generation during heavy equipment operation and through habitat loss due to the introduction of invasive plants, given the Project footprint and limited impacts to potentially suitable habitat, the Project is unlikely to result in population-level impacts to these species. Nonetheless, potential impacts to special status wildlife species would be avoided and/or reduced through implementation of **Mitigation Measure BIO-2**, which requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Direct impacts to the Crotch's bumble bee, a CDFW State Candidate Endangered species, are not anticipated since no host plants or burrows that could support nest sites were observed in the road or staging areas during the reconnaissance survey. Nonetheless, indirect impacts to this species may occur if Project-related disturbances result in bees abandoning nest burrows in adjacent areas. Potential impacts to Crotch's bumble bee would be avoided and/or reduced through implementation of **Mitigation Measure BIO-1**, which requires a biological pre-construction survey and monitoring, **Mitigation Measure BIO-2**, which requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Direct impacts to maternal or day roosts of the Western mastiff bat, a CDFW Species of Special Concern, are not anticipated because this species is unlikely to roost within the Biological Study Area and any potential roost sites in adjacent habitats are subject to regular anthropogenic and vehicle disturbance under the current conditions. Additionally, impacts are not anticipated to foraging individuals because this species is nocturnal and construction would take place during the day. Nonetheless, indirect impacts would be avoided and/or reduced through implementation of **Mitigation Measure BIO-2**, which requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Direct impacts to Coastal California gnatcatchers, a Federally Threatened and CDFW Species of Special Concern, are not anticipated because the Project's impacts would be limited to existing

paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street, and suitable nesting habitat is located adjacent to the roads. Nonetheless, indirect impacts to this species may occur if an active nest is present within the Project vicinity and is abandoned due to Project-related disturbance. Potential impacts to Coastal California gnatcatchers would be avoided and/or reduced through implementation of **Mitigation Measure BIO-5**, which requires implementation of measures to avoid and/or minimize direct take of California gnatcatchers, **Mitigation Measure BIO-1**, which requires a biological pre-construction survey and monitoring, **Mitigation Measure BIO-2**, which requires worker environmental awareness training, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Direct impacts to burrowing owl, a CDFW Species of Special Concern, is not anticipated as the Project impacts would be limited to existing paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street, and suitable nesting habitat is located adjacent to the roads. Nonetheless, indirect impacts to this species may occur if an active burrow is present within the Project vicinity and is abandoned due to Project-related disturbance. Potential impacts to Burrowing owl would be avoided and/or reduced through implementation of **Mitigation Measure BIO-6**, which requires implementation of measures during project construction to avoid and/or minimize direct take of burrowing owl, **Mitigation Measure BIO-1**, which requires a biological pre-construction survey and monitoring, **Mitigation Measure BIO-2**, which requires worker environmental awareness training, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Direct impacts to Stephen's kangaroo rat, a Federally and State Threatened species, are not anticipated as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street and no burrows were observed in the road or staging areas during the reconnaissance survey. Nonetheless, indirect impacts could occur if Project related disturbances result in Stephen's kangaroo rats abandoning active burrows. Potential impacts to Stephen's kangaroo rat would be avoided and/or reduced through implementation of **Mitigation Measure BIO-1**, which requires a biological pre-construction survey and monitoring, **Mitigation Measure BIO-2**, which requires worker environmental awareness training, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

The Biological Study Area contains habitat that can support nesting birds, including raptors, protected under CFGC Section 3503 and the MBTA (16 United States Code Sections 703–712). While suitable nesting bird habitat within the Biological Study Area includes native and ornamental trees, snags, coastal scrub, boulders, burrowing mammal complexes for burrowing owl, and buildings, direct impacts to nesting birds are unlikely given the existing level of development and disturbance within the Project's construction and staging areas. Nonetheless, indirect impacts could occur if active nests within the 100-foot buffer of the Biological Study Area are abandoned due to Project-related disturbance. Potential impacts to nesting birds would be avoided and/or reduced through implementation of **Mitigation Measure BIO-7**, which requires pre-construction nesting bird surveys, **Mitigation Measure BIO-2**, which requires worker

environmental awareness training, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Mitigation Measures

BIO-1 Biological Pre-Construction Survey and Monitoring

A qualified biologist shall conduct a pre-construction survey of the project area and a 50-foot buffer zone where accessible (such as open areas adjacent to the construction impact area) for special-status plant species and potential burrows that could support Stephen's kangaroo rat or Crotch bumble bee nest(s) within 14 days prior to the start of ground disturbance. If found, these areas shall be avoided and clearly marked with non-disturbance buffer zone. A biological monitor shall be on site if special-status plant species or potential Stephen's kangaroo rat burrows or Crotch bumble bee nest(s), are determined to be present within 50 feet of the work areas. The biologist shall be on site during all vegetation removal or grading activities within 50 feet of these regulated biological resources. The biologist will oversee and provide recommendations to facilitate avoidance of these regulated biological resources and will have the authority to temporarily halt work to protect them.

BIO-2 Worker Environmental Awareness Training

Prior to the initiation of the Project, an approved biologist shall present a Worker Environmental Awareness Training (WEAT) to all on-site personnel. The WEAT will educate the personnel on the identification of special status species and regulated biological resources that are present or have the potential to occur within the Project Area, will cover the applicable regulatory policies and provisions regarding their protection, and will provide an overview of the Project's mitigation measures. Furthermore, on-site personnel will be briefed on the reporting process if an inadvertent injury or mortality should occur to a special status species during construction.

BIO-3 Invasive Plant Species Control

Invasive plant species, for the purpose of this document, shall include all species with a California Invasive Plant Council (Cal-IPC) rating of limited, moderate, or high. Construction personnel and equipment shall be free of invasive plant seeds, propagules, and any material which may contain them (e.g., soil) prior to entering the Project Area. All potentially contaminated equipment will be carefully cleaned prior to the initiation of Project activities. Staging areas and temporary work areas shall avoid weed infestations and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., gravel, straw, and fill) will be used for the Project.

BIO-4 General Best Management Practices. General requirements that shall be followed by construction personnel are listed below.

- The contractor shall clearly delineate the Project limits, staging areas, and access points and prohibit any construction-related traffic outside of these boundaries.
- All food-related trash items, such as wrappers, cans, bottles, and food scraps generated during proposed Project construction, shall be disposed of in closed containers only and removed from the workspace.
- Best management practices (BMPs) shall be implemented throughout the Project and shall include, but not be limited to, erosion and sediment controls to minimize erosion during construction. BMPs shall be implemented for the duration of the Project until disturbed areas have been stabilized by long-term erosion control measures.
- Materials shall be stored at least 50 feet from streams and wetlands, as feasible, or equipment will utilize secondary containment.
- Construction materials and spoils shall be protected from stormwater runoff using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
- Vegetation trimming shall be limited to the maximum extent feasible.
- Any substances that could be hazardous to wildlife resulting from Project-related activities shall be prevented from contaminating the soil and/or entering waterways.
- Construction shall only take place during daylight hours.

BIO-5 California Gnatcatcher Take Avoidance and Minimization. Measures required during the project construction to avoid and/or minimize direct take of California gnatcatcher include:

- All brushing, grading, or excavation that occurs adjacent to California gnatcatcher occupied habitat (defined as within 500 feet of any gnatcatcher sightings [USFWS 2007]) shall be conducted from September 1 through February 14, which is outside the coastal California gnatcatcher breeding season.
- When conducting any other construction activities during the coastal California gnatcatcher breeding season of February 15 through August 30, adjacent to habitat in which coastal California gnatcatcher are known to occur or have potential to occur (within 500 feet of suitable scrub habitat), the following avoidance measures shall apply:
    - A USFWS-permitted biologist shall survey for coastal California gnatcatcher within 10 calendar days prior to initiating activities in an area. If coastal California gnatcatcher are present, but not nesting, a USFWS permittee

biologist shall survey for nesting coastal California gnatcatcher approximately once per week within 500 feet of the construction area, where accessible, for the duration of the activity in that area during the breeding season. The standard California gnatcatcher survey protocol shall be followed for all surveys.

- If an active nest is located, a 500-foot no-construction buffer shall be established around each nest site; however, there may be a reduction of this buffer zone depending on site-specific conditions such as topography, line-of-sight to the nest, or the existing ambient level of activity at the discretion of the qualified biologist. No construction shall take place within this buffer until the nest is no longer active.

BIO-6 Burrowing Owl Take Avoidance and Minimization. Measures that shall be implemented during the project construction to avoid and/or minimize direct take of burrowing owl include:

- Burrowing owl pre-construction surveys shall be conducted by a qualified wildlife biologist within 14 days of the start of ground disturbing construction. The survey area shall include the project site and a 500-foot buffer around the project boundary, as accessible in open areas adjacent to the project site, or via visual survey where inaccessible.

- If active burrowing owl burrows are detected in the project boundary or the 500-foot survey buffer, they can be avoided through implementation of a "no disturbance" buffer designated by a barricade. Use of a haybale or other visual screen can help shelter the burrow from construction activities and potentially reduce buffer zones. Such screening would be placed at the edge of, but within, the project area.

- The need for passive relocation of burrowing owls, which can only be carried out during the non-breeding season, is not anticipated to be necessary as the suitable burrowing owl habitat is located outside the project impact area. Therefore, implementation of avoidance and non-disturbance buffers/barricades as well as periodic biological monitoring (once per week) will be the primary avoidance measures if burrowing owls are detected.

- Any materials on site during construction shall be made unsuitable for burrowing owl occupation by various methods, including capping open pipes or other materials that could attract burrowing owls.

BIO-7 Pre-construction Nesting Bird Surveys.

To avoid disturbance of nesting birds, including special status species and birds protected by the MBTA and CFGC Section 3503, Project activities shall occur outside of the breeding season for nesting birds (generally February 1 through August 31), if feasible.

If construction occurs during the breeding season, then a pre-construction nesting bird survey shall be conducted no more than seven days prior to the initiation of Project activities. The nesting bird survey shall be conducted on foot inside the project area and include a 500-foot buffer for raptors and special status species and a 100-foot buffer for all other species. The survey shall be conducted by a biologist familiar with avian species known to inhabit Southern California. If nests are found, an avoidance buffer of up to 500 feet for raptors and special status species and up to 100 feet for non-raptors (dependent upon the species, the proposed work activity, and existing disturbances associated with land use outside of the workspace) shall be determined and demarcated by the biologist with construction fencing, flagging, or other means to mark the boundary. Intrusion into the buffer may be conducted if it is determined by the biologist that there is no risk of harm to the nest and work is monitored by the biologist. If the risk of nest abandonment is observed, all construction activities within the buffer shall cease until the nest is no longer active as determined by the biologist.

Significance Determination

Less than significant impact with mitigation incorporated.

b) Have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plan, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Southern willow scrub and black willow thicket are present in the Biological Study Area and are considered sensitive natural communities. Direct impacts to these communities are not anticipated as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, West Ellis Avenue, and South G Street. Indirect impacts could result during and following the Project through the introduction of invasive plant species or from inadvertent contact with heavy machinery. Potential impacts would be avoided or minimized through the implementation of **Mitigation Measure BIO-2**, which requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices.

Mitigation Measures

See **Mitigation Measures BIO-2, BIO-3,** and **BIO-4** listed above.

Significance Determination

Less than significant impact with mitigation incorporated.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impacts to jurisdictional waters are not anticipated for this Project. None of the potentially jurisdictional features in the Biological Study Area meet the United States Army Corps of Engineers definition of a relatively permanent water (i.e., they do not contain flow for at least 3 months out of the year) and they do not have direct surface connection to a Navigable Water or a Traditional Navigable Water, therefore these features are not likely jurisdictional waters of the U.S. While these features and the culverts within the Biological Study Area potentially fall under the jurisdiction of the Santa Ana RWQCB and CDFW as waters of the state, the work plan states that the construction crews will be excavating underneath the potentially jurisdictional drainages and culverts along Highway 74 and West Ellis Avenue, thus avoiding impacts to these features. Furthermore, removal of riparian trees or vegetation is not anticipated. As a result, direct impacts would be less than significant. Potential indirect impacts would be avoided or minimized through the implementation of **Mitigation Measure BIO-2**, which requires worker environmental awareness training, **Mitigation Measure BIO-3**, which requires invasive plant species control, and **Mitigation Measure BIO-4**, which requires implementation of general best management practices, and impacts would be less than significant.

Mitigation Measures

See **Mitigation Measures BIO-2, BIO-3,** and **BIO-4** listed above.

Significance Determination

Less than significant impact with mitigation incorporated.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Project activities would be limited to existing roads in the developed/disturbed portions of the Biological Study Area, which offer little to no value to wildlife movement. Additionally, the Biological Study Area likely does not support substantial wildlife movement. Therefore, impacts to wildlife movement would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There are no protected trees within the Biological Survey Area and tree removal would not be conducted as a part of the proposed Project. Therefore, there would be no impact to protected trees.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Biological Study Area is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan, and the proposed Project falls within the WR-MSHCP burrowing owl species survey area and the Stephen's Kangaroo Rat Mitigation Fee area. However, EMWD is not a signatory to the WR-MSHCP, and therefore its requirements do not apply to this Project. Furthermore, the proposed Project is confined to disturbed and developed lands; thus, no loss of covered species habitat will occur. Because EMWD is not a signatory to the WR-MSHCP, there would be no impact, and a Consistency Analysis is not required.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.5 Cultural Resources

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	[ ]	[ ]	[ ]	[X]
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	[ ]	[X]	[ ]	[ ]
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	[ ]	[ ]	[X]	[ ]

Discussion

A *Cultural Resources Technical Report* was prepared for the proposed Project by Rincon Consultants (Rincon Consultants 2024b). The report includes a cultural resources records search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC), a Sacred Lands File (SLF) search conducted by the Native American Heritage Commission (NAHC), a geoarchaeological review, and cultural resources field surveys. As part of the report, the National Register of Historic Places, the California Register of Historical Resources, the California Historical Landmarks list, the Archaeological Determination of Eligibility list, and the Built Environment Resources Directory were also reviewed. The complete *Cultural Resources Technical Report* is provided in **Appendix C**, and is relied upon for analysis in this MND.

A discussion of the proposed Project's potential impacts to tribal cultural resources, including tribal outreach and consultation, is provided in *Section 3.18 Tribal Cultural Resources*.

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

On November 3, 2023, a CHRIS records search was conducted by the EIC located at the University of California, Riverside. The records search included a review of all previously cultural resources studies and previously recorded cultural resources within the Project site and a 0.5-mile radius.

Results from the CHRIS records search identified three historic period built environment resources immediately adjacent to the Project site. These resources include a wood-framed ranch office constructed in the 1920s (P-33-012206), an abandoned paved segment of Ellis Avenue (P-33-020451) and an existing un-paved segment of Dockery Lane (P-33-020467). Pedestrian field surveys conducted on December 18, 2023 and February 21, 2024 confirmed historical resource P-33-012206 was no longer present and appears to have been destroyed sometime between 2004 and 2005 based on aerial imagery. Both historical resource P-33-020451 and historical resource P-33-020467 were found to match previous descriptions. Because P-33-012206 is no longer present, it is not considered further in this discussion.

Historical resources P-33-020451 and P-33-020467 have not been previously evaluated for inclusion in the California Register of Historical Resources and, therefore, have the potential to qualify as historical resources pursuant to CEQA. However, the proposed Project design does not propose alterations to either resource, and excavations associated with the pipeline installation would not intrude into the limits of the resources. As such, no impacts to these two resources are anticipated. No additional built environment resources were identified within the *Cultural Resources Technical Report*. Operation of the proposed Project would not involve ground disturbing activities and would therefore have no impact on historical resources. Therefore, the proposed Project would have no impact on a historical resource.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?

The CHRIS records search identified one previously recorded prehistoric archaeological site immediately adjacent to the project site. The resource was originally recorded in 1951 as bedrock milling features, but during site inspections conducted in the 1970s and 1990s, the bedrock milling features could not be detected and the site was presumed to be destroyed by road construction. As part of the field surveys, the mapped location of the resource was inspected but no evidence of bedrock milling features was detected. Therefore, the site is presumed to have been destroyed and is no longer present.

The geoarchaeological review suggests the likelihood of encountering intact subsurface archaeological deposits within the Project site is low. This is due to the highly disturbed nature of the Project site which is largely comprised of paved road rights-of-way that have been subject to a high degree of disturbance associated with their construction, realignment, maintenance, and installation of underground utilities. The one exception to this is the West Ellis Avenue ROW, which is an unpaved road that has not been subject to the same degree of disturbance as the paved

roads. Despite this, West Ellis Avenue lies within the plutonic rock geologic unit, which is not conducive to the natural burial and preservation of subsurface archaeological deposits.

Although there is low potential for encountering subsurface archaeological deposits, the proposed Project would require ground disturbing activities during construction which have the potential to encounter previously unknown archaeological resources. Potential impacts would be reduced with implementation of **Mitigation Measures CUL-1** and **CUL-2**. **Mitigation Measure CUL-1** would require additional surveys for staging areas that were not accessible during the field surveys (APN 313-180-013 and APN 310-090-014) to identify and document potentially qualifying historical resources that are currently unknown. **Mitigation Measure CUL-2** would ensure any artifacts discovered are properly inventoried and analyzed. Operation of the proposed Project would not involve ground disturbing activities and would therefore have no impact on unique archaeological resources. With implementation of **Mitigation Measure CUL-1** and **CUL-2**, potential impacts would be less than significant.

Mitigation Measures

CUL-1 Staging Area Surveys.

Prior to the start of project-related ground disturbance, cultural resources survey shall be conducted under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) for all unsurveyed portions of the project site including Staging Areas within APN 313-180-013 and APN 310-090-014. The intent of the survey is to identify and document archaeological resources potentially qualifying as historical resources under CEQA. The survey results shall be documented in a report addendum (or letter report) and Department of Parks and Recreation (DPR) 523 forms for resources encountered during the survey, shall be appended to the report. Should archaeological resources be identified during the survey, they shall be treated in accordance with the steps outlined in the anticipated discovery of cultural resources mitigation included below.

CUL-2 Evaluation of Discovered Artifacts.

In the event of discovery of significant archaeological resources at the development site, avoidance and preservation in place shall be the preferred manner of mitigation. If avoidance is determined to be infeasible, data recovery or other treatment shall be implemented by the project archaeologist, in coordination with the tribal monitor. Artifacts recovered shall be inventoried and analyzed by the project archaeologist and tribal monitor(s). A data recovery report shall be prepared, detailing the methods and results of the monitoring program and data recovery, as well as the disposition of cultural material encountered. If no cultural material is encountered, a brief letter report will be sufficient to document monitoring activities.

Significance Determination

Less than significant impact with mitigation incorporated.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

No human remains are known to be present within the proposed Project sites. However, the proposed Project would require ground disturbing activities during construction which have the potential to encounter previously unknown human remains. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance. Operation of the proposed Project would not involve ground disturbing activities and would therefore have no impact. With adherence to existing regulations, impacts from the proposed Project would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.6 Energy

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources,	[ ]	[ ]	[X]	[ ]

during project construction or operation?				
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	[ ]	[ ]	[X]	[ ]

Discussion

Electrical service for the proposed Project area is provided by Southern California Edison (SCE). SCE is one of the largest providers of electricity in southern California and serves 15 million people, 180 incorporated cities, and 15 counties (SCE 2020). According to SCE's power content label for 2022, its electricity comes from approximately 33.2 percent renewables, 3.4 percent large hydroelectric, 24.7 percent natural gas, 8.3 percent nuclear, and 30.3 percent from other and unspecified power sources through transactions (SCE 2022).

Local and state agencies have developed plans and policies that address prioritizing renewable energy, energy efficiency and energy reduction measures and meet state targets for reduction in Greenhouse Gas (GHG) emissions. These include the City of Perris General Plan Conservation Element (City of Perris 2008) and Climate Action Plan (CAP) (City of Perris 2016.c), the County of Riverside 2015 CAP and 2019 CAP Update (County of Riverside 2019.a); and the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan (WRCOG 2022) which are discussed further in *Section 3.8, Greenhouse Gas Emissions*. The County of Riverside CAP was adopted in 2015, with an update adopted in 2019, to establish and update the County's GHG reduction targets and reduction strategies.

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction of the proposed Project would involve construction-related fossil fuel consumption from operation of diesel-powered construction equipment, on-site generator, and fossil fuel consumption from material hauling, delivery, and worker vehicle trips. The anticipated construction fleet for the proposed Project includes typical construction equipment such as a backhoe/loader, excavator, utility trucks, water truck, compressor, pump, pick-up trucks, dump trucks, concrete saw, pavement breaker, sweeper, paver, and generator. **Table 2-2** in *Section 2.4.3* summarizes the anticipated construction fleet for the proposed Project. The complete CalEEMod Air Quality Data Sheets are provided in **Appendix A**.

The proposed Project would implement typical construction practices such as site clearing and grading, excavating and installation, and site restoration. As shown in **Table 2-2**, the Project would not require unusual or excessive construction equipment or practices that would result in wasteful, inefficient, or unnecessary consumption of energy compared to projects of similar type and size. In addition, the construction fleet contracted for the proposed Project would be required to comply with CARB In-Use Off-Road Diesel-Fueled Fleets Regulations, which would limit vehicle

idling time to five minutes, restrict adding vehicles to construction fleets with older-tier engines, and establish a schedule for retiring older, less fuel-efficient engines from the construction fleet.

Additional vehicle trips are required for hauling, deliveries, and worker vehicle trips. However, for the purposes of this analysis, it is conservatively assumed that 50 percent of excavated trench material would be hauled off site and imported fill material would be used as backfill. Haul trucks carry approximately 16 cubic yards per load requiring a total of 1,400 round trips for Alignment 1 and 760 round trips haul trips for Alignment 2, as estimated in *2.4.3 Pipeline Construction*.

The pipeline and manholes would not be associated with long-term energy usage or additional EMWD O&M activities. Inspection of the pipeline and manholes would be incorporated into EMWD's existing O&M activities and would involve portable monitoring equipment. Furthermore, O&M activities would be conducted using EMWD's vehicle fleet, which is continually being improved with regard to efficiency and fuel type, consistent with the County of Riverside 2019 CAP Update and City of Perris 2016 CAP. As such, construction and operation of the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy and impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The proposed Project would not interfere with state or local plans related to renewable energy or energy efficiency. The proposed Project would not result in a net increase beyond existing levels in energy use or vehicle trips during operation. The City of Perris General Plan contains goals and policies to encourage energy efficiency; and the City of Perris CAP focuses on reducing energy and GHG emissions. The CAP includes suggested measures to reduce emissions and GHGs through energy use reduction, water use reduction, recycling and diversion, alternative transportation, and renewable energy utilization. Additionally, the WRCOG Subregional CAP, identifies several goals, measures, and strategies to reduce GHG emissions through energy, transportation and land use, solid waste, and water.

Operation of the proposed Project would be incorporated into EMWD's existing operations and maintenance activities, and would not result in an increase in new vehicle trips. The proposed Project would not involve land use changes that would indirectly result in an increase in vehicle trips or vehicle miles travelled. As explained under question "a" above, the construction and operation proposed Project would not involve wasteful or inefficient energy consumption. Therefore, the proposed Project would not conflict with the City of Perris General Plan or CAP, or the WRCOG Subregional CAP, which were developed to keep GHG emissions in line with State

emission reduction targets. Therefore, the proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant, and no mitigation would be required.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.7 Geology and Soils

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	[ ]	[ ]	[X]	[ ]
ii) Strong seismic ground shaking?	[ ]	[ ]	[X]	[ ]
iii) Seismic-related ground failure, including liquefaction?	[ ]	[ ]	[X]	[ ]

	iv) Landslides?	[ ]	[ ]	[X]	[ ]
b)	Result in substantial soil erosion or the loss of top soil?	[ ]	[ ]	[X]	[ ]
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	[ ]	[ ]	[X]	[ ]
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	[ ]	[ ]	[X]	[ ]
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	[ ]	[ ]	[ ]	[X]
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	[ ]	[X]	[ ]	[ ]

Discussion

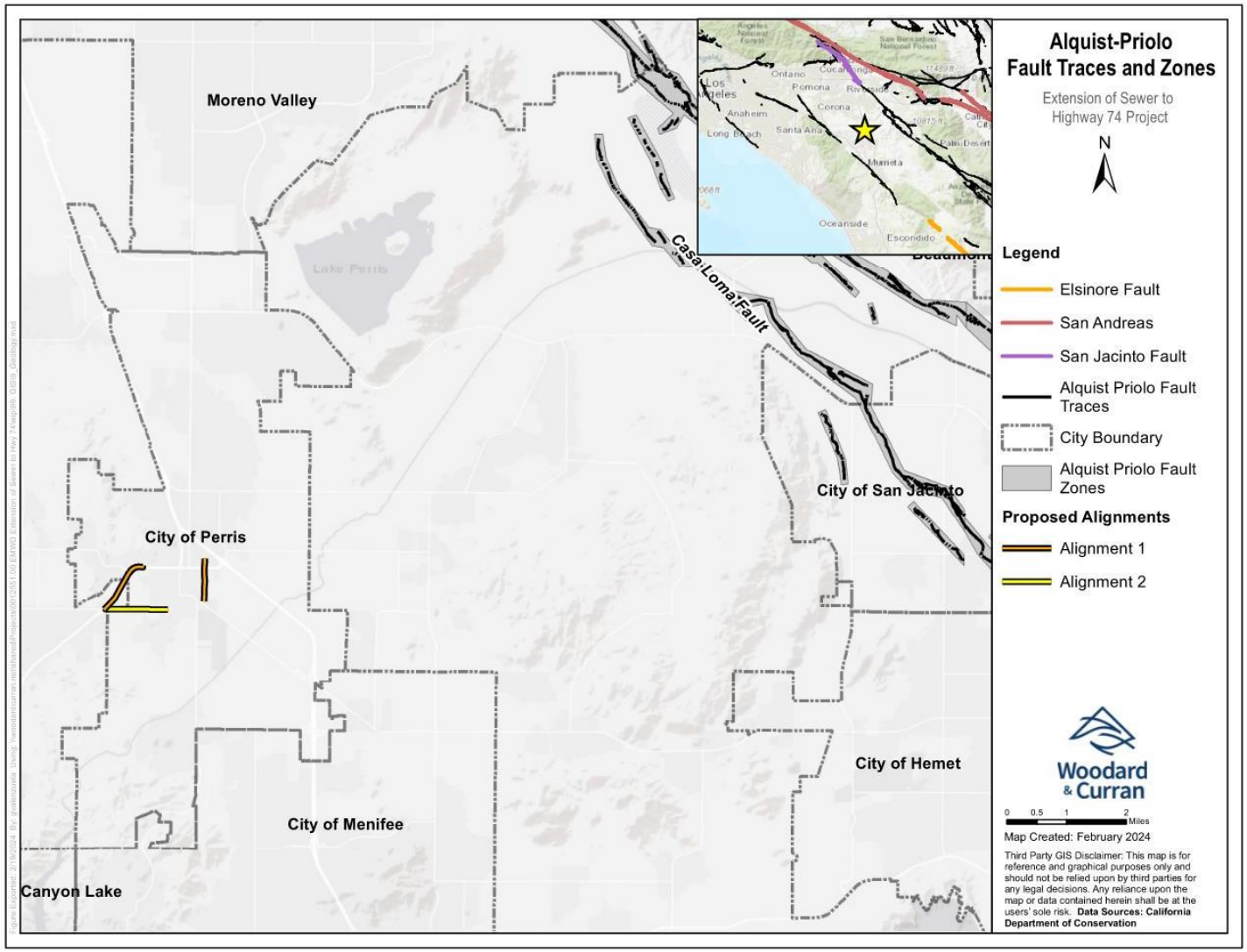
The City of Perris is located in a flat valley surrounded by foothills and mountains. The proposed Project would be located on the valley floor, which is relatively flat with minimal slope. As with most regions in Southern California, the proposed Project area is located in areas of several known active earthquake faults. As shown in **Figure 3-4**, the nearest fault is the Casa Loma fault, located approximately 10 miles to the east of the City (CGS 2015). No fault traces or zones are located within the City of Perris and no Alquist-Priolo Earthquake Fault Zones are identified in the Project area by the State Division of Mines and Geology (City of Perris 2021).

Slope instability is mainly found in the most southern portions of the City of Perris as well as a small portion near the mid-western City boundary and a small area in the northeastern region (City of Perris 2021). The closest of these areas to the Project is the mid-western City boundary portion. Most of the City of Perris is comprised of alluvium soils prone to settlement, and the central and northeastern parts of the City are susceptible to liquefaction (City of Perris 2021). A portion of the Project area is located in an area of moderate liquefaction susceptibility, including

Alignment 1 – Segment 2 (Johnson Avenue/South G Street) and the easternmost portion of Alignment 2, along West Ellis Avenue between A Street and B Street.

Project specific geotechnical reports were completed by Converse Consultants 2024 for the North Perris Sewer Pipeline (Alignment 1) and Inland Foundation, Inc. for the West Ellis Sewer Project (Alignment 2). The complete Converse Consultants Geotechnical Investigation Report is provided in **Appendix D**. The complete IFE Geotechnical Investigation Report is provided in **Appendix E**.

Figure 3-4: Alquist-Priolo Fault Traces and Zones



a.i) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 41.

The potential for ground rupture is most likely to occur along the traces of active faults. Although the proposed Project area is within a seismically active region of southern California, the Project area is not within a State of California Earthquake Fault Zone (also known as Alquist-Priolo Special Studies Zone Fault Zone). The closest major fault to the proposed Project is the Casa Loma Fault Zone, located approximately 10 miles east from the Project area. There are no active faults known to cross Alignment 1 or Alignment 2, and the area has a relatively slight localized seismic hazard potential compared to other areas in Southern California (County of Riverside 2021.b.). The City of Perris' General Plan, Safety Element (City of Perris 2021) identifies three faults near the Project area, though these are located between 2 and 4 miles to the west and southwest and are not thought to be active fault lines (**Figure 3-5**). Due to the distance between the Fault Zone and proposed Project area, the potential for ground rupture at the site is considered to be low. Thus, impacts related to rupture of a known earthquake fault would be less than significant.

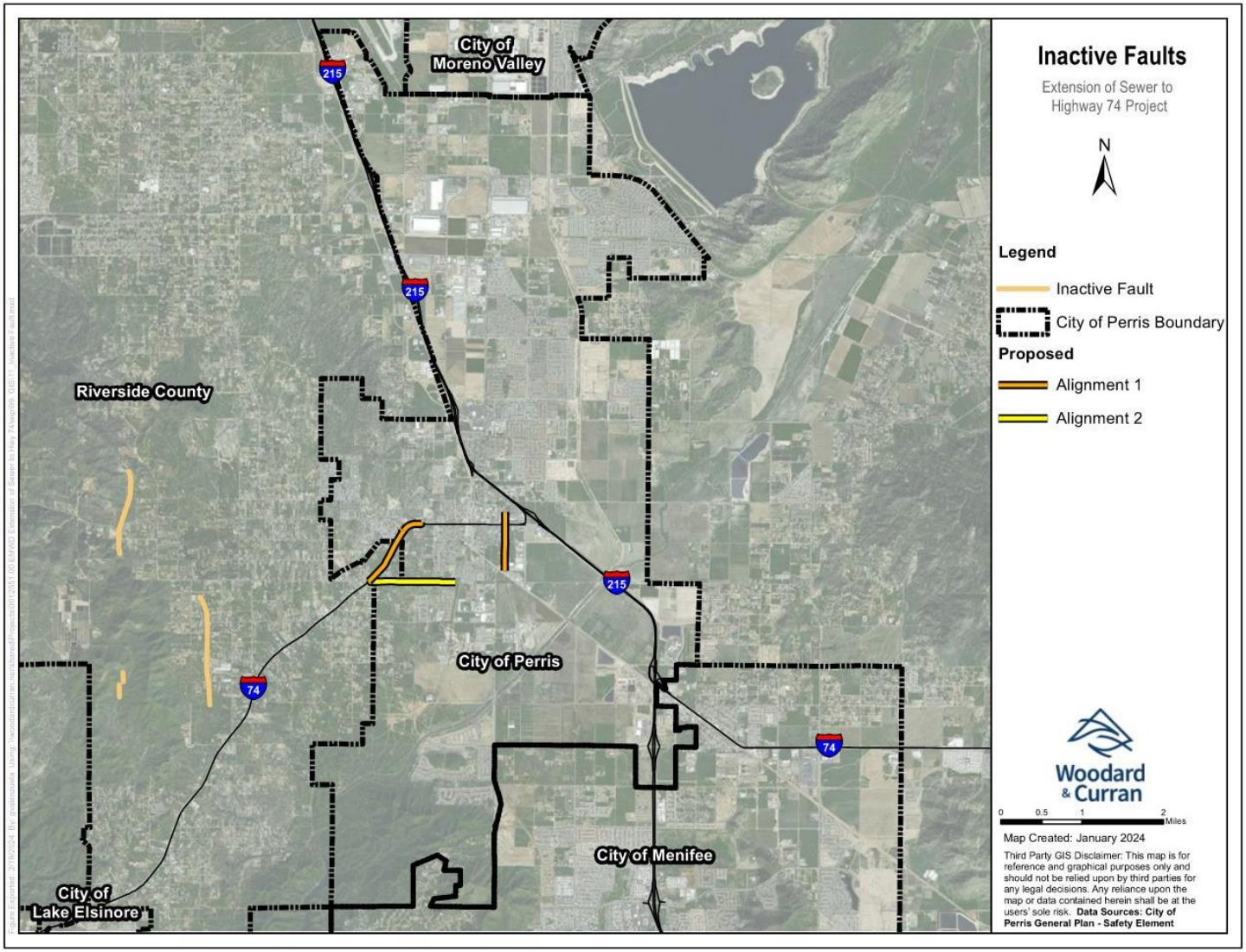
Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

Figure 3-5: Inactive Faults



a.ii) Directly or indirectly caused potential substantial adverse effects, including the risk of loss, injury, or death involving: Strong seismic ground shaking?

The Project area is located within a seismically active region of southern California near local and regional faults capable of generating earthquakes with strong ground shaking. The intensity of ground shaking would depend upon the magnitude of the earthquake, distance to the epicenter, and the geology of the area between the epicenter and the project area. Within the Project vicinity, the San Jacinto Fault Zone (approximately 23 miles to the north of the Project area) has a 20 percent chance of generating an earthquake of 6.7 magnitude or higher during a 30-year period, and the San Jacinto fault zone (located approximately 10 miles east of the Project area) has a 6 percent probability of generating an earthquake of a similar magnitude (City of Perris 2021). The County of Riverside has identified three faults located between 2 and 4 miles west and southwest of the Project area, but these are not thought to be active faults and have a low risk of earthquake (City of Perris 2021).

During the life of the Project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the Project site. Review of seismological and geophysical publications indicates that the seismic hazard for the Project is high. Although impacts related to strong seismic ground shaking would potentially be significant in the Project area, the proposed Project would not include any land use components that would induce growth or otherwise bring additional people to the area or structures people would occupy that would be at risk of loss, injury of death from strong seismic ground shaking. Furthermore, the Project facilities would all be buried and not pose a fall risk that could damage structures or injure people.

Seismic activity is common in California generally. The proposed Project would be designed and constructed pursuant to the recommendations and requirements of the applicable geotechnical reports for each alignment – Converse Consultants 2024 *Geotechnical Investigation Report* for the North Perris Sewer Pipeline (Alignment 1) and IFE's 2024 Geotechnical Investigation for the West Ellis Sewer Project (Alignment 2). The complete Converse Consultants Geotechnical Investigation Report is provided in **Appendix D**. The complete IFE Geotechnical Investigation Report is provided in **Appendix E**.

In accordance with EMWD's existing Standard Construction Practices (see *Section 2.6*), the proposed Project facilities would be designed per EMWD's Engineering Standards and Specifications, as well as applicable American Water Works Association standards and would incorporate measures to accommodate seismic loading pursuant to guidelines such as the "Greenbook" Standard Specifications for Public Works Construction" (Greenbook Committee of Public Works Standards, Inc. 2021) and the International Building Code (International Code Council 2018). These guidelines are produced through joint efforts by industry groups to provide standard specifications for engineering and construction activities, including measures to accommodate seismic loading parameters. These standards and guidelines are widely accepted by regulatory authorities and are regularly included in related standards such as municipal building and grading codes. In addition, the proposed Project's design would follow guidelines

within the California Building Code (California Code of Regulations, Title 24, Part 2), which is based on the International Building Code with amendments to reflect conditions specific to California. Because building and construction codes related to seismic shaking would be followed, there would be less potential for structural damage or loss due to seismic ground shaking. Even if structural damage does occur during a seismic event, it would be isolated to the various Project components; the proposed Project would not exacerbate a risk of seismic-related events or damage to other existing resources in the vicinity. Impacts would be less than significant, and mitigation would not be required.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

a.iii) Directly or indirectly caused potential substantial adverse effects, including the risk of loss, injury, or death involving: Seismic-related ground failure, including liquefaction?

Liquefaction is the process by which clay-free soil, such as sands and silts, temporarily lose cohesion and strength and turn into a fluid state during a severe ground shaking event. This primarily occurs in areas saturated with high groundwater levels and recent deposits of sands and silts. The California Geological Survey Seismic Hazards Program: Liquefaction Zones map does not indicate that the Project area is in a liquefaction zone, however the Perris General Plan Safety Element designates Alignment 1 Segment 2 (Johnson Avenue/South G Street) as being in an area that is moderately susceptible to liquefaction. The geotechnical report for Alignment 1 found that Alignment 1 was located in an area with soils that had a slight to no collapse potential, and very low expansion potential (Converse 2024). The Project would be designed and constructed in accordance with State and the City's seismic engineering standards. Geotechnical reports have been prepared for both alignments by a California licensed geotechnical engineer that includes recommendations on appropriate construction standards to follow based on the soil types and characteristics along the proposed alignments. All proposed Project facilities would be designed in accordance with EMWD's Engineering Standards and Specifications, the applicable geotechnical reports, and the other standards and guidelines described under "a.ii" above, that would ensure pipeline resiliency during earthquakes and other ground instability events, such as liquefaction. While design would address seismic risks on the proposed Project pipelines, construction and operation of the proposed Project would not trigger a seismic event or associated liquefaction, and impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

a.iv) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Landslides?

Seismically induced landslides and slope failures are common occurrences during or soon after large earthquakes. Landslides can occur when strong ground movement such as an earthquake shakes loose soil and causes land and debris to lose stability and slide. The proposed Project is not located on a hillside and the proposed pipelines would be constructed within existing roadway ROWs. The Project alignments are not located in landslide susceptibility zones, although there are small portions of nearby areas which have low landslide susceptibility (City of Perris 2021). All proposed Project facilities would be designed in accordance with EMWD's Engineering Standards and Specifications, as well as the other standards and guidelines described under "a.ii" above, including recommendations in the applicable geotechnical reports for the proposed Project (Converse Consultants 2024 and IFE 2024). Following these standards, guidelines, and policies would limit the potential for the Project to directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death resulting from a Project failure during a seismically induced landslide or slope failure. Therefore, landslide impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Result in substantial soil erosion or the loss of top soil?

The proposed Project could result in minor erosion of soils or loss of topsoil onsite during Project construction, in particular due to the presence of soil stockpiles during excavation activities. Exposed soil piles are susceptible to erosion during strong winds, heavy rains, or other storm events. Construction of the proposed Project would disturb a total area greater than one acre in size and would therefore be required to obtain coverage under the SWRCB's National Pollutant Discharge Elimination System (NPDES) Stormwater Construction General Permit during Project construction. A Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented in compliance with the Construction General Permit. Best management practices (BMPs) would be identified in the SWPPP to control and reduce impacts associated with construction activities and erosion of soil. In accordance with EMWD's Standard Construction Practices (see *Section 2.6*) potential BMPs include site management "housekeeping," erosion control, sediment control, tracking control and wind erosion control. With implementation of the standard construction BMPs, the potential for soil erosion or the loss of topsoil during construction of the proposed Project would be less than significant. All pipeline disturbance areas would be repaved after construction is complete and would not result in further soil erosion. Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The proposed Project area is underlain by alluvial soils, which are more susceptible to settlement than other soils. Additional landslide impacts were addressed in response "a.iv" above. Lateral spreading is caused by earthquake-induced liquefaction, which has been determined to be a less than significant impact. Liquefaction and lateral spreading risks exist in the proposed Project area, though the proposed Project's activities would not exacerbate these risks because it would not change the soil type or trigger a seismic event. The project area in both the City of Perris and unincorporated Riverside County has low to moderate liquefaction susceptibility and low slope instability (City of Perris 2021). The geotechnical reports prepared for the proposed Project confirmed that Alignment 1 found that Alignment 1 was located in an area with soils that had a slight to no collapse potential, and very low expansion potential (Converse 2024). The geotechnical report for Alignment 2 did not identify risks associated with landslide, lateral spreading, subsidence, liquefaction, or collapse (IFE 2024). Along with adherence to EMWD's Engineering Standards and Specifications and other standards and guidelines, these would ensure structural resiliency to earthquake events and associated lateral spreading and liquefaction. Subsidence and collapse are a known risk in alluvial valley regions like the Project area. All excavation backfill and compaction would be in accordance with EMWD construction standards and recommendations from the geotechnical reports. As a result, fill materials used to backfill would be stable with little risk of subsidence or collapse. Therefore, implementation of the project is not expected to result in significant risk of landslide, lateral spreading, liquefaction, subsidence, or collapse. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Expansive soils have the ability to significantly change their volume, shrink and swell, due to their soil moisture content. Expansive soils can crack rigid structures and potentially create pipeline

rupture. Typically, expansive soils are very fine grained with a high to very high percentage (60 percent or more) of clay. Surficial soils underlying the project area consist predominantly alluvial fan deposits and tonalite which are mostly sandy and medium- to coarse-grained, respectively (USGS n.d.). Based on the low clay particle content of the soil, the Project area would not be located on expansive soils. The geotechnical report for Alignment 1 found that the proposed pipelines would be located in an area with soils that have very low expansion potential (Converse 2024). The geotechnical report for Alignment 2 found that bedrock was encouraged between 1 and 8 feet below ground surface for the unpaved portion of West Ellis Avenue, while the paved portion of West Ellis Avenue included alluvial soil of stiff sandy clay and dense clayey sand to about 13.5 feet below ground surface before encountering bedrock (IFE 2024). The bulk of the pipeline would therefore be constructed in soil type and rock that are less susceptible to expansion. The proposed Project would be designed and constructed to the standards described in response "a.ii" as well as the recommendations of the applicable geotechnical reports prepared for the Project to minimize geological risk (Converse 2024 and IFE 2024). Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The proposed Project does not propose the construction or use of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

f) Directly or indirectly destroy a unique paleontological resource of site or unique geologic feature?

A *Paleontological Resources Assessment* was prepared for the proposed Project by Rincon Consultants (Rincon Consultants 2024c). Paleontological sensitivity of the geological units underneath the proposed Project area was assessed through a literature review, a paleontological records search, and a paleontological sensitivity assessment. A records search of the Western

Science Center on August 21, 2023, to identify any fossil localities known from within the project site or nearby fossil localities known from the same geologic units as those underlying the project site. The project site is completely developed (paved and dirt roads for the alignments, and previously disturbed areas for staging) and contains no bedrock exposures; therefore, a field survey was not warranted. The complete *Paleontological Resources Assessment* is provided in **Appendix F** and is relied upon for analysis in this MND.

According to the *Paleontological Resources Assessment*, the proposed Project site is underlain by two geologic units: Quaternary very old alluvial fan deposits and Val Verde tonalite. As indicated in the report, Quaternary very old alluvial fan deposits have high paleontological sensitivity and Val Verde tonalite has no paleontological sensitivity. A formal fossil locality search of the Western Science Center identified no fossil localities within a one-mile radius of the Project site.

Although there are no known fossil localities within the Project area, ground-disturbing activities in undisturbed sediments or geologic units with high paleontological sensitivity (i.e., Quaternary very old alluvial fan deposits) have the potential to significantly impact paleontological resources. The potential impact to paleontological resources of each alignment, segment, and construction activity are summarized in **Table 3-11**.

Table 3-11: Potential Impacts to Paleontological Resources

Construction Location and Activity	Geologic Unit(s)	Impacts and Recommendations
Alignment 1, Segment 1	Val Verde tonalite	Not Significant; No Mitigation Required
Alignment 1, Segment 2 (parallel installation alternative)	Quaternary very old alluvial fan deposits	Potentially Significant; Mitigation Required
Alignment 1, Segment 2 (replace-in-place installation alternative)	Quaternary very old alluvial fan deposits	Not Significant; No Mitigation Required
Alignment 2 (open-cut trenching segments)	Quaternary very old alluvial fan deposits & Val Verde tonalite	Potentially Significant; Mitigation Required
Alignment 2 (trenchless segment)	Val Verde tonalite	Not Significant; No Mitigation Required

Segment 1 of Alignment 1, primarily along Highway 74 and Kruse Street, is completely underlain by Val Verde tonalite, therefore its construction is not anticipated to impact paleontological resources. Segment 2 of Alignment 1 would involve upsizing the existing sewer along G Street, which is underlain by Quaternary very old alluvial fan deposits. If the new sewer line is constructed in parallel to the existing sewer, then impacts to paleontological resources would be potentially significant, because it would include excavation in paleontologically sensitive geologic units. If replace-in-place methods are used, then significant impacts to paleontological resources are not anticipated because excavations would occur in previously disturbed sediments, which are not paleontologically sensitive. Alignment 2 is primarily underlain by Val Verde tonalite, including the only segment of pipeline that would require trenchless installation. The eastern end of Alignment 2 is underlain by Quaternary very old alluvial fan deposits. Open-cut trench installation in the area

mapped as Quaternary very old alluvial fan deposits could have significant impacts on paleontological resources. **Mitigation Measure GEO-1** would only apply to ground-disturbing activities associated with Alignment 1, Segment 2 (if the parallel installation method is chosen) and the open-cut trenching portions of Alignment 2. Implementation of **Mitigation Measure GEO-1** would ensure compliance with proper procedures through the recovery, identification, and curation of previously unrecovered fossils. With the implementation of **Mitigation Measure GEO-1**, impacts associated with paleontological resources would be reduced to less than significant.

Mitigation Measures

GEO-1 Paleontological Resources Monitoring and Mitigation

Qualified Professional Paleontologist. Prior to excavation, the project applicant shall retain a Qualified Professional Paleontologist, as defined by the Society of Vertebrate Paleontology (SVP 2010). The Qualified Professional Paleontologist shall direct all mitigation measures related to paleontological resources.

Paleontological Worker Environmental Awareness Program. Prior to the start of construction, the Qualified Professional Paleontologist or their designee shall conduct a paleontological Worker Environmental Awareness Program (WEAP) training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction personnel.

Paleontological Monitoring. Full-time paleontological monitoring shall be conducted during excavations within previously undisturbed sediments mapped as Quaternary very old alluvial fan deposits. Paleontological monitoring shall be conducted by a paleontological monitor with experience with collection and salvage of paleontological resources and who meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. The Qualified Professional Paleontologist may recommend that monitoring be reduced in frequency or ceased entirely based on geologic observations. Such decisions shall be subject to review and approval by EMWD. In the event of a fossil discovery by the paleontological monitor or construction personnel, all construction activity within 50 feet of the find shall cease, and the Qualified Professional Paleontologist shall evaluate the find. If the fossil(s) is (are) not scientifically significant, then construction activity may resume. If it is determined that the fossil(s) is (are) scientifically significant, the following shall be completed:

- **Fossil Salvage.** The paleontological monitor shall salvage (i.e., excavate and recover) the fossil to protect it from damage/destruction. Typically, fossils can be safely salvaged quickly by a single paleontological monitor with minimal disruption to construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. Bulk matrix sampling may be necessary to recover small invertebrates or microvertebrates from within paleontologically sensitive deposits. After the fossil(s) is (are) salvaged, construction activity may resume.

- **Fossil Preparation and Curation.** Fossils shall be identified to the lowest (i.e., most-specific) possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Qualified Professional Paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground-disturbing activities (or laboratory preparation and curation of fossils, if necessary), the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts. The report shall include a summary of the field and laboratory methods employed; an overview of project geology; and, if fossils were discovered, an analysis of the fossils, including physical description, taxonomic identification, and scientific significance. The report shall be submitted to EMWD, if fossil curation occurred, the designated scientific institution.

Significance Determination:

Less than significant impact with mitigation incorporated.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	[ ]	[ ]	[X]	[ ]
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	[ ]	[ ]	[X]	[ ]

Discussion

Greenhouse gases (GHGs) are pollutants that are known to increase the greenhouse effect in the Earth's atmosphere thereby adding to global climate change impacts. Several pollutants have been identified as GHGs, and the State of California definition in the Health and Safety Code, Section 38505(g) includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (CARB 2024). Water vapor is also identified as a GHG; however, it is short lived, and concentrations are largely determined by natural processes such as evaporation. Other GHGs such as fluorinated gases are created and emitted through anthropogenic sources. The most common anthropogenic GHGs are CO_2, CH_4, and N_2O.

A measurement called global warming potential (GWP) is used to measure how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of CO_2. CO_2e is the amount of GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one; CH_4 has a GWP of 25; and N_2O has a GWP of 298 (CARB 2024).

In 2005, the Governor issued Executive Order (EO) S-3-05, which set GHG emission reduction targets:

- 2010 should have 2000 levels;
- 2020 should have 1990 levels; and
- GHG emissions should be 80 percent below 1990 levels by 2050.

Senate Bill (SB) 32, passed in 2016, required that the California Air Resources Board (CARB) include in its next update to the Assembly Bill (AB) 32 Scoping Plan, "ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030." (EO) B-55 set a GHG emission reduction target for California to be carbon neutral by 2045.

CARB adopted Climate Change Scoping Plan in 2008 and a Climate Change Scoping Plan Update in 2017, which contains the strategies California will implement to achieve a GHG emissions reduction of 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. In the Scoping Plan, "CARB recommends that lead agencies prioritize onsite design features that reduce emissions, especially from vehicle miles travelled (VMT), and direct investments in GHG reductions within the project region that contribute potential air quality, health, and economic co-benefits locally."

The proposed Project alignment overlies the City of Perris and unincorporated County of Riverside and is located within the jurisdiction of the SCAQMD.

The SCAQMD is in the process of developing an Air Quality Analysis Guidance Handbook to replace the CEQA Air Quality Handbook approved by the SCAQMD Governing Board in 1993. In order to assist CEQA related air quality analysis while the new Handbook is being prepared, SCAQMD updated its Air Quality Significance Thresholds in March 2023. The SCAQMD has set a threshold of 10,000 $MTCO_2e$/year for industrial facilities (SCAQMD 2023).

The County of Riverside CAP was adopted in 2015 to establish goals and policies that incorporate sustainability and GHG reduction targets into its management process. The County of Riverside adopted a CAP Update in 2019 which re-evaluated the County's GHG reduction targets and existing reduction strategies. The new goals and supporting measures are proposed to reflect and ensure compliance with changes in the local and State policies and regulations which set a 2030 goal of reducing emissions to 40 percent below 1990 levels by 2030, and to make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. In particulate, the 2019 CAP Update elaborates on the County of Riverside's General Plan goals and policies relative to GHG emissions and provides a specific implementation tool to guide future decisions of the County. The County's CAP includes a review process procedure for evaluating individual project GHG impacts and determining the significance under CEQA. The County's CAP is qualified for CEQA tiering and streamlining of individual projects' CEQA review. The County's CAP has set a threshold of 3,000 metric tons CO2e per year to be used to identify projects that, when combined with the modest efficiency measures (e.g., energy efficiency matching or exceeding the Title 24 requirements in effect as of January 2017; water conservation measures that match the California Green Building Standards Code in effect as of January 2017) are considered less than significant (County of Riverside 2019).

The City of Perris adopted a CAP in 2016 to address global climate change through the reduction of harmful GHG emissions at the community level, and as part of California's mandated statewide GHG emissions reduction goals. Within the 2016 CAP, the City of Perris developed multiple sustainable strategies and reduction measures that are organized into the following major economic sectors: Energy (including electricity and natural gas consumption), Transportation and Land Use, and Solid Waste. The 2016 CAP set a goal to reduce the City's emissions to a level 80% below 1990 levels by 2050, which is consistent with the State's emissions reduction targets per Assembly Bill 32 and Senate Bill 32 (City of Perris 2016.c).

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The proposed Project would create GHG emissions during construction. Construction is expected to last approximately 18 months, and the Project's life expectancy is conservatively assumed to be 30 years for the purposes of this GHG analysis.[1] Construction impacts would include vehicle and equipment emissions associated with pipeline trenching and installation, manhole construction, and road resurfacing. The Project would not generate a net increase in operation emissions because the pipelines would not require energy use to operate, and inspection of the pipelines and manholes would be incorporated into EMWD's existing O&M trips. Further details can be found in *Section 2 Project Description*.

Modeling of GHG emissions from construction of the Project was completed in CalEEMod version 2022.1.1.21. Details on construction, including timing and equipment, can be found in *Section 2.4 Proposed Project Description*. In instances where Project-specific information was not available (e.g., construction equipment horsepower, length of worker trips, soil moisture content), the analysis relied on CalEEMod default values. The Project would not emit GHGs associated with electricity consumption; all GHG emissions would result from vehicle use, including construction equipment, generators used during construction, haul trips, and worker trips. No energy would be required for the operation of the pipelines. The complete CalEEMod Air Quality Data Sheets are provided in **Appendix A**.

The results of the inventory for GHG emissions for Alignment 1 and Alignment 2, as shown in the CalEEMod output tables in **Appendix A**, are presented in **Table 3-12** and **Table 3-13** Error! Reference source not found.along with the County of Riverside 2019 CAP threshold of 3,000 metric tons CO2e per year. Consistent with the methodologies in the SCAQMD 2008 Board Letter, total GHG emissions from construction have been amortized over a 30-year lifetime of the project.

Table 3-12: Alignment 1 GHG Emissions per Year ($MTCO_2e$/year)

Source	**$MTCO_2e$**
Operation	negligible
Construction (amortized over 30 years)	319.6
Total	**319.6**
Regional Threshold	*3,000*
Threshold exceeded?	**No**

[1] The SCAQMD Board Letter - Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans (SCAQMD 2008) recommends construction emissions be amortized over a 30-year project lifetime.

Table 3-13: Alignment 2 GHG Emissions per Year ($MTCO_2e$/year)

Source	$MTCO_2e$
Operation	negligible
Construction (amortized over 30 years)	524.6
Total	**524.6**
Regional Threshold	*3,000*
Threshold exceeded?	**No**

Based on the results of CalEEMod, construction of Alignment 1 would emit a total of 9,587 $MTCO_2e$. Amortized over a 30-year period, construction of Alignment 1 would generate approximately 319.6 $MTCO_2e$ per year. Construction of the Alignment 2 would emit a total of 15,737 $MTCO_2e$. Amortized over a 30-year period, Alignment 2 would generate approximately 524.6 $MTCO_2e$ per year. In addition to the low per-year generation of $MTCO_2e$, the Project would adhere to existing energy efficiency requirements during construction, including CARB's In-Use Off-Road Diesel-Fueled Fleets Regulations that limit vehicle idling time to five minutes restrict adding vehicles to construction fleets that have lower than Tier 3 engines, and establish a schedule for retiring older and less fuel-efficient engines (CARB 2011). Construction-related GHG impacts would be less than significant.

The State of California has set targets for renewable energy from the energy sector through the Renewable Portfolio Standard. The Renewable Portfolio Standard directs energy utilities to source half of their electricity sales from renewable sources by 2030 (CEC 2017). The proposed Project would not consume electricity during construction or operation. Therefore, the proposed Project would not conflict with or obstruct this target, and impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

California's 2022 Climate Change Scoping Plan for Achieving Carbon Neutrality lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas emissions by 85 percent below 1990 levels no later than 2045. The proposed Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl. The Project is designed to meet existing and anticipated demand that would occur with or without the Project and would not conflict with any 2022 Climate Change Scoping Plan emission reduction strategies or climate change policies or measures (CARB 2022). Furthermore, O&M activities would be conducted using EMWD's vehicle fleet, which is continually being improved with regard to efficiency and fuel type, consistent with the County of Riverside 2019 CAP Update and City of Perris 2016 CAP.

The proposed Project would not interfere with existing City, County, or regional programs intended to reduce energy and improve water use efficiency. It would not result in GHG emissions higher than the SCAQMD significance screening threshold or County of Riverside 2019 Climate Action Plan $MTCO_2e$ /year threshold. The proposed Project would not, therefore, conflict with or obstruct a State or local plan for reducing emissions of GHGs. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	[ ]	[ ]	[X]	[ ]

b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	[ ]	[ ]	[X]	[ ]
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	[ ]	[ ]	[X]	[ ]
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	[ ]	[ ]	[ ]	[X]
e)	For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	[ ]	[ ]	[X]	[ ]
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	[ ]	[ ]	[X]	[ ]
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	[ ]	[ ]	[ ]	[X]

Discussion

The California Department of Toxic Substances Control (DTSC) EnviroStor database (DTSC 2024) is a data management system for tracking DTSC cleanup, permitting, enforcement and

investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. The State Water Resources Control Board (SWRCB) maintains the GeoTracker system for sites that impact or have the potential to impact water quality in California (SWRCB 2024). This includes leaking underground storage tank (LUST) sites, Department of Defense Sites, and Cleanup Program Sites. A regulatory records search was performed for the Project area using the SWRCB GeoTracker database (SWRCB 2024) and the DTSC EnviroStor database (DTSC 2024), both accessed January 3, 2024. These lists are a compilation of information from various sources listing potential and confirmed hazardous waste and hazardous substances sites in California. The Envirostor and GeoTracker databases reported the following active sites within 1 mile of the proposed Project:

- Verano Apartments and Retail - Cleanup Program Site (904 South D Street, Perris, CA 92570). Status: Open – Assessment & Interim Remedial Action. Located 0.43 miles from Alignment 1 and 0.38 miles from Alignment 2 at the nearest.

- B And D Automotive - LUST Cleanup Site (102 S D St, Perris, CA 92570). Status: Open - Site Assessment. Located 0.4 miles from Alignment 1 and 0.94 miles from Alignment 2 at the nearest.

- OK Service Bulk Plant - LUST Cleanup Site (240 E First St, Perris, CA 92570). Status: Open - Eligible for Closure. Located 0.25 miles from Alignment 1 and 1 mile from Alignment 2 at the nearest.

There are three schools within one quarter mile of the Project site including Park Avenue Elementary School and Perris Elementary School near Alignment 1 and Perris Lake High School for Alignment 2. Park Avenue and Perris Elementary School are located on West 4th Street between Park Avenue and South A Street and are adjacent to one another. Perris Lake High School is located along West Ellis Avenue and South B Street.

The California Department of Forestry and Fire Protection's (Cal Fire) Fire Resources Assessment Program assesses the amount and extent of California's forests and rangelands, analyzes their conditions, and identifies alternative management and policy guidelines. Through the Fire Resources Assessment Program, CalFire produces maps designating very high fire hazard severity zones (VHFHSZ) within State and Local Responsibility Areas. The Project area is located within the City of Perris Local Responsibility Area. The City of Perris Local Responsibility Area map designates the Project area as a non-VHFHSZ (Cal Fire 2009 and 2023).

The Perris Valley Airport is located south of Ellis Avenue between Goetz Road and Interstate 215, approximately 0.2 miles south of Alignment 1 and 0.5 miles east of Alignment 2 at the nearest. The entire Project area is within the Airport Influence Area Boundary. Alignment 1 is within Zones B1, C, D, and E, while Alignment 2 is within Zone E (Riverside County Airport Land Use Commission 2011).

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Typical hazardous materials that may be used during construction and routine O&M activities include gasoline, diesel fuel, oil, solvents, and lubricants. The use of these materials for their intended purpose would not pose a significant risk to the public or environment. Wastes, both hazardous and non-hazardous, accumulated during construction activities would be handled, documented, and disposed of in accordance with federal, state, and local laws and regulations.

As specified in *Section2.6 Standard Construction Practices*, hazardous materials would be stored in designated construction staging areas (see *Section 2.4.5 Equipment Staging Areas*) and would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations (Federal Code Title 40 and 49; Occupational Safety and Health Administration 29 Code of Federal Regulations 1910; California code section 5001, 5401, 5701, and 25507; California Health and Safety Code Division 20, Chapter 6.5, Article 6.5, Article 6.6) which are intended to minimize health risk to the public associated with hazardous materials. In addition, the Project would require implementation of a SWPPP to address the discharge of construction related pollutants in storm water runoff (including construction-related hazardous materials) through implementation of appropriate BMPs. Specific BMPs would be determined during preparation of the SWPPP based on site- and project-specific characteristics (equipment types, etc.), and would be in conformance with the NPDES Construction General Permit. Conformance with federal hazardous materials transportation law (49 U.S.C. 5101 et seq.) and California Health and Safety Code Division 20, Chapter 6.5, Article 6.5 would require precautionary measures be taken during the routine transport of hazardous materials, such as testing and preparation of a transportation safety plan. According to California Health and Safety Code Division 20, Chapter 6.5, Article 13, used oil that may be produced from construction or operation of the project would be recycled.

EMWD and its contractors would be required to adhere to EMWD's General Safety Requirements for Hazardous Materials and Hazardous Waste (Specification 1.15 of Section 01000-7) as noted in *Section 2.6 Standard Construction Practices*. These requirements address proper communication of hazardous substances on a project site, proper storage and disposal of hazardous substances on the site, and clean-up of any spills in accordance with manufacturer, CalEPA, and/or U.S. EPA requirements.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The proposed Project has the potential to expose the public and the environment to hazards associated with on-site releases of hazardous materials including gasoline, diesel fuel, oil, solvents, and lubricants during construction. As stated in *Section 3.11 Land Use and Planning,* there are sensitive receptors within the project area, including three schools, which increase the risk of impact from an accidental release of hazardous materials. Although there are three known hazardous clean-up sites within 1 mile of the proposed Project, none of them are within the proposed Alignments and would not be exposed by Project construction activities. Upon completion of the Project, there would not be any chemical or hazardous materials storage required at the Project site.

Hazardous materials would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations as discussed in a) above, as well as EMWD general safety requirements and construction specifications noted in *Section 2.6*. Implementation of these regulations would minimize the risk of hazardous material exposure through material use and accidents. Thus, impacts from hazardous materials to the public or the environment from potential accidents during construction or operation would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are two schools within one quarter mile of the Alignment 1 including Park Avenue Elementary School (445 Park Avenue) and Perris Elementary School (500 South A Street), and one school within one quarter mile of the Alignment 2 – Perris Lake High School (418 West Ellis Avenue). The proposed Project has the potential to expose the public and the environment to hazards associated with on-site releases of hazardous materials including gasoline, diesel fuel, oil, solvents, and lubricants during construction. However, EMWD's Standard Construction Practices (see *Section 2.6*) and compliance with all applicable federal, state, and local laws and regulations as discussed in a) would minimize the risk of hazardous material exposure through material use and accidents. Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Regulatory records were searched through the SWRCB GeoTracker database (SWRCB 2024) and the DTSC EnviroStor database (DTSC 2024). None of the proposed Project alignments or staging areas fall within a site that is included on a list of recent or currently active clean-up or hazardous materials sites per Government Code Section 65962.5 (SWRCB 2024; DTSC 2024). Therefore, there would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project Area?

The proposed Project area is within the Perris Valley Airport Land Use Plan. The Project would construct sewer pipelines, which would be installed underground. It would not create a hazard for planes taking off from or landing at the Perris Valley Airport. The Project would comply with applicable noise regulations (see *Section 3.13* Noise) and would not result in a safety hazard or excessive noise for people residing or working in the Project area. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The County of Riverside Emergency Operations Plan (EOP) (County of Riverside 2019b) serves as the foundation for response and recovery operations for the County of Riverside, as it establishes roles and responsibilities, assigns tasks, and specifies policies and general procedures. The County

of Riverside Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) (County of Riverside 2023c) aims to reduce the impact of a disaster by identifying hazards and developing ways to decrease their impact. The purpose of the LHMP is to identify the County's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-caused hazards.

The proposed Project would construct pipeline within the roadway ROW along Highway 74, Kruse Street, Johnson Avenue/South G Street (Alignment 1), and West Ellis Avenue (Alignment 2). As a result, there would be temporary lane closures and construction would temporarily block access, which may conflict with the adopted emergency response plan and emergency evacuation plan (the City EOP and Riverside County LHMP). Implementation of a Traffic Control and Detour Plan (as specified in *Section 2.6*) would be required prior to the issuance of an encroachment permit from the County of Riverside and City of Perris. The Plan would require the construction contractor to coordinate with emergency responders on the location of construction and make a reasonable effort to preserve access to adjacent sites and surrounding areas for emergency response crews.

Operations and maintenance required during long-term operation of the Project would be incorporated into EMWD's existing O&M routine. These activities would include inspection of the sewer line as needed, and would not interfere with an adopted emergency response plan or emergency evacuation plan. Thus, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The California Public Resources Code 4201-4204 directs the California Department of Forestry and Fire Protection (Cal Fire) to map fire hazard within State Responsibility Areas based on fuel loading, slope, fire weather, and other relevant factors present, including areas where winds have been identified by Cal Fire as a major cause of wildfire spread. These zones, referred to as fire hazard severity zones (FHSZ), classify a wildland zone as moderate, high, or very high fire hazard based on the average hazard across the area included in the zone. The proposed Project is located within the City of Perris Local Responsibility Area. The City's Local Responsibility Area shows that the Project is not located within a designated fire hazard zone.

The Project alignments are entirely within existing roadway ROWs; the Project area does not contain and is not adjacent to wildlands. The Project area has a low risk of wildfire and the Project would involve the installation and maintenance of an underground pipeline, which is not

infrastructure typically associated with fire risk (see *Section 3.20 Wildfire*). Therefore, there would be no impacts associated with the exposure of people or structures either directly or indirectly to a significant risk of loss, injury or death involving wildlife fire.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	[ ]	[ ]	[X]	[ ]
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	[ ]	[ ]	[X]	[ ]
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	[ ]	[ ]	[X]	[ ]

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	[ ]	[ ]	[X]	[ ]
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	[ ]	[ ]	[X]	[ ]
iv) impede or redirect flood flows?	[ ]	[ ]	[ ]	[X]
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	[ ]	[ ]	[X]	[ ]
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	[ ]	[ ]	[X]	[ ]

Discussion

Surface Water

The proposed Project is located within the San Jacinto River Watershed, which drains an approximately 540-square-mile area of western Riverside County. The San Jacinto River flows from the San Jacinto Mountains, across the San Jacinto Valley, through the City of Perris, to Railroad Canyon Reservoir, and finally to its terminus in Lake Elsinore, southwest of Perris. The only major tributary to the San Jacinto River within the City of Perris is the Perris Valley Channel, which flows from north to south through southern Moreno Valley and Perris Valley before converging with the San Jacinto River (City of Perris 2004).

The San Jacinto River Watershed falls under the jurisdiction of the Santa Ana Regional Water Quality Control Board (RWQCB). The Santa Ana RWQCB, Region 8, regulates water quality within the Santa Ana River Region and maintains the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan sets water quality standards in the Santa Ana River Basin by establishing beneficial uses for specific water bodies and designating numerical and narrative water quality objectives. Existing or potential beneficial uses of the Perris Valley Channel include non-contact water recreation, wildlife habitat, and rare, threatened or endangered species habitat. Intermittent beneficial uses of the Perris Valley Channel include water contact recreation and warm freshwater habitat (Santa Ana RWQCB 2019).

The SWRCB also maintains the 303(d) List of Impaired Water Bodies, which identifies water bodies where water quality indicators exceed acceptable thresholds. If a waterbody is placed on the 303(d) list as impaired for one or more pollutants, it will be identified as "listed". Although the Project area does not directly drain to a 303(d)-listed impaired water body, Canyon Lake and Lake Elsinore, which are located south of the proposed Project, are listed. Canyon Lake is 303(d)-listed for nutrients; Lake Elsinore is 303(d) listed for DDT (Dichlorodiphenyltrichloroethane), nutrients, organic enrichment/low dissolved oxygen, PCBs (Polychlorinated biphenyls), and toxicity (SWRCB 2022). The RWQCB develops and implements total maximum daily loads to address water quality impairments and help achieve water quality standards. Water quality is also governed through NPDES stormwater discharge permits issued to municipalities, construction sites, and industrial facilities to control non-point-source pollutants in stormwater discharges to surface waters.

The United States Department of Homeland Security Federal Emergency Management Agency (FEMA) identifies flood hazard areas on Flood Insurance Rate Maps prepared for the National Flood Insurance Program. These areas, known as Special Flood Hazard Areas, are defined as areas where there is a one percent chance of flooding in any given year (also referred to as a 100-year flood) and areas where there is a 0.2 percent chance of flooding in a given year (also referred to as a 500-year flood). Areas outside the 100-year and 500-year flood zones are considered areas of minimal flood hazard.

Groundwater

The Sustainable Groundwater Management Act (SGMA) was adopted in 2014 and established a statewide framework to help protect groundwater resources. Under SGMA, groundwater basins ranked as medium- or high-priority are required to develop groundwater sustainability plans (GSPs) or submit an alternative to a GSP that demonstrates how water managers have already achieved or will achieve sustainable groundwater management.

The proposed Project area is located within the San Jacinto Groundwater Basin (California Department of Water Resources [DWR] Basin Number 8-005). The Basin generally encompasses the areas of Moreno Valley, Perris, Hemet, San Jacinto, Sun City, and Menifee, and has an estimated storage capacity of roughly three million acre-feet (DWR 2006). The San Jacinto Groundwater Basin is designated by DWR as a high priority basin and is subject to the provisions of SGMA (DWR 2019). The eastern portion of the Basin, referred to as the Hemet-San Jacinto Watermaster Management Area, is adjudicated. The western portion of the Basin, referred to as the West San Jacinto Groundwater Management Area, is the source of groundwater production for EMWD and several other water purveyors. EMWD acts as the Groundwater Sustainability Agency (GSA) for the West San Jacinto Groundwater Management Area. The proposed Project area overlies the Perris South Groundwater Management Zone of the West San Jacinto Groundwater Management Area (EMWD 2021.a). The San Jacinto Groundwater Basin Groundwater Sustainability Plan was approved by DWR in 2023 and documents basin conditions and ongoing basin management practices to maintain sustainability (EMWD n.d.a).

The Santa Ana RWQCB designates beneficial uses for the San Jacinto Groundwater Basin, including the Perris South Groundwater Management Zone. Existing or potential beneficial uses include municipal and domestic supply and agricultural supply (Santa Ana RWQCB 2019).

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Potential water quality impacts associated with implementation of the proposed Project would be limited to short-term erosion/sedimentation that would occur during construction of the pipeline alignments. Construction activities that primarily result in sediment releases are related to exposing previously stabilized soils to potential mobilization by rainfall/runoff and wind. Such activities have the potential to degrade surface or groundwater quality and include grading, excavations, and temporary stockpiling of soil.

Construction of the proposed Project would disturb a total area greater than one acre in size and would therefore be required to obtain coverage under the SWRCB's NPDES Stormwater Construction General Permit during Project construction. As part of the permit conditions, and consistent with EMWD Standard Construction Practices (see *Section 2.6*), EMWD would be required to prepare a SWPPP and implement BMPs during construction to control sediment and other construction-related pollutants in stormwater discharges. Potential BMPs include housekeeping practices such as proper waste disposal, covering stockpiles with tarps, containment of building materials, and inspection of construction vehicles to prevent leaks or spills. The construction contractor would be required to comply with the Construction General Permit throughout construction. Construction dewatering is not anticipated, and all disturbed areas would be returned to pre-construction conditions. Should construction dewatering be required, the desilted water would be spread on land within the potential staging area. Compliance with the NPDES Stormwater Construction General Permit, including implementation of BMPs would ensure construction of the Project would not violate water quality standards or waste discharge requirements, nor significantly degrade surface water quality. Construction impacts on surface water and groundwater quality would be less than significant.

Operation of the proposed Project would consist of distributing wastewater through the proposed pipeline to EMWD's sanitary sewer system. No adverse impacts on surface water and groundwater quality would occur from operation of the proposed Project.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

The proposed Project is a sewer improvement project and does not involve the extraction, recharge or use of groundwater. For Alignment 1, after construction is complete, all pipeline construction areas would be restored to pre-construction conditions (i.e., no permanent disturbance footprint), and would not result in a change in impervious surface area affecting the ability of rainfall to recharge the groundwater basin.

For Alignment 2, after construction is complete, disturbed pipeline construction areas within the paved segment of West Ellis Avenue between the intersections with South A Street and South B Street would be restored to pre-construction conditions (i.e., no permanent disturbance footprint). However, disturbed areas within the unpaved segment of West Ellis Avenue between the intersections with South A Street and Highway 74 would be restored with pavement where a dirt road currently exists. Although the new paved road would be a minimum width of 10 feet per the County of Riverside Standards for Pavement Resurfacing (**Figure 2-4**), this additional impervious surface area would not significantly impact the ability of the Project area to recharge rainfall to the groundwater basin.

As discussed in *Section 3.14 Population and Housing,* the proposed Project would serve existing wastewater demand and planned future growth that would occur with or without the Project. The Project would not induce population growth or increase water demands that would require additional groundwater pumping. Operation of the Project does not require potable or non-potable water, meaning the use of water would be limited to temporary construction activities such as dust control. Therefore, the proposed Project would not be expected to substantially decrease groundwater supplies or interfere with groundwater recharge efforts. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c.i) Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: result in substantial erosion or siltation on- or off-site?

For Alignment 1, after construction is complete, all pipeline construction areas would be restored to pre-construction conditions. Thus, pipeline construction would not result in an increase in total impervious surface area nor increased volumes of storm water runoff.

For Alignment 2. after construction is complete, disturbed pipeline construction areas within the paved segment of West Ellis Avenue between the intersections with South A Street and South B Street would be restored to pre-construction conditions (i.e., no permanent disturbance footprint or change in impervious surface). However, disturbed areas within the unpaved segment of West Ellis Avenue between the intersections with South A Street and Highway 74 would be restored with pavement where a dirt road currently exists. Although the new paved road would be a minimum width of 10 feet per the County of Riverside Standards for Pavement Resurfacing (**Figure 2 4**), this additional impervious surface area would not generate much, if any, increased volume of storm water runoff because the existing unpaved road is hard packed, rocky, and already has existing drainages to collect and convey runoff. The newly paved road would continue to use the existing drainage features to collect and convey runoff and would not substantially increase erosion or siltation.

Project construction may result in disturbance or exposure of soil that could be subject to erosion and sedimentation during wind or rain events. However, implementation of BMPs as required by the NPDES Stormwater Construction General Permit and SWPPP would limit erosion and sedimentation. As a result, implementation of the proposed Project would not alter the existing drainage pattern of the Project area in a manner which would result in substantial erosion or siltation on- or off-site. Therefore, the proposed Project would have a less than significant impact.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c.ii) Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

As shown in **Figure 3-6**, the Alignment 1 does not overlie a FEMA designated 100-year or 500-year flood zone, as identified by the FEMA National Flood Hazard Layer (FEMA 2014). Construction of the Alignment 1 includes installation of underground sewer pipelines within existing paved public ROWs, and all pipeline construction areas would be restored to pre-construction conditions after construction is complete. The Project would not alter or otherwise impact existing culverts or stormwater drainage features along the alignment. Thus, the rate or amount of surface runoff would not increase. As a result, Alignment 1 would not substantially alter the existing drainage pattern of the site area in a manner which would result in flooding on- or off-site. Therefore, the proposed Project would have a less than significant impact.

As shown in **Figure 3-6**, Alignment 2 also does not overlie a FEMA designated 100-year or 500-year flood zone, as identified by the FEMA National Flood Hazard Layer (FEMA 2014). After

construction is complete, disturbed pipeline construction areas within the paved segment of West Ellis Avenue between the intersections with South A Street and South B Street would be restored to pre-construction conditions (i.e., no permanent disturbance footprint or change to impervious surfaces or drainages). However, disturbed areas within the unpaved segment of West Ellis Avenue between the intersections with South A Street and Highway 74 would be restored with pavement where a dirt road currently exists. Although the new paved road would be a minimum width of 10 feet per the County of Riverside Standards for Pavement Resurfacing (**Figure 2-4**), this additional impervious surface area would not substantially alter the existing drainage pattern of the Project site area because the roadway would continue to use existing culverts and drainage systems, nor would it result in a substantial increase in runoff due to the relatively small increase in impervious surface. Therefore, Alignment 2 would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

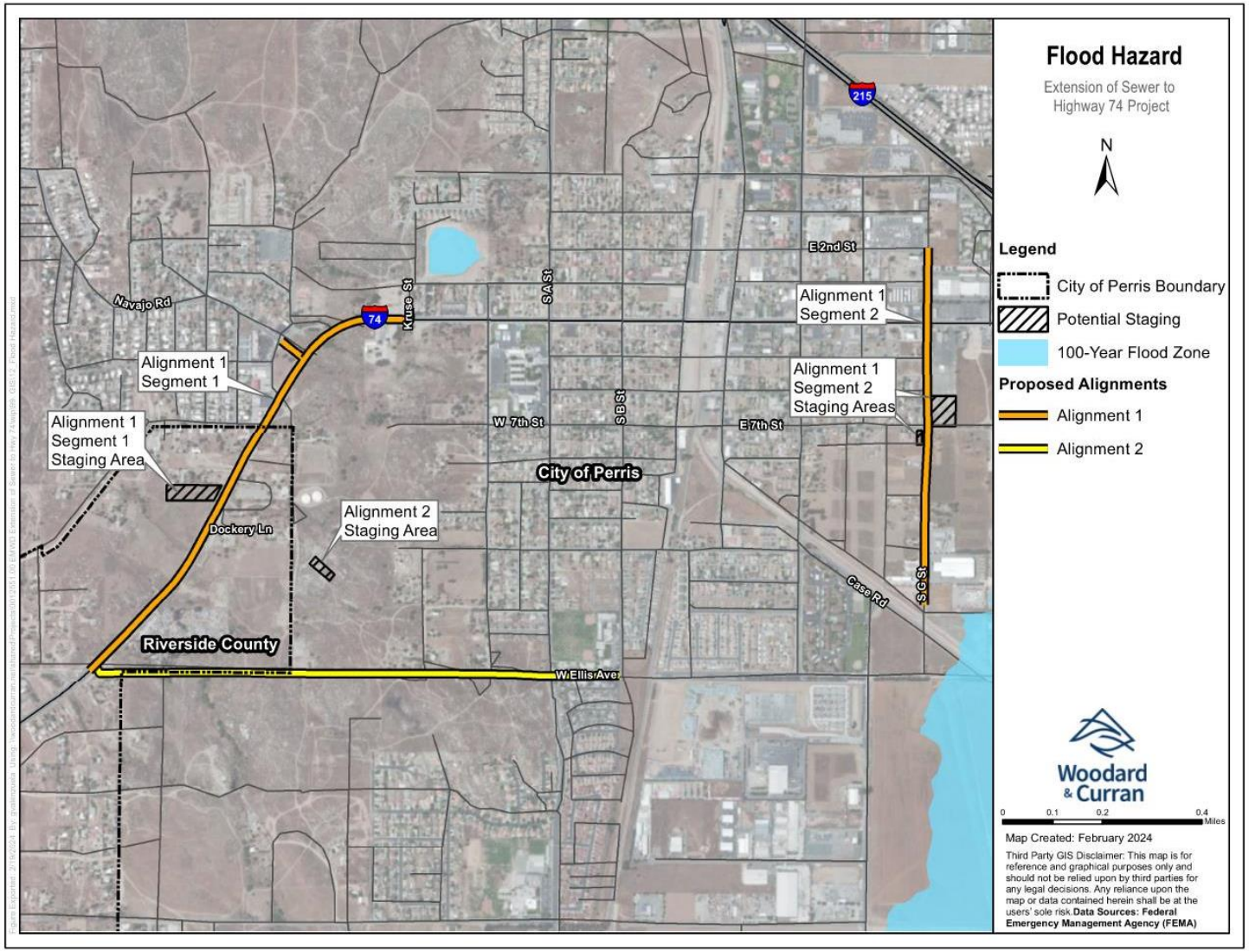
Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

Figure 3-6: Flood Hazard



c.iii) Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As discussed in *c,i, and cii*, above, the proposed Project would not increase surface runoff or alter the existing drainage patterns within the Project area in a manner which would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. In addition, all construction activities would be conducted in accordance with BMPs specified in the construction SWPPP to reduce impacts to pollutants in storm water discharges. Therefore, the proposed Project would have a less than significant impact.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c.iv) Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: impede or redirect flood flows?

As discussed in *c,i, cii and ciii,* above, the proposed Project would not increase surface flows or pass above, below, or through an existing stream or river. In addition, there are no 100-year or 500-year flood zones underlying the Project area (FEMA 2014). As a result, the proposed Project would not alter the existing drainage pattern of the site area in a manner which would impede or redirect flood flows. The proposed Project would have no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?

A tsunami is a large ocean wave, caused by earthquakes or major ground movement. The proposed Project site is located approximately 40 miles from the Pacific Ocean; at this distance, a tsunami would not impact the Project area. A seiche is a large wave generated in an enclosed

body of water such as a lake, which is also typically caused by an earthquake. The nearest enclosed body of water is Lake Perris, a reservoir, located approximately 5 miles from the Project area. Lake Perris reservoir is a confined basin of water susceptible to a reverberating surface wave action induced by seismic action. Although a seiche in Lake Perris could conceivably cause the Lake Perris dam to fail, the dam is not likely to be breached as a result of seismic activity (City of Perris 2004). Additionally, the Project would adhere EMWD Standard Construction Practices (specified in Section 2.6) and which would ensure safe handling, transport, and storage of hazardous materials as well as prevention of building material pollutants in storm water runoff through implementation of a SWPPP. Therefore, the Project site is unlikely to become inundated and the potential for release of pollutants is low. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As noted previously, the Water Quality Control Plan for the Santa Ana River Basin sets beneficial uses and water quality objectives for surface water and groundwater on the Project area. The water quality objectives are intended to reduce pollutant discharge and ensure that water bodies are of sufficient quality to meet their designated beneficial uses.

As discussed above, pollutant discharge during construction would be avoided via compliance with the Construction General Permit, development of a SWPPP, and implementation of BMPs. Should dewatering be required, the desilted water would be spread on land within the potential staging area. Once operational, the Project would convey wastewater through EMWD's existing sanitary sewer system. The Project would not discharge extracted or treated water into a surface water body or be a source of pollutants for downstream water bodies. Therefore, the proposed Project would not conflict with the Basin Plan or worsen water quality conditions in any 303(d)-listed water body.

The proposed Project area is located within the West San Jacinto Groundwater Management Area of the San Jacinto Groundwater Basin, which is being managed for groundwater sustainability under the San Jacinto Groundwater Basin Groundwater Sustainability Plan. The purpose of the Project is to install sewer transmission lines to provide wastewater conveyance to developing areas in the unincorporated County of Riverside, specifically Planning Area 6, and meet existing and projected demands for wastewater conveyance in EMWD's service area. The Project does not involve the extraction of groundwater, nor would it result in any increases in impervious surfaces that could affect groundwater recharge, and thus the Project would not impact groundwater

sustainability. Therefore, the Project would not conflict with applicable water quality control plans or groundwater management plans. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.11 Land Use and Planning

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Physically divide an established community?	[ ]	[ ]	[X]	[ ]
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project is located in the City of Perris and unincorporated Riverside County. Land use in the area is governed by zoning designations established in the City of Perris General Plan, the Perris Downtown Specific Plan, and by Riverside County ordinances that outline acceptable uses in each zone. The surrounding land uses of the Project area include residential, mixed use, open space, and commercial (City of Perris 2012; Riverside County 2023.b). Aging infrastructure concerns in the Downtown Specific Plan Area are recognized in the Land Use Element of the General Plan, and related increases in vehicle trips and parking demand are anticipated during downtown revitalization (City of Perris 2016.a).

Alignment 1 Highway 74 and Johnson Avenue/South G Street

Under Alignment 1, the pipeline would be constructed entirely within the existing public ROW along Highway 74 from West Ellis Avenue north through Navajo Road to Kruse Street (Alignment 1 – Segment 1) and Johnson Avenue/South G Street from north of Case Road to 2nd Street (Alignment 1 – Segment 2). The proposed temporary staging areas within APN 326-240-079, APN 310-090-014 and APN 310-123-006 are optional but would be located within vacant and already graded properties. If the contractor does not want to use the identified staging areas, the contractor would be responsible for securing suitable temporary equipment storage/staging site(s) prior to construction and implementing applicable EMWD Standard Construction Practices (see *Section 2.6*) at the staging area(s). Zoning along Alignment 1 – Segment 1 include Commercial Community and Residential along the northern portion of the alignment that falls within the City of Perris, and as Mixed Use in the Highway 74 portion in the unincorporated County. Zoning along Alignment 1 – Segment 2 includes Light Industrial in the southern portion (Case Street to approximately East 7th Street), and a mix of Residential and Commercial Community, Commercial Neighborhood, Residential, and Light Industrial between approximately 7th Street and 2nd Street.

Alignment 2 West Ellis Avenue

Under Alignment 2, the pipeline would be constructed on West Ellis Avenue from Highway 74 in the west to B Street in the east. This portion of West Ellis Avenue would be located within a public ROW that may not have been dedicated. As a result, approximately 530 LF of this alignment would run through APN 330-020-009, requiring an easement. The proposed temporary staging area within APN 313-180-013 is optional but would be located within a vacant and already graded property. If the contractor does not want to use the identified staging area, the contractor would be responsible for securing suitable temporary equipment storage/staging site(s) prior to construction and implementing applicable EMWD Standard Construction Practices (see *Section 2.6*) at the staging area(s). The easternmost portion of the alignment, between A Street and B Street is zoned Public Facility and is home to Perris Lake High School. The rest of Alignment 2 is zoned Multifamily Residential, Single-Family Residential, and Open Space within the City of Perris, and as Mixed Use within the unincorporated county portion of West Ellis Avenue.

a) Physically divide an established community?

Construction of the proposed Project would temporarily affect adjacent established communities through increased short-term vehicle trip lengths (as a result of street detours), dust, noise, and traffic during construction, and could temporarily reduce access to adjacent land uses. Any temporary lane closures would be addressed in a Traffic Control and Detour Plan (see *Section 2.6 EMWD Standard Construction Practices*). However, this temporary impact would not physically divide established communities. Furthermore, temporary effects from construction activities would not permanently affect the existing surrounding established communities. The Project pipelines would be located below ground, and disturbed areas would be restored to pre-construction condition. The temporary construction staging areas would be located on land that is vacant. Therefore, the proposed Project would have a less than significant impact related to physically dividing an established community.

Significance Determination

Less than significant impact.

Mitigation Measures

None required or recommended.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Construction of Alignment 1 would occur entirely within existing roadway ROWs, and the proposed staging areas would be located on vacant and previously graded land. Construction of Alignment 2 would occur within the existing West Ellis Avenue ROW and APN 330-020-009, which would require an easement. Upon completion of construction, all disturbed surfaces would be restored to pre-construction conditions and some news paved areas (Alignment 2). The Project pipeline would be installed below ground and would not result in any land use changes.

The Project is located within the Western Riverside County Multiple Species Habitat Conservation Plan, which encompasses all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line and the jurisdictional area of the City of Perris. The WR-MSHCP is a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Western Riverside County (RCTLMA 2023). Neither of Project alignments are located within existing or proposed criteria areas or reserves defined in the WR-MSHCP. Therefore, the proposed Project would not impact wildlife movement corridors or habitat linkages because the Project would be developed within a roadway and previously disturbed, barren, unvegetated, and/or sparsely vegetated areas.

As a result, the Project would not conflict with applicable land use plans, policies, or regulations intended to avoid or mitigate an environmental effect.

Significance Determination

No impact.

Mitigation Measures

None required or recommended.

3.12 Mineral Resources

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	[ ]	[ ]	[ ]	[X]
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	[ ]	[ ]	[ ]	[X]

Discussion

The Surface Mining and Reclamation Act of 1975 mandates a process for classification and designation of lands containing potentially important mineral deposits. Classification is carried out by the California Geological Survey (CGS) State Geologist and designation is a function of the CGS State Mining and Geology Board. The relative importance of potential mineral resource sites is indicated through classification into Mineral Resource Zones (MRZs). These MRZs are based on geological appraisals which include the use of literature, geological maps, and publications and data from the CDOC Division of Mines and Geology, US Geological Survey, the former US Bureau of Mines, and the US Bureau of Land Management. It also includes site investigations that determine the chemical and physical components of the area. An area can be classified as:

MRZ 1: No mineral resources;

MRZ 2: Significant resource area (quality and quantity known);

MRZ 3: Significant resource area (quality and quantity unknown);

MRZ 4: No information (applies primarily to high-value ores).

The proposed Project is located within the City of Perris and unincorporated Riverside County. The portion of the proposed Project area within the City of Peris is in designated urban areas, while the portion located in unincorporated Riverside County is designed MRZ-3 (CGS 2008).There are no operating quarries for any mineral resources in the City of Perris (CDOC n.d.).

a-b) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

The CDOC, Division of Mines and Geology has not identified significant mineral resources in the City of Perris, and the City of Perris has additionally supported this finding in its 2030 General Plan (CDOC n.d.; City of Perris 2004). Therefore, no impact to availability of valuable mineral resources would occur. The proposed Project area is not currently used as a mineral resource recovery site and the proposed Project would not involve mining or the production of mineral resources. No impact on the availability of a known mineral resource or the availability of a locally-important mineral resource recovery site would occur as a result of construction or operation of the proposed Project.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.13 Noise

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	[ ]	[X]	[ ]	[ ]
b) Generation of excessive groundborne vibration or groundborne noise levels?	[ ]	[ ]	[X]	[ ]

c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	[ ]	[X]	[ ]	[ ]

Discussion

Noise is generally defined as unwanted sound. Noise can cause hearing impairment for humans, and may also disrupt everyday activities such as sleep, speech, and activities requiring concentration. Noise can also interfere with the activities of wildlife, especially nesting birds. Noise-sensitive land uses are generally those where excess noise would disrupt how humans and/or wildlife use the land. Land uses such as residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas are considered noise-sensitive (City of Perris 2016.a). Noise may be generated by mobile (i.e., line) sources (for example, cars, trains, and aircraft) or stationary (i.e., point) sources (for example, machinery, airports, and construction sites).

This analysis uses the following noise metrics adapted from the County of Riverside General Plan Noise Element (County of Riverside 2015) and the Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018).

- A decibel (dB) is a unit for measuring the relative amplitude of a sound equal to the smallest difference normally detectable by the human ear, the range of which includes approximately one hundred thirty (130) decibels on a scale beginning with zero decibels for the faintest detectable sound.
- A-weighting (dBA) means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.
- Community Noise Equivalent Level (CNEL) is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7pm to 10pm and after the addition of 10 decibels to sound levels in the night from 10pm to 7am.
- Day-Night Average Level (Ldn) is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night from 10pm to 7am. CNEL and Ldn both represent daily levels of noise exposure averaged on an annual or daily basis.
- L_{10} is the A-weighted sound level exceeded 10% of the sample time. Similarly, L_{50}, L_{90}, etc.
- Maximum Sound Level (L_{max}) is the maximum level describes the maximum noise level reached during a single noise event. For transit noise impact assessments, it is appropriate to consider the A-weighted maximum level (L_{max}) to understand the full context of the

scenario. It is not appropriate to use this metric for transit noise impact assessments. This metric is commonly used in vehicle noise specifications and commonly measured for individual vehicles.

Groundborne vibration can occur when heavy equipment or vehicles create vibrations in the ground, which can then propagate through the ground to buildings, creating a low-frequency sound. Groundborne vibration can be described by both its amplitude and frequency. Amplitude may be characterized by particle velocity, which is measured in inches or millimeters per second. Vibration can be felt outdoors, but the perceived intensity of vibration impacts is much greater indoors, due to the shaking of the structure. Groundborne vibrations can be a source of annoyance to humans due to a "rumbling" effect, and such vibrations may also cause damage to buildings. Groundborne vibration is discussed in terms of these impacts on humans and structures. The annoyance potential of groundborne noise is typically characterized using the A-weighted sound level. Common sources of vibration come from trains, transit vehicles, construction equipment, airplanes, and large vehicles. Land uses sensitive to vibration will have a lower vibration threshold.

This analysis uses the following vibration metrics adapted from the Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018).

- Peak Particle Velocity (PPV) is the peak signal value of an oscillating vibration velocity waveform. Usually expressed in inches/second.
- Root Mean Square (rms) is the square root of the arithmetic average of the squared amplitude of the signal.
- Vibration Decibels (VdB) is the vibration velocity level in decibel scale.

Noise Standards

The proposed Project alignments are located within the City of Perris and unincorporated County of Riverside. EMWD has not established an applicable noise standard of its own for permanent or temporary ambient noise levels, however EMWD follows a "good neighbor" approach to adhering to local noise standards. Thus, the City of Perris and County of Riverside noise standards are used for the purposes of evaluating the significance of the Project's noise levels in this CEQA analysis.

The Riverside County General Plan Noise Element (County of Riverside 2015) provides a systematic approach to identifying and appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise. The element includes policies, standards, criteria, programs, diagrams, a reference to action items, and maps related to protecting public health and welfare from noise (**Table 3-14**).

Table 3-14: County of Riverside Land Use Compatibility for Community Noise Exposure

Land Use Category	Range of "Normally Acceptable" Community Noise Exposure Level (L_{dn} or CNEL, dBA)					
	55	60	65	70	75	80
Residential-low density single family, duplex, mobile homes						
Residential-multiple family						
Transient lodging-motels, hotels						
Schools, libraries, churches, hospitals, nursing homes						
Playgrounds, neighborhood parks						
Golf courses, riding stables, water recreation, cemeteries						
Office buildings, businesses, commercial, and professional						
Industrial, manufacturing, utilities, agriculture						

Source: County of Riverside 2015

Riverside County Ordinance No. 847 Regulating Noise establishes countywide standards regulating noise and regulates noise in order to protect the health, safety, and general welfare of Riverside County residents. According to Ordinance 847, sound emanating from capital improvement projects of a government agency are exempt from the provisions of the ordinance. Therefore, the sound levels set in the County of Riverside Noise Ordinance would not apply to the proposed Project. However, sound levels can be used to understand acceptable sound levels in the region. The ordinance establishes general sound level standards by land use type. The proposed Project alignments overly the residential land use type. For the residential land use designation, the ordinance stipulates that no person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standard shown in **Table 3-15**.

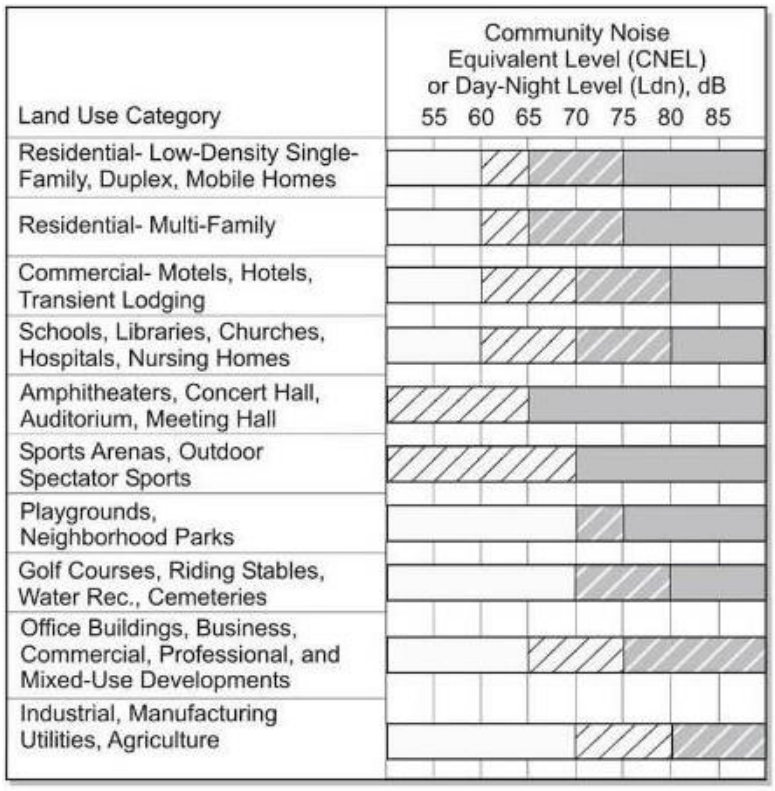
Table 3-15: County of Riverside Sound Level Standards

General Plan Land Use Designation of Proposed Project	Maximum Decibel Level (dB L_{MAX})	
	7am – 10pm	10pm – 7am
Residential (1/2 Acre – 20+ Density)	55	45

Source: County of Riverside 2007

The City of Perris General Plan Noise Element (City of Perris 2016.b) identifies existing noise sources in the City, including both stationary and mobile sources, and establishes strategies and thresholds to protect noise sensitive land uses. **Table 3-16** presents a land use compatibility chart for community noise as presented in the City of Perris General Plan Noise Element.

Table 3-16: City of Perris Land Use Compatibility for Community Noise Exposure



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable
Specific land use is satisfactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Clearly Unacceptable
New construction or development should generally not be undertaken.

City of Perris Ordinance No. 1082 Regulating Noise Levels establishes suitable noise standards for residential, commercial, school, agricultural and noise sensitive areas. City of Perris Municipal Code Section 7.34.060 states that it is unlawful for any person between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish, excavate, alter or repair

any building or structure in such a manner as to create disturbing, excessive or offensive noise. Construction activity shall not exceed 80 dBA in residential zones in the city (City of Perris 2000).

A) Generation of substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Construction of the proposed Project has the potential to expose people to increased noise levels resulting from the use of equipment and vehicles. Single-family residences are the primary noise-sensitive receptors adjacent to, and in the vicinity, of the Project alignments.

Construction of the proposed Project is expected to last approximately 18 months and construction activities would include saw cutting of the pavement, trench excavation, trench backfill and compaction, and site restoration/pavement replacement. Noise-generating equipment used during pipeline construction is listed in **Table 2-2** in *Section 2.4.3 Pipeline Construction*. Pipeline construction is expected to occur at a rate of approximately 80 to 100 LF per day for open trenching, though portions of Alignment 2 are considered deep sewer, which would result in construction at a rate of approximately 30 to 40 LF per day. Therefore, construction noise impacts at any one receptor would be of short duration as construction would move along the pipeline alignment until it is completed. In addition, construction noise levels would fluctuate depending on the construction phase, equipment type, duration of use, distance between noise source and receptor, and presence or absence of existing barriers between noise source and receptor. The typical noise level of each piece of equipment included in *Section 2.4.3 Pipeline Construction* is listed in **Table 3-17**.

Table 3-17: Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level 50ft from Source, dBA
Air Compressor	80
Bore/Drill Rig*	88[4]
Cement and Mortar Mixer	82
Concrete Saw	N/A[1]
Crane*	83
Dumper/Tender	84[2]
Excavator	80[3]
Generator Set	82
Off-Highway Truck (Utility Truck, Water Truck)	84[2]
Pavement Breaker	88[4]
Paver	85
Paving Equipment	85
Pump	77

Equipment	Typical Noise Level 50ft from Source, dBA
Roller	85
Sweeper	N/A[1]
Tractor/Loader/Backhoe	80

Source: FTA 2018

Notes:

*If Alignment 2 is selected and trenchless construction required.

1. No noise level was reported
2. Noise level was assumed to be comparable to "truck"
3. Noise level was assumed to be comparable to "backhoe"
4. Noise level was assumed to be comparable to "jackhammer"

Schools and residences adjacent to the Project alignments have the potential to be exposed to construction generated noise which could exceed the maximum exposure level standards established in the County of Riverside Noise Ordinance 847 and City of Perris Ordinance 1082. Although the proposed Project is exempt from County of Riverside and City of Perris noise standards, construction would occur during daytime hours only, consistent with the limits on private construction activities in the noise ordinances. Additionally, EMWD would require the Project contractor to implement **Mitigation Measure NOI-1**, which includes a number of BMPs to control and reduce noise, including but not limited to restricting hours for construction, notification to nearby residents, placement of equipment to minimize noise at sensitive receptors, and restrictions on non-critical noise generating activities, among others. With construction limited to daytime hours and with implementation of **Mitigation Measure NOI-1,** construction noise impacts would be less than significant.

Operation

Once operational, the below-ground sewer pipelines would not generate noise. Noise may be associated with occasional vehicle maintenance trips, but these trips would be infrequent, and the resulting noise would be consistent with existing ambient noises because the pipelines are within roadway ROWs. The Project would have less-than-significant long-term operational noise impacts.

Mitigation Measures

NOI-1: Construction Noise Reduction Measures

EMWD shall require its contractor to implement the following actions relative to construction noise:

- EMWD shall conduct construction activities Monday through Friday between the hours of 7:00 AM and 6:00 PM.
- Prior to construction, EMWD, in coordination with the construction contractor, shall provide written notification to all properties within 50 feet of the proposed Project facilities informing occupants of the type and duration of construction activities. Notification materials shall identify a method to contact EMWD's program manager with noise

concerns. Prior to construction commencement, the EMWD program manager shall establish a noise complaint process to allow for resolution of noise problems. This process shall be clearly described in the notifications.

- Stationary noise-generating equipment shall be located as far from sensitive receptors as possible. Such equipment shall also be oriented to minimize noise that would be directed toward sensitive receptors. Whenever possible, other non-noise generating equipment (e.g., roll-off dumpsters) shall be positioned between the noise source and sensitive receptors.

- Equipment and staging areas shall be located as far from sensitive receptors as possible. At the staging location, equipment and materials shall be kept as far from adjacent sensitive receptors as possible.

- Construction vehicles and equipment shall be maintained in the best possible working order; operated by an experienced, trained operator; and shall utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds).

- Unnecessary idling of internal combustion engines shall be prohibited. In practice, this would require turning off equipment if it would idle for five or more minutes.

- Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.

- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

Significance Determination

Less than significant impact with mitigation incorporated.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Construction

Construction of the proposed Project has the potential to expose people to increased levels of groundborne vibration and noise resulting from the use of equipment and vehicles. Single-family residences are the primary sensitive receptors adjacent to, and in the vicinity, of the Project alignments. **Table 3-18** displays the human reaction to typical vibration levels.

Table 3-18: Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches/second)	Human Reaction
0.0059-0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937-0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges

Source: County of Riverside 2015

Construction of the proposed Project is expected to last approximately 18 months and construction activities would include saw cutting of the pavement, trench excavation, trench backfill and compaction, and site restoration/pavement replacement. Vibration-generating equipment used during pipeline construction is listed in **Table 2-2** in *Section 2.4.3 Pipeline Construction*. Pipeline construction is expected to occur at a rate of approximately 80 to 100 LF per day for open trenching, though portions of the alignment are considered deep sewer, which would result in construction at a rate of approximately 30 to 40 LF per day. Groundborne vibrations propagate through the ground and decrease in intensity quickly as they move away from the source. The *Transit Noise and Vibration Impact Assessment Manual* provides average source levels for typical construction equipment that may generate groundborne vibrations. Vibration source levels for construction equipment associated with the proposed Project are summarized in **Table 3-19**.

Table 3-19: Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (inches/second)	Approximate VdB at 25 feet
Air Compressor	N/A	N/A
Bore/Drill Rig*	0.035[2]	79
Cement and Mortar Mixer	N/A	N/A
Concrete Saw	N/A	N/A
Crane*	N/A	N/A
Dumper/Tender	0.076[1]	86[1]
Excavator	N/A	N/A
Generator Set	N/A	N/A
Off-Highway Truck (Utility Truck, Water Truck)	0.076[1]	86[1]
Pavement Breaker	0.035[2]	79[2]

Equipment	PPV at 25 feet (inches/second)	Approximate VdB at 25 feet
Paver	N/A	N/A
Paving Equipment	N/A	N/A
Pump	N/A	N/A
Roller	0.21[3]	94
Sweeper	N/A	N/A
Tractor/Loader/Backhoe	N/A	N/A

Source: FTA 2018

Most construction equipment is not expected to generate vibration; these are denoted with "N/A."

1. Vibration level was assumed to be comparable to "loaded trucks"
2. Vibration level was assumed to be comparable to a "jackhammer"
3. Vibration level was assumed to be comparable to a "vibratory roller"

According to the Federal Transit Administration (FTA)'s *Transit Noise and Vibration Impact Assessment Manual*, 80 VdB is the threshold for human annoyance from groundborne vibration noise when events are infrequent. The proposed Project would not involve use of high-impact activities, such as piledriving or blasting, that typically generate significant levels of groundborne vibration. However, vibratory rollers would produce levels of vibration noise that exceed the threshold for human annoyance at a distance of 25 feet. Groundborne vibration from a vibratory roller would attenuate to below 0.1968 inches/second peak particle velocity to reach a less than significant level at a distance of less than 30 feet (FTA 2018). Along Alignment 1, most residences adjacent to the proposed Project alignment are set back at a distance greater than 30 feet from the construction ROWs. Along Alignment 2, residences along the paved section of West Ellis Avenue are closer than 30 feet from the roadway ROW.

Although pipeline construction would require the use of vibratory rollers which have the potential to generate groundborne vibration annoying to people in buildings within 25 feet, vibrations associated with pipeline construction would occur infrequently and would be short in duration. Additionally, pavement resurfacing would move along at the same rate as pipeline installation and would not remain in the same location for an extended period of time; therefore, sensitive receptors near the pipeline alignments would not experience vibrations for the entire duration of Project construction. Groundborne vibration and noise tends to be more perceptible and disruptive during nighttime hours when people are generally indoors and asleep. Pipeline construction would only occur during daytime hours and would therefore avoid impacts during the night when they would be more likely to be noticed. Once operational, the pipelines would not produce groundborne vibration or groundborne noise.

Construction of the proposed Project may generate low levels of vibration noise that would be infrequent, temporary, and short in duration. Vibration and vibration noise would not be damaging or excessive, therefore the impact would be less than significant.

Mitigation Measure

None required or recommended.

Significance Determination

Less than significant.

c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

Perris Valley Airport (Federal Aviation Administration Identifier L65) is a privately owned and operated airport open to public use. The Perris Valley Airport is located south of Ellis Avenue between Goetz Road and Interstate 215, approximately 0.10 miles south of Alignment 1 – Segment 2, and 0.5 miles east of Alignment 2. The entire Project area is within the Airport Influence Area Boundary and within the Perris Valley Airport Land Use Plan. Alignment 1 – Segment 1 and Alignment 2 are in Zone E, while Alignment 1 – Segment 2 is within Zones B1, C, D, and E (Riverside County, 2011). The Project would construct sewer pipelines, which would be installed underground. It would not create a hazard for planes taking off from or landing at the Perris Valley Airport. The Project would comply with applicable noise regulations, and with implementation of **Mitigation Measure NOI-1**, which requires implementation of noise BMPs to reduce excessive noise levels during construction, would not result in a safety hazard or excessive noise for people residing or working in the Project area.

Mitigation Measures

Mitigation Measure NOI-1, above, would be required.

Significance Determination

Less than significant impact with mitigation.

3.14 Population and Housing

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or	[ ]	[ ]	[ ]	[X]

indirectly (for example, through extension of roads or other infrastructure)?				
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	[ ]	[ ]	[ ]	[X]

Discussion

In 2020, EMWD served an estimated retail population of 603,950 through approximately 155,561 single family, multi-family, and other commercial, industrial, institutional, landscape, and irrigation accounts. EMWD's service area is currently 40 percent built out, making it one of the few regions in Southern California that will see significant population growth in the coming decades (EMWD 2021.b). Ultimate demand estimates indicate that before EMWD reaches build out, the population will more than double compared to the current size. As planned for in the EMWD 2020 Urban Water Management Plan, EMWD's retail service area population will increase to approximately 807,200 by 2045 (EMWD 2021.b).

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed Project would not directly induce unplanned population growth because no new housing or permanent employment would be constructed as a result of the proposed Project. The proposed Project involves an extension of EMWD's existing sewer infrastructure within its existing service area, which would serve the portion of Riverside County Planning Area 6 along Highway 74 that is being developed. The development within Riverside County Planning Area 6 is planned growth and is consistent with the County's zoning, General Plan, and Specific Plan. The Project would increase EMWD's sewer system capacity to accommodate planned growth anticipated in the 2020 UWMP that would occur with or without the Project. Inspection and repair, if necessary, of the proposed Project would be incorporated into EMWD's existing O&M activities; no new staff would be required to serve the Project. Therefore, the proposed Project would not directly or indirectly induce unplanned population growth and no impact would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Construction and operation of the Project would occur entirely within existing City of Perris and Riverside County roadway ROWs (Alignment 1) and within existing West Ellis Avenue ROW and through undeveloped land within APN 330-020-009 (Alignment 2). Potential construction staging areas would occur within vacant and already graded properties. The proposed Project would not be constructed in a manner that would remove existing housing stock or reduce areas zoned for residential use. Further the proposed Project would not require temporary removal of residents. Therefore, the Project would not displace existing people or houses or require the construction of replacement housing. For these reasons, no impact would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.15 Public Services

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:	[ ]	[ ]	[ ]	[X]
i) Fire protection?	[ ]	[ ]	[ ]	[X]

ii) Police protection?	[ ]	[ ]	[ ]	[X]
iii) Schools?	[ ]	[ ]	[ ]	[X]
iv) Parks?	[ ]	[ ]	[X]	[ ]
v) Other public facilities?	[ ]	[ ]	[ ]	[X]

Discussion

Fire Protection

The City of Perris contracts with the Riverside County Fire Department for fire and emergency services, which also provides fire and emergency services for the unincorporated portion of the Project area. There are three fire stations within the City of Perris (Riverside County n.d.). In relation to the Project area, Station 101 is the closest of the two fire stations within the City of Perris, and it is also the closest of the County fire stations in unincorporated Riverside County (Riverside County, n.d.). The City of Perris Riverside County Station 101, located at 105 South F Street, is, at its furthest, approximately two miles away from the proposed Project. The Riverside County Fire Department responds to fires, rescues, traffic accidents, medical emergencies, and requests for general public assistance (City of Perris n.d.b.).

Police Protection

The City of Perris contracts police services from the Riverside County Sheriff's Department to provide police protection and crime prevention services within the proposed Project area. The Riverside County Sheriff's Department also serves the unincorporated portion of the proposed Project area. The newest of the Department's stations is located in the City of Perris at 137 North Perris Blvd., between approximately one quarter of a mile and two miles from the Project area (City of Perris n.d.c.).

Schools

The proposed Project is located within the Perris Elementary School District and the Perris Union High School District (City of Perris n.d.e). The districts operate eight elementary schools, one middle school, and five high schools. There are two schools within one quarter mile of the proposed Project, including Park Avenue Elementary School and Perris Elementary School near Alignment 1 and Perris Lake High School near Alignment 2.

Parks

The City of Perris Parks Department maintains and manages 25 parks and recreational facilities. The Riverside County Regional Park and Open-Space District manages seven campgrounds, eight open space areas, and seven historic sites and centers, One park is located within one-quarter mile of the proposed Project. This is Rotary Park, which is located on the north side of West Ellis Avenue between A Street and B Street, adjacent to Alignment 2, and managed by the City of Perris

Parks Department. Construction of the proposed Project would occur entirely within existing roadways, and staging areas would occur within vacant and already graded parcels.

Other Public Facilities

There are no other public facilities within one-quarter mile of the proposed Project. The City of Perris Public Library is located at 163 East San Jacinto Ave., approximately 1.5 miles from the Project area. The hospital nearest to the Project area is Kindred Hospital Riverside (2224 Medical Center Dr.), located approximately three miles from the Project area.

a.i) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: Fire protection?

The proposed Project would not include construction of new or expanded Riverside County or City of Perris facilities that would increase the number of fire protection facilities, or indirectly cause population growth or development, resulting in the need for additional fire protection services. The proposed Project would increase EMWD's sewer system capacity to accommodate planned growth anticipated in the 2020 UWMP and Riverside County General Plan that would occur with or without the Project. The proposed Project itself would not increase population or result in the need for new or expanded public facilities, such as fire protection facilities, typically associated with population growth. Construction of the proposed Project would require temporary lane closures that could affect response times for fire protection services or interfere with access to fire hydrants. However, a Traffic Control and Detour Plan, required as part of EMWD's Standard Construction Practices (see *Section 2.6*), would be developed that identifies potential road closures, and would be coordinated with emergency services, including fire protection services. The coordination would include construction schedule, Project siting, and potential delays due to construction. The Traffic Control and Detour Plan would identify roadways and access points for emergency services and minimize disruptions to or closures of these locations. As a result, the Project would not substantially increase the need for new fire department staff or new facilities, nor would it interfere with acceptable service rations, responses times, or other performance objectives for fire protection. Therefore, no impact on fire protection service facilities would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

a.ii) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: Police protection?

The proposed Project would not include construction of new or expanded facilities that would increase the number of police protection facilities or indirectly cause population growth or development, resulting in the need for additional police protection services. The proposed Project would increase EMWD's sewer system capacity to accommodate planned growth anticipated in the 2020 UWMP and Riverside County and General Plan that would occur with or without the Project. The need for new or expanded public facilities, such as police protection facilities, is typically associated with a population increase. The Project would therefore not substantially increase the need for new police department staff or facilities. Construction of the proposed Project would require temporary lane closures that could affect response times for police. However, a Traffic Control and Detour Plan, required as part of EMWD's Standard Construction Practices (see *Section 2.6*), would be developed that identifies potential road closures, and would be coordinated with emergency services, including emergency services. The coordination would include construction schedule, Project siting, and potential delays due to construction. The Traffic Control and Detour Plan would identify roadways and access points for emergency services and minimize disruptions to or closures of these locations. Therefore, no impact on police service facilities would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

a.iii) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: Schools?

The proposed Project would not change existing demand on schools because the Project would serve existing and planned communities. Construction of the proposed Project does not include housing, and operation would not result in new employment or population growth that would result in an influx of students. No new school facilities would need to be built to maintain class size ratios or other performance objectives. A portion of Alignment 2 would occur adjacent to the southern border of Perris Lake High School, but would not interfere with access to the school, which is available on B Street where no construction would occur. Although construction of Alignment 1 would occur within one-quarter mile of Park Avenue Elementary School and Perris

Elementary School, it would not be located on roadways adjacent to either school. As a result, no impact on school facilities would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

a.iv) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: Parks?

The proposed Project would not change existing demand on City parks or recreational facilities because the proposed Project does not include new housing units, nor would it directly or indirectly induce population growth or permanent employment within the area. Construction of the Project would not necessitate expansion of existing or construction of new parks or recreational facilities to maintain any existing park acreage standard. The proposed Project would not have any direct impact on park facilities. Rotary Park is adjacent to Alignment 2, and lane closures would occur on West Ellis Avenue adjacent to the park during construction of Alignment 2. These lane closures would be temporary. Access to the park would be addressed in the Traffic Control and Detour Plan, which would be developed as part of EMWD's Standard Construction Practices (see *Section 2.6*). The Project area adjacent to Rotary Park would be restored to pre-construction condition at the end of the Project's 18-month construction period. Therefore, impacts on park facilities would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

a.v) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: Other public facilities?

The proposed Project would not change existing demand on other public facilities because the Project does not propose new housing units, nor would it directly or indirectly induce population

or permanent employment within the area. Construction and operation of the Project would not necessitate expansion of existing or construction of new public facilities such as libraries or hospitals, nor would it interfere with access to such facilities. Therefore, no impact on other public facilities would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.16 Recreation

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	[ ]	[ ]	[X]	[ ]
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	[ ]	[ ]	[ ]	[X]

Discussion

According to the City of Perris Interactive Zoning Map, parcels adjacent to Alignment 1 and Alignment 2 are classified as residential, multi-family residential, commercial, professional office, open space, and public (City of Perris 2024). Within the unincorporated Riverside County portion of the Project area, parcels are zone mixed use. There are also no regional, state, multi-use, or proposed trails within the Project area. The nearest public trail to the proposed Project is located approximately 4.5 miles northeast of the Project area and consists of a 0.75 mile segment over

the aqueduct near the Avalon Greenway. Segment 2 of Alignment 1, located at the intersection of 4th Street and South G Street, crosses a proposed Class II Bike Lane, however this bike lane has not yet been established or constructed. The nearest existing bike lane is a Class II Bike Lane 0.25 mile away on Redlands Ave (City of Perris 2013.b). Class II bike lanes provide a striped lane for one-way bike travel on a street or highway. There is one recreational facility located adjacent to Alignment 2, Rotary Park, on the north side of West Ellis Avenue between A Street and B Street. A parking lot is located on West Ellis Avenue, and street parking is available along A Street and in surrounding neighborhoods.

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The proposed Project would serve existing and planned development that would occur with or without the Project. The proposed Project does not include residential housing and would not induce permanent employment or population growth that would permanently increase the use of the parks and recreational facilities. The Project would not increase the use of existing parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.

Parking at Rotary Park may be temporarily affected by construction of Alignment 2 occurring along West Ellis Avenue, interruptions would be for a limited duration and not long enough to create substantial deterioration at other parks that people may choose to visit while construction occurs near Rotary Park. Once construction is complete, the roadway ROW would be restored to pre-construction conditions in the portion next to Rotary Park. Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Implementation of the proposed Project would not require construction or expansion of recreational facilities which could have an adverse physical impact on the environment. As a result, no impact would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

3.17 Transportation

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	[ ]	[ ]	[X]	[ ]
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	[ ]	[ ]	[X]	[ ]
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	[ ]	[ ]	[X]	[ ]
D) Result in inadequate emergency access?	[ ]	[ ]	[X]	[ ]

Discussion

Major roadways in the proposed Project vicinity are Highway 74, West 4th Street, South G Street and Johnson Avenue for Alignment 1 and West Ellis Avenue for Alignment 2. Metrolink operates the Perris Valley rail line, which runs adjacent to D Street and along Case Road in the vicinity of the proposed Project. Bus routes in the area are operated by Riverside Transit Agency. Active routes that cross or coincide with Alignment 1 include Route 9, which runs along Highway 74; Route 22, which runs along Navajo Road; and Route 61, which runs along Case Road but turns south at Goetz Street just west of the intersection with Johnson Street. Active bus routes that cross or coincide with Alignment 2 are limited to Route 9 which passes through the intersection of

Highway 74 and Ellis Avenue. Additionally, there are no existing bikeways or railroad crossings within the immediate Project area.

Along the western portion of Alignment 1, Highway 74 consists of four lanes of traffic and a center turn lane. Navajo Road is a two-lane road, with adjacent commercial land uses. The portion of Kruse Street in the Project area is unpaved, and traversing through a mix of undeveloped land and single family residential. The eastern portion of Alignment 1 runs along South G Street and Johnson Avenues. South G Street is a two-lane road running through commercial and residential areas, with overhead electrical utilities and traffic lights at most intersections. There are sidewalks along both sides of South G Street from the northernmost portion of the alignment at 2nd Street south until 7th Street. From 9th street to Case Street there is a center turn-lane within the street. The speed limit along South G street is 25 mph.

Alignment 2 is located along West Ellis Avenue between Highway 74 and B Street. West Ellis Avenue is an unpaved one lane road between Highway 74 and A Street. The road is undulating and rutted, with vegetation and large rocks along both sides. Between A Street and B Street, the road is paved with sidewalks and a combination of head-in angled parking and parallel parking available on either side of the road.

The City of Perris *General Plan* Circulation Element establishes goals, objectives, and policies for transportation. It also provides information on current and future conditions for streets and highways, public transportation, non-motorized transportation and other transportation needs. Alignment 1 Segment 2, Johnson Avenue/South G Street is located along the boundary of a transportation corridor study area, meaning it will be studied during the General Plan's planning period and may change prior to 2030 (City of Perris 2022). The Riverside County Circulation Element (County of Riverside 2020) designates future road improvements and extensions, addresses non-motorized transportation alternatives, and identifies funding options. The Circulation Element also establishes standards for the movement of people, goods, and services throughout the planning area.

On September 3, 2020, the Southern California Association of Governments adopted Connect SoCal, SCAG's 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy. The plan is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The plan details how the region will address its transportation and land use challenges and opportunities in order to achieve its regional emissions standards and GHG reduction targets. The Connect SoCal plan represents the vision for Southern California's future, including policies, strategies, and projects for advancing the region's mobility, economy, and sustainability through 2040 (SCAG 2020).

The City of Perris *General Plan* Safety Element identifies generalized evacuation corridors. Although emergency egress may vary depending on the type and scale of emergencies, prominent emergency evacuation routes in the City of Perris which are mapped in the *General Plan* Safety Element and which fall within the Project area are located on Highway 74, Navajo Road, A Street, D Street, 11th Street, 4th Street, Perris Boulevard, Case Street, and Goetz Road.

a) *Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

Construction of the proposed Project would have temporary effects on local roadways, including Highway 74, Kruse Street, South G Street, and Johnson Avenue (Alignment 1) or West Ellis Avenue (Alignment 2). Project construction is estimated to last approximately 18 months and would occur within the roadway ROW. Due to construction activities within the roadway ROW, temporary lane closures would occur, necessitating traffic control measures or alternate routes. Additionally, sidewalks may be temporarily closed when construction occurs in the adjacent ROW. However, construction would occur at a rate of between 30 and 100 LF per day, so impacts from lane closures would not occur in the same area over the entire construction period, and disturbed areas would be restored to their original condition. In the portion of Alignment 2 that is currently unpaved, the road would be paved following construction, and in the portion of Alignment 2 that is currently paved, the disturbed area would be restored to its original condition. Because there are no bikeways within the proposed Project's alignment, the proposed Project would not impede bike path or trail access.

Potential construction impacts associated with lane closures would be minimized through the implementation of the Traffic Control and Detour Plan, incorporated into the proposed Project as one of EMWD's Standard Construction Practices (see *Section 2.6*). The Traffic Control and Detour Plan would include identification of staging locations, safe ingress and egress points from staking areas, potential road closures, haul routes for construction-related vehicle traffic, save routes to maintain pedestrian and bicyclist safety during construction, and traffic control measures. It would be reviewed by the City of Perris and County of Riverside and coordinated with emergency service providers. Construction related-impacts to roadways, trails, and bikeway systems would therefore be less than significant.

During operation, EMWD staff may be required to implement temporary lane closures to access manholes to conduct maintenance activities. Such activities would be incorporated into EMWD's existing O&M activities, and would be temporary. The proposed Project's long-term impacts on roadways, trails, and bikeway systems would therefore be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts in terms of vehicle miles traveled for land use projects and transportation projects. VMT refers to the amount and distance of automobile travel attributable to a project. According to the

California Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018), the term "automobile" refers to on-road passenger vehicles, specifically cars and light-duty trucks. In the case of the proposed Project, worker trips would be conducted in cars and light-duty trucks. Vendor and hauling trips would be conducted in medium- or heavy-duty trucks and are therefore excluded from the estimation of VMT. Environmental impacts associated with the use of medium- and heavy-duty truck trips are addressed in the Air Quality, Energy, and Greenhouse Gas sections of this document.

Construction of the proposed Project would involve temporary worker trips which would occur during the approximately 18-month construction period. Project construction would require approximately 55 and 53 round-trip worker trips per day for Alignment 1 and Alignment 2, respectively. According to OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA*, projects that generate fewer than 110 trips per day may be assumed to cause a less-than-significant transportation impact (OPR 2018). Therefore, construction of the Project would not result in a considerable increase in VMT. Operation of the proposed Project is expected to require occasional worker trips for inspection and maintenance of the pipeline and manholes. These trips would be incorporated into EMWD's existing O&M program and would not increase VMT in the Project area. Based on OPR guidance, the proposed Project would not create a significant impact related to VMT. The Project would be consistent with CEQA Guidelines Section 15064.3, subdivision (b) and impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Project construction would temporarily increase transportation hazards in the Project area because it would require lane closures, incompatible uses (i.e., use of heavy construction equipment) and ingress/egress to temporary staging areas from existing roadways. However, implementation of EMWD Standard Construction Practices (*Section 2.6*), which includes a Traffic Control and Detour Plan, would minimize these hazards by identifying and implementing traffic control and safety measures such as flagging, and establishment of safe routes. .

For Alignment 1, no new roadways would be constructed, and existing roadways would be restored to their prior condition once construction is complete. Therefore, after construction, the Project would not create roadway hazards. For Alignment 2, a paved road would be installed after Project completion along West Ellis Avenue between Highway 74 and South A Street where there is currently a dirt road. While this new pavement does represent a change in road conditions as part of the completed Project, the paved road would not substantially increase hazards due to

design features; paving of the road would be completed following applicable standards as set forth by the City and County. Impacts related to hazards associated with a design feature or incompatible uses would therefore be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Result in inadequate emergency access?

Construction of the proposed Project may require lane closures along the pipeline alignments and would generate trips associated with construction (worker travel and delivery of materials and equipment). Lane closures have the potential to hinder access for emergency vehicles. Traffic control measures are included in EMWD's Standard Construction Practices (see *Section 2.6*). Traffic control measures implemented during Project construction would require that emergency crews be able to access sites and surrounding areas. The contractor would coordinate the Traffic Control and Detour Plan with EMWD and emergency service providers to ensure that emergency responders are informed of construction locations and construction does not interrupt emergency access. Traffic control measures would also require that the contractor make a reasonable effort to preserve access to business and properties during construction. Project impacts would be less than significant.

Significance Determination

Less than significant impact.

Mitigation Measures

None required or recommended.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	[ ]	[X]	[ ]	[ ]
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision © of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision © of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	[ ]	[X]	[ ]	[ ]

Discussion

A *Cultural Resources Technical Report* was prepared for the proposed Project by Rincon Consultants (Rincon Consultants 2024b). The report includes a cultural resources records search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC), a Sacred Lands File (SLF) search conducted by the Native American Heritage Commission (NAHC), a geoarchaeological review, and a cultural resources field survey. The CHRIS records search was conducted on November 3, 2023, and the results concluded that no known cultural resources are located within the proposed Project area. Pedestrian field surveys conducted on December 18, 2023 and February 21, 2024 confirmed that no known tribal cultural resources are located within the proposed Project area. Additional information is provided in *Section 3.5 Cultural Resources*. The complete Cultural Resources Technical Report is provided in **Appendix C**.

The NAHC was contacted on September 15, 2023 to request a search of the SLF as well as a contact list of Native Americans culturally affiliated with the Project site. On November 9, 2023, the NAHC responded stating the results of the SLF search were positive for the presence of Native American cultural resources. The NAHC did not provide details regarding the positive response but recommended the Pechanga Band of Indians be contacted for more information.

EMWD sent tribal consultation letters under AB52 on November 17, 2023 to Native Tribes that are traditionally and culturally affiliated with the geographic area of the proposed Project to identify resources of cultural or spiritual value to the Tribe. Consultation efforts are summarized in **Table 3-20**. Consultations were conducted on January 24, 2024 with Pechanga Band of Indians and February 6, 2024 with Agua Caliente Band of Cahuilla Indians. The remaining four Native Tribes were contacted but either declined consultation or did not respond, as noted in **Table 3-20**.

Table 3-20: Native American Tribal Consultation

Tribe	Individual Contacted	Date Letter Mailed	Response Received	Consultation Held
Agua Caliente	Pattie Garcia	11/17/2023	12/15/2023	2/06/2024
Morongo	Laura Chatterton	11/17/2023	12/28/2023	DNR[1]
Pechanga	Ebru Ozdil	11/17/2023	12/12/2023	1/24/2024
Rincon	Cheryl Madrigal	11/17/2023	12/11/2023	N/A
San Manuel	Alexandra McCleary	11/17/2023	11/30/2023	N/A
Soboba	Joe Ontiveros	11/17/2023	DNR[1]	N/A

1. DNR = did not respond

During the consultation meetings, the responding Tribes highlighted their concerns for the general area noting that within that it is within Traditional Use Areas and considered sensitive as there are existing sites in the surrounding areas. The Tribes provided recommendations with regards to mitigation and expressed concern with potential unearthing of unknown artifacts while grading occurred. The Tribes recommended tribal monitoring consistent with those measures used in prior CEQA analysis conducted by EMWD to mitigate the potential for uncovering of unknown buried artifacts.

a.i) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).

Results from the Cultural Resources Assessment Report determined there are no known tribal cultural resources within the proposed Project area and no tribal cultural resources have been discovered within the Project sites. Most of the proposed Project area is highly disturbed by urban development, which makes the possibility of encountering tribal cultural resources low. Additionally, there are no known tribal burial sites within the proposed Project area. However, local Tribes indicated that the proposed Project would be located within Traditional Use Areas and are considered sensitive.

Although there is low potential for encountering subsurface tribal resources, the proposed Project would require ground disturbing activities during construction which have the potential to encounter previously unknown tribal cultural resources. Potential impacts would be reduced with implementation of **Mitigation Measures TRI-1**, **TRI-2**, **TRI-3**, and **TRI-4**. **Mitigation Measure TRI-1** would require the development of a Cultural Resources Treatment Monitoring Agreement prior to the start of ground-disturbing activities. **Mitigation Measure TRI-2** would require a tribal monitor to be present for ground-disturbing activities associated with the Project. **Mitigation Measure TRI-3** would require the District to coordinate with the project archaeologist and the Tribe to conduct analysis of recovered resources. **Mitigation Measure TRI-4** would require the site of any reburial of culturally sensitive resources shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act.

Mitigation Measures

TRI-1 Tribal Resources Monitoring Agreement

At least 30 days prior to the start of ground-disturbing activities, Eastern Municipal Water District (District) shall contact the Consulting Tribe(s) to develop Cultural Resources Treatment Monitoring Agreement (Agreement). The Agreement shall address the treatment of archaeological resources that may be Tribal cultural resources inadvertently discovered on the project site; project grading; ground disturbance and development scheduling; the designation, responsibilities, and participation of tribal monitor(s) during grading, excavation, and ground disturbing activities; and compensation for the tribal monitors, including overtime, weekend rates, and mileage reimbursement.

TRI-2 Tribal Monitoring

Prior to the start of ground-disturbing activities, a Tribal monitor may participate in the construction workers archaeological resources sensitivity training, conducted by the project

archaeologist. At least seven business days prior to ground-disturbing activities, the District shall notify the Tribe of the grading/excavation schedule and coordinate the tribal monitoring schedule.

A Tribal monitor shall be present for ground-disturbing activities associated with the Project. Both the project archaeologist and Tribal monitor working together will determine the areas with a potential for encountering potential Tribal cultural resources. Both the archaeologist and tribal monitor shall have the authority to stop and redirect grading activities in order to evaluate the nature and significance of any archaeological resources discovered within the project limits. Such evaluation shall include culturally appropriate temporary and permanent treatment pursuant to the Cultural Resources Treatment and Monitoring Agreement, which may include avoidance of tribal cultural resources, in-place preservation, data recovery, and/or reburial so the resources are not subject to further disturbance in perpetuity. Any reburial shall occur at a location determined between the District and the consulting Tribe as described in **TRI-4**. Treatment may also include curation of the resources at a tribal curation facility or an archaeological curation facility, as determined in discussion among the District, the Tribe and the project archaeologist as addressed in the Cultural Resources Treatment and Monitoring Agreement. The on-site Tribal monitoring shall end when all ground disturbing activities on the project site are completed, or when the Tribal representatives and Tribal monitor have indicated that the project site has little or no potential for impacting Tribal Cultural Resources.

TRI-3 Disposition of Inadvertent Discoveries

In the event that Tribal Cultural Resources are recovered during the course of grading, the District shall relinquish ownership of all cultural resources, including sacred items, burial goods, archaeological artifacts, and non-human remains. The District will coordinate with the project archaeologist and the Tribe to conduct analysis of recovered resources. If it is determined that the resource is a Native American resource and thus significant under CEQA, avoidance of the resource will be explored as the preferred option and on-site reburial will be evaluated as the second option. If avoidance and on-site reburial are not possible, a treatment plan shall be prepared with State guidelines and in consultation with the Tribe. The treatment plan may include, but would not be limited to capping in place, excavation and removal of the resource, interpretive displays, sensitive area signage, or other mutually agreed upon measures. Treatment may also include curation of the cultural resources at a tribal curation facility, as determined by the District and the consulting Tribe.

TRI-4 Non-Disclosure of Reburial Locations

It is understood by all parties that unless otherwise required by law, the site of any reburial of culturally sensitive resources shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The coroner, pursuant to the specific exemption set forth in California Government Code 6254(r), parties, and Lead Agencies will be asked to withhold public disclosure information related to such reburial.

Significance Determination

Less than significant impact with mitigation incorporated.

a.ii) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Results from the Cultural Resources Assessment Report determined there are no known tribal cultural resources within the proposed Project area and no tribal cultural resources have been discovered within the Project sites. Most of the proposed Project area is highly disturbed by urban development, which makes the possibility of encountering tribal cultural resources low. Additionally, there are no known tribal burial sites within the proposed Project area.

As part of AB 52 consultation with EMWD, the responding tribes, Pechanga Band of Luiseño Indians and Agua Caliente Band of Cahuilla Indians highlighted their concerns for the general Project area, noting that the proposed Project is within the Tribes' traditional use area and considered sensitive as there are existing sites in the surrounding area. The Tribes expressed concern with potential unearthing of unknown artifacts during Project-related ground disturbance. The Tribes recommended tribal monitoring, consistent with the cultural resource mitigation measures used in prior EMWD CEQA documents, to mitigate the potential for uncovering unknown buried Native American resources.

Although no tribal cultural resources have been identified within the Project site, the proposed Project would require ground disturbing activities during construction which have the potential to encounter previously unknown tribal cultural resources. Potential impacts would be reduced with implementation of **Mitigation Measure TRI-1**, **TRI-2**, **TRI-3**, and **TRI-4**. Potential impacts would be reduced with implementation of **Mitigation Measures TRI-1**, **TRI-2**, **TRI-3**, and **TRI-4**. **Mitigation Measure TRI-1** would require the development of a Cultural Resources Treatment Monitoring Agreement prior to the start of ground-disturbing activities. **Mitigation Measure TRI-2** would require a tribal monitor to be present for ground-disturbing activities associated with the Project. **Mitigation Measure TRI-3** would require the District to coordinate with the project archaeologist and the Tribe to conduct analysis of recovered resources. **Mitigation Measure TRI-4** would require the site of any reburial of culturally sensitive resources shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act.

Mitigation Measures

See **Mitigation Measures TRI-1**, **TRI-2**, **TRI-3**, and **TRI-4** listed above.

Significance Determination

Less than significant impact with mitigation incorporated.

3.19 Utilities and Service Systems

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	[ ]	[ ]	[X]	[ ]
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	[ ]	[ ]	[ ]	[X]
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	[ ]	[ ]	[X]	[ ]
D) Generate solid waste in excess of State or local standards, or in excess	[ ]	[ ]	[X]	[ ]

	of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	[ ]	[ ]	[X]	[ ]

Discussion

Water Service

The City of Perris Public Works Department handles water and sewer utilities within the area of the City south of Nuevo Road, north of Mountain Avenue, west of Ruby Drive and east of Park Avenue. Alignment 1 Segment 2 is located within the City of Perris' water and sewer service area. EMWD is the water wholesaler for the City of Perris, which purchases approximately 640 million gallons of water each year from EMWD. The City of Perris has a storage capacity of 2.5 million gallons, and water distribution reaches approximately 2,300 customers through a 37-mile distribution system (City of Perris n.d.d.). EMWD provides and distributes potable water throughout all other portions of the City of Perris and its Sphere of Influence, including the rest of the proposed Project area. The majority of EMWD's supply is imported via the State Water Project and the Colorado River Aqueduct for potable and non-potable use and groundwater recharge (EMWD 2021.b).

Wastewater Treatment

The City of Perris Sewer District owns and maintains sanitary sewers in and around Downtown Perris in an area generally extending north to Nuevo Road, west to Arapaho Road, south to Mountain Avenue, and east to Redlands Boulevard (City of Perris n.d.d). Alignment 1 Segment 2 is located within the City of Perris' sewer service area, as is a small portion of Alignment 1 Segment 1 along Kruse Street. The remaining portion of the Project area is located within EMWD's service area. EMWD owns and maintains the sanitary sewer system serving the remaining portions of the City of Perris and its Sphere of Influence. EMWD provides wastewater services to approximately 268,000 customers within its service area and currently treats approximately 49 million gallons per day of wastewater at its four active regional water reclamation facilities through 1,813 miles of sewer pipelines (EMWD n.d.a). Its Perris Valley operations include typical daily flows of 15.5 million gallons per day, a current capacity of 22 million gallons per day, and a 100 million gallons per day ultimate capacity (EMWD 2021b).

Stormwater Drainage

The Perris Valley Channel is owned by the Riverside County Flood Control and Water Conservation District (RCFC&WCD) and flows generally through the City of Moreno Valley through the east side of Perris before emptying into the San Jacinto River floodplain to the south. The Channel collects

stormwater runoff from a series of east-west oriented, smaller drains and channels along its course through the City. Smaller drains and channels are owned and maintained by the City of Perris or the RCFC&WCD (City of Perris n.d.d).

Electrical, Natural Gas, and Telecommunications Utilities

Electrical service in the proposed Project area is provided by SCE. SCE's 2022 power content mix utilized approximately 33 percent renewables, 3 percent large hydroelectric, 25 percent natural gas, 8 percent nuclear, and 30 percent from unspecified power sources through transactions (SCE 2022).

Southern California Gas Company is the natural gas service provider in the Project area. Southern California Gas Company maintains a series of transmission and distribution pipelines delivering natural gas to the Project area via existing six-inch gas mains in Perris Boulevard., Morgan Street, Nuevo Road, Goetz Road (south of Watson Road, Ethanac Road, and Murrietta Road north of Ethanac Road) (City of Perris n.d.f).).

Telecommunications service in the Project area is variously provided by AT&T, Spectrum, and Verizon (City of Perris n.d.f.). These companies maintain cable networks throughout their service areas to carry signals to their customers, including underground conduit located within public roadways, and overhead lines often collocated with electric wire.

Landfills

Solid waste generated by the Project would be disposed at the Lamb Canyon Sanitary Landfill, El Sobrante Landfill and/or, the Badlands Sanitary Landfill. The total remaining capacity at each of these landfills is shown in **Table 3-21**,

Table 3-21: Sanitary Landfill Maximum Permitted and Existing Capacity

Landfill	Maximum Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Ceased Operation Date
Lamb Canyon[1]	39,681,513	19,242,950	4/1/2032
El Sobrante[2]	6,003,343	3,271,203	11/1/2052
Badlands[3]	82,300,000	7,800,000	1/1/2059

Sources
[1]CalRecycle n.d.a
[2]CalRecycle n.d.b
[3]CalRecycled n.d.c.

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The proposed Project would upsize existing sewer pipelines and construct new sewer pipelines to address the needs of planned growth and development occurring in Riverside County, California's fastest-growing county (see *Section 3.14 Population and Housing*). The proposed Project would not require the construction of additional wastewater treatment facilities or expansion of existing wastewater treatment facilities. Additional wastewater flows from the proposed Project are within the available capacity at EMWD's existing treatment facilities. Additionally, the Project would not affect drainage and stormwater management in the Project area because existing culverts would be avoided during construction. The proposed Project would not change drainage patterns along the alignments in such a manner as to require the construction of new drainage facilities. As discussed in Section 2 *Project Description* the new sewer pipelines would be gravity-fed and would not require additional energy demands that would require construction of new electrical power. The pipelines would be constructed in the roadway ROW and would avoid existing utilities that are located in the ROW. Therefore, there would be no new utilities or relocation of utilities that could cause significant environmental effects. The environmental impacts of construction and operation of the proposed Project are evaluated throughout this IS/MND and are mitigated to less than significant levels.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?

The Project proposes to upsize existing sewer pipelines and construct new sewer pipelines to meet the needs of planned growth and development occurring in Riverside County. Construction of the proposed Project would require a minimal water supply for purposes such as dust control and concrete mixing. Existing sources would be sufficient and no new or expanded supply would be required for construction. Operation of the proposed Project would not induce unplanned population growth that would require or result in the construction of new water treatment facilities or the expansion of existing facilities. No impact related to sufficient water supplies would occur.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

EMWD trunk line sewers convey sewage from both EMWD and Perris Sewer District systems to the 300-acre Perris Valley Regional Water Reclamation Facility south of Case Road and west of the I-215 Freeway (EMWD 2021.b). Although completion of the Project would increase wastewater flows to Perris Valley Regional Water Reclamation Facility because it would extend new sewer service to planned development in unincorporated Riverside County, the Perris Valley Regional Water Reclamation Facility has sufficient capacity to accommodate the planned additional flows. As discussed in *Section 3.14 Population and Housing*, the proposed Project would serve planned development that would occur with or without the proposed Project and would not induce unplanned population or employment growth that would require or result in the construction of new or expanded wastewater collection infrastructure or treatment services beyond those included in the proposed Project. Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Construction of the proposed Project would generate solid waste in the form of construction and demolition debris that would need to be hauled offsite and disposed of in a landfill by the Project's construction contractors. Construction and demolition material would include asphalt and concrete removed from paved areas and concrete, metal, and plastic pipe sections. While excavated soil would be reused onsite as backfill to the extent feasible, it is estimated that up to approximately 20,800 cubic yards (Alignment 1) or 12,100 cubic yards (Alignment 2) of material would need to be exported and disposed at a permitted landfill in accordance with local and state solid waste disposal requirements. There are two state regulations that set standards for solid waste generation: AB 939 mandates 50 percent diversion of solid waste; and AB 341 mandates recycling programs to help reduce GHG emissions. Riverside County's Construction and Demolition Waste Diversion Program requires contractors to establish a plan for the diversion of

at least 65 percent of this debris to approved Construction and Demolition facilities that would reuse, recycle, or repurpose the material. The existing landfills in the Project area noted in **Table 3-21** in the above 'Landfills' description section have remaining permitted capacity and would be available to accept non-hazardous demolition waste from the proposed Project. Excess construction debris is anticipated to be within the permitted capacity of the local landfill after onsite backfill of excavated soil combined with adherence to mandatory construction waste diversion requirements. Therefore, the Project's impact with respect to generation of solid waste during the construction phase is less than significant.

Operation of the Project is not anticipated to generate solid waste in the long-term. Solid waste generation would be limited to temporary construction activities and would not significantly affect available solid waste disposal capacity in the region. Therefore, impacts related to local solid waste infrastructure capacity during operation would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Construction and operation of the proposed Project would comply with local, state, and federal regulations related to solid waste. While operation of the Project is not anticipated to generate a long-term solid waste stream, construction activities would create debris such as excavated soil and demolished concrete, asphalt, metal, and plastic. Excavated soil would be backfilled to the extent possible, but the Project construction contractor would be required to dispose of excess construction debris in accordance with existing reduction statutes and regulations, such as Riverside County's Construction and Demolition Program, discussed in d) above, as well as Assembly Bill (AB) 939 and AB 341. These regulations would determine the landfill to be used for disposal of construction debris, mandatory 50 percent diversion of solid waste (AB 939), and mandatory recycling programs to reduce GHG emissions (AB 341). Therefore, impacts related to compliance with local, state, and federal reduction statues and regulations related to solid waste would be less than significant.

Significance Determination

Less than significant impact.

Mitigation Measures

None required.

3.20 Wildfire

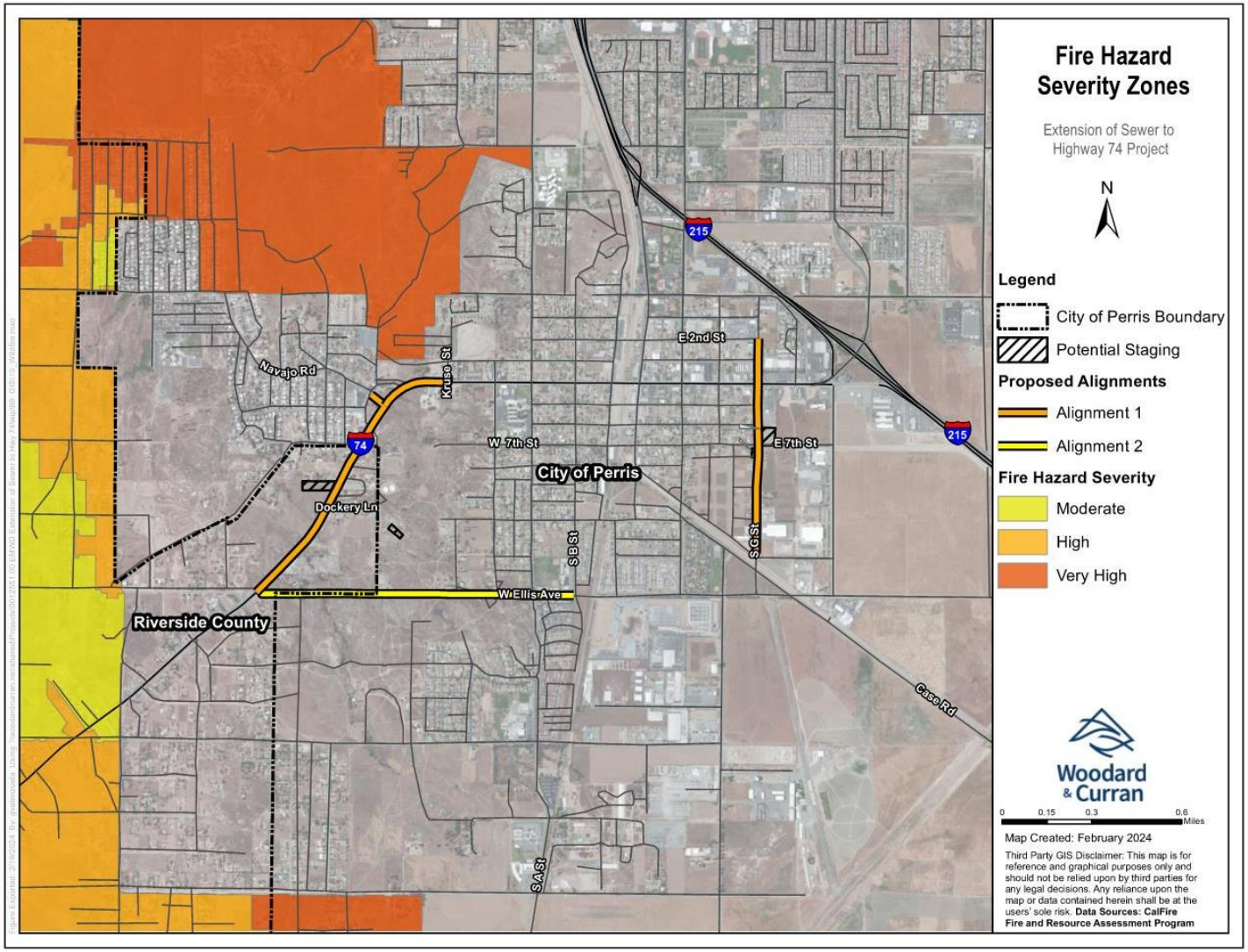
	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	[ ]	[ ]	[X]	[ ]
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	[ ]	[ ]	[ ]	[X]
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	[ ]	[ ]	[X]	[ ]
d) Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	[ ]	[ ]	[X]	[ ]

Discussion

The California Department of Forestry and Fire Protection's Fire Resources Assessment Program assesses the amount and extent of California's forests and rangelands, analyzes their conditions, and identifies alternative management and policy guidelines. Through the Fire Resources Assessment Program, CalFire produces maps designating very high fire hazard severity zones (VHFHSZs) within State Responsibility Areas and Local Responsibility Areas. The Project area is designated as a non-VHFHSZ in the City of Perris Local Responsibility Area, though north of West 3rd Street east of Arapaho Road the area is designated VHFHSZ, near the proposed Project though outside of the construction footprint and staging areas (**Figure 3-7**).

The City of Perris has an Emergency Operations Plan (EOP) which establishes emergency preparedness and emergency response procedures (City of Perris 2013.a). The City of Perris EOP addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the City of Perris (City of Perris 2013.b). The County of Riverside has a *Multi-Jurisdictional Local Hazard Mitigation Plan*, also known as the Base Plan, which identifies and reviews the County's past and present hazards and disasters. The Base Plan estimates the probability of future occurrences and sets goals to mitigate potential risks to reduce or eliminate long term risk to people and property from natural and human-caused hazards (EMWD 2023.a). The Base Plan includes key measures and activities to help protect residents, critical facilities, infrastructure, key resources, private property, and the environment from natural hazards in incorporated and unincorporated areas.

Figure 3-7: Fire Hazard Severity Zones



a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

The Project is not located in a VHFHSZ. Construction activities would be located within existing roadways in the City of Perris and unincorporated Riverside County. Potential staging areas would be located on vacant land and, if necessary, within roadway ROWs. Sidewalk and lane closures during construction would temporarily restrict access for use by emergency response vehicles or emergency evacuations and could impair implementation of or physically interfere with the City of Perris Safety Element evacuation routes and County Base Plan. EMWD would develop and implement a Traffic Control and Detour Plan as part of its Standard Construction Practices (see *Section 2.6*), which would reduce conflicts between temporary construction activities and the EOP and LHMP by requiring coordination with emergency services (police, fire, and others); requiring identification of roadways and access points for emergency services; and requiring that disruptions to or closures of these locations be minimized. Impacts of construction on the adopted EOP and LHMP would be less than significant. Further consideration of the proposed construction activities and potential for roadway access and hazardous conditions can be found under *Section 3.17 Transportation*.

Operation of the proposed Project would not physically impair or otherwise interfere with adopted emergency response or evacuation plans in the Project area, as all disturbed ground surface would be returned to pre-construction conditions or paved after excavation and below-grade pipeline installation. Operation of the Project would not interfere with emergency evacuation plans and would involve minimal truck trips for maintenance as needed. Therefore, impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The Project location and surrounding area is not located within very high, high, or moderate fire hazard severity zones in a State Responsibility or Local Responsibility Area (CalFire 2009, CalFire 2023). Staging areas would be located on vacant land and, if necessary, within the roadway ROWs. Pipelines would be installed below grade on parcels that do not have steep slopes. Therefore, the proposed Project would not exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. There would be no impact.

Mitigation Measures

None required or recommended.

Significance Determination

No impact.

***c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment*?**

The proposed Project would not involve the installation or maintenance of infrastructure that is typically associated with fire risk, such as roads, fuel breaks, emergency water sources, or power lines. Construction and operation of the proposed Project would rely on existing roads and utilities. Installation of the pipelines would occur within existing roadway ROWs and all disturbed areas would be restored to preconstruction condition. Surface restoration required for Alignment 2 would convert the unpaved portion on West Ellis Avenue to paved. Although Alignment 2 would result in the construction of a new paved road, this alignment from West Ellis existed prior to the Project as a dirt road. Therefore, the Project would not result in the installation of a new road that would not exacerbate fire risk. Impacts would be less than significant.

Mitigation Measures

None required or recommended.

Significance Determination

Less than Significant Impact.

d) Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The proposed Project would be located within existing roadways. The potential construction staging areas would be located on vacant land and, if necessary, within roadway ROWs that do not have steep slopes susceptible to landslides.

For Alignment 1, pipelines would be installed below-grade and overlying ground surface would be restored to pre-construction conditions, resulting in no permanent impact on site drainage. Additionally, where the pipeline would cross an existing culvert, construction would use tunneling to avoid the culvert thereby avoiding potential impacts to existing culverts.

The Alignment 2 pipeline would be installed below-grade and overlying ground surface would be restored to pre-construction conditions, with the exception of a portion of West Ellis Avenue; the stretch of West Ellis Avenue spanning from Highway 74 to South A Street, is currently unpaved

but would be paved Project completion. Construction of the road would be in accordance with local standards, and existing drainage and culverts would be avoided either by the alignment itself or via tunneling or trenchless construction, thereby avoiding potential impacts to drainages during and after construction. The change of the unpaved segment of the road to impervious surface area after Project completion would represent a permanent change in the Project area, however, runoff from the new paved road would be conveyed to existing drainages and culverts. Any increases in runoff from the newly paved segment is expected to be minimal because the existing roadway is hardpacked dirt with limited infiltration. Maintenance of the new paved road would be incorporated into the existing operation and maintenance of city roadways.

Therefore, the proposed Project would not expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes. Impacts would be less than significant. Further consideration of the proposed Project's impact related to stormwater runoff and drainage can be found under Section 3.10 Hydrology and Water Quality.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Does the Project:				
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant	[ ]	[X]	[ ]	[ ]

	or animal or eliminate important examples of the major periods of California history or prehistory?				
b)	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	[ ]	[ ]	[X]	[ ]
c)	Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	[ ]	[X]	[ ]	[ ]

Discussion

a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

With the implementation of mitigation measures, the proposed Project would have a less than significant impact on the environment.

Based on the results of the Biological Resources Assessment, four special-status plant species and six special-status wildlife species are considered to have a moderate or high potential to occur in the Project area. Furthermore, although direct impacts to protected nesting and migratory birds are unlikely given the existing level of development and disturbance within the Project's construction and staging areas, indirect impacts could occur if active nests are abandoned due to Project-related disturbance. In order to avoid and/or reduce the potential for impacts to sensitive plant species, **Mitigation Measures BIO-1**, **BIO-2**, **BIO-3**, and **BIO-4** would be implemented. In order to avoid and/or reduce the potential for impacts to sensitive wildlife species, **Mitigation Measures BIO-1**, **BIO-2**, **BIO-3**, **BIO-4, BIO-5**, and **BIO-6**, would be implemented. In order to avoid and/or reduce the potential for impacts to nesting birds, **Mitigation Measures BIO-2** and **BIO-7** would be implemented.

Based on the results of the Cultural Resources Technical Report, there are no known archaeological or historical resources within the Project sites. While historical resources P-33-020451 and P-33-020467 have the potential to qualify as historical resources pursuant to CEQA, the proposed Project design does not propose alterations to either resource and construction of the Project would not intrude into the limits of the resources. As such, no impacts to these two resources are anticipated. Although the potential for encountering subsurface archaeological deposits or tribal resources is low, construction would require ground disturbing activities which have the potential to encounter previously unknown archaeological deposits or cultural/tribal cultural resources. In order to avoid and/or reduce potential damage during an unanticipated discovery, **Mitigation Measures CUL-1 and CUL-2** would be implemented. Although there are no known fossil localities within the Project site, the Project area is underlain by geologic units with high paleontological sensitivity. To ensure proper procedures are in place in the event of an unanticipated fossil discovery, **Mitigation Measure GEO-1** would be implemented during construction of the Project. Although there is low potential for encountering subsurface tribal resources, the proposed Project would require ground disturbing activities during construction which have the potential to encounter previously unknown tribal cultural resources. Potential impacts would be reduced with implementation of **Mitigation Measures TRI-1**, **TRI-2**, **TRI-3**, and **TRI-4**.

Mitigation Measures

Refer to **Mitigation Measures BIO-1** through **BIO-7** in *Section 3.4 Biological Resources*.

Refer to **Mitigation Measure CUL-1 and CUL-2** in *Section 3.5 Cultural Resources* and *Section 3.18 Tribal Cultural Resources*.

Refer to **Mitigation Measures GEO-1** in *Section 3.7 Geology and Soils*.

Refer to **Mitigation Measures TRI-1** through **TRI-4** in *Section 3.18 Tribal Cultural Resources*.

Significance Determination

Less than significant impact with mitigation incorporated.

b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

CEQA Guidelines Section 15130(b) provides two approaches to discussing cumulative project impacts: either the List-of-Projects Method: a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or the Summary-of-Projections Method: a summary of projections contained in an adopted general plan or related planning document or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area wide conditions

contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. EMWD is relying on the List-of-Projects method for purposes of this analysis.

The proposed Project was included in EMWD's 2016 Master Plan along with other improvements in the Riverside County Planning Area 6 to address existing and future sewer capacity deficiencies. No additional EMWD projects are proposed in the Project vicinity that, together with the proposed Project, would result in cumulative impacts.

Mitigation Measures

None required or recommended.

Significance Determination

Less than significant impact.

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

With the implementation of mitigation measures, the proposed Project would have a less than significant environmental impact on human beings. Although standard construction measures would be implemented during construction of the proposed Project (see *Section 2.6 EMWD Standard Construction Practices*), temporary construction activities would still have the potential to exceed noise thresholds. EMWD would require the Project contractor to implement **Mitigation Measure NOI-1**, which includes a number of best management practices to control and reduce temporary construction noise. With the implementation of these actions, the proposed Project would have a less than significant impact on human beings as a result of noise. The impacts of the proposed Project have been analyzed in accordance with the CEQA Guidelines; each topic has been found to have either no impact, a less than significant impact, or a less than significant impact with mitigation incorporated. Therefore, with the implementation of the **Mitigation Measure NOI-1**, the proposed Project would not result in any environmental effects that would cause substantial adverse effects on human beings either directly or indirectly.

Mitigation Measures

Refer to **Mitigation Measure NOI-1** in *Section 3.13 Noise*.

Significance Determination

Less than significant impact with mitigation incorporated.

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APPENDIX A

CALEEMOD AIR QUALITY DATA SHEETS

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Extension of Sewer to Highway 74 (Alignment 1) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Extension of Sewer to Highway 74 (Alignment 1)
Construction Start Date	10/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	0.20
Location	33.77786678919382, -117.23203626073227
County	Riverside-South Coast
City	Perris
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5519
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Asphalt Surfaces	57.3	1000sqft	1.32	0.00	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.	4.67	3.89	27.3	34.6	0.08	0.98	0.98	1.95	0.90	0.24	1.14	—	9,500	9,500	0.36	0.24	4.92	9,587
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.89	4.10	29.5	34.1	0.08	1.11	0.98	2.09	1.03	0.24	1.27	—	9,461	9,461	0.37	0.25	0.14	9,545
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.31	2.77	19.6	24.1	0.06	0.70	0.70	1.39	0.64	0.17	0.81	—	6,748	6,748	0.26	0.17	1.51	6,808
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.60	0.50	3.58	4.39	0.01	0.13	0.13	0.25	0.12	0.03	0.15	—	1,117	1,117	0.04	0.03	0.25	1,127
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Threshol	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes

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	4.67	3.89	27.3	34.6	0.08	0.98	0.98	1.95	0.90	0.24	1.14	—	9,500	9,500	0.36	0.24	4.92	9,587
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.89	4.10	29.5	34.1	0.08	1.11	0.98	2.09	1.03	0.24	1.27	—	9,461	9,461	0.37	0.25	0.14	9,545
2025	4.63	3.88	27.4	33.5	0.08	0.98	0.98	1.95	0.90	0.24	1.14	—	9,438	9,438	0.37	0.24	0.13	9,520
2026	4.49	3.76	26.2	33.3	0.08	0.89	0.98	1.86	0.82	0.24	1.06	—	9,410	9,410	0.34	0.24	0.12	9,491
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.88	0.74	5.32	6.18	0.01	0.20	0.18	0.38	0.18	0.04	0.23	—	1,705	1,705	0.07	0.04	0.41	1,720
2025	3.31	2.77	19.6	24.1	0.06	0.70	0.70	1.39	0.64	0.17	0.81	—	6,748	6,748	0.26	0.17	1.51	6,808
2026	0.79	0.66	4.61	5.88	0.01	0.16	0.17	0.33	0.14	0.04	0.19	—	1,659	1,659	0.06	0.04	0.34	1,673
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	0.13	0.97	1.13	< 0.005	0.04	0.03	0.07	0.03	0.01	0.04	—	282	282	0.01	0.01	0.07	285
2025	0.60	0.50	3.58	4.39	0.01	0.13	0.13	0.25	0.12	0.03	0.15	—	1,117	1,117	0.04	0.03	0.25	1,127
2026	0.14	0.12	0.84	1.07	< 0.005	0.03	0.03	0.06	0.03	0.01	0.03	—	275	275	0.01	0.01	0.06	277

3. Construction Emissions Details

3.1. Trenching and Install (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.11	2.60	18.7	18.8	0.06	0.67	—	0.67	0.62	—	0.62	—	6,122	6,122	0.25	0.05	—	6,143
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	0.47	3.37	3.39	0.01	0.12	—	0.12	0.11	—	0.11	—	1,102	1,102	0.04	0.01	—	1,106
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.10	0.09	0.62	0.62	< 0.005	0.02	—	0.02	0.02	—	0.02	—	182	182	0.01	< 0.005	—	183

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.17	0.16	0.18	2.05	0.00	0.00	0.42	0.42	0.00	0.10	0.10	—	430	430	0.02	0.02	0.05	435
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	0.04	0.01	1.16	0.27	0.01	0.02	0.26	0.27	0.02	0.07	0.09	—	988	988	0.02	0.16	0.05	1,036
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.39	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	78.4	78.4	< 0.005	< 0.005	0.14	79.5
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	0.01	< 0.005	0.21	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	178	178	< 0.005	0.03	0.16	187
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.02	13.2
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	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.4	29.4	< 0.005	< 0.005	0.03	30.9

3.3. Trenching and Install (2025) - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.99	2.50	17.1	18.6	0.06	0.59	—	0.59	0.55	—	0.55	—	6,130	6,130	0.25	0.05	—	6,151
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.99	2.50	17.1	18.6	0.06	0.59	—	0.59	0.55	—	0.55	—	6,130	6,130	0.25	0.05	—	6,151
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.14	1.79	12.2	13.3	0.04	0.42	—	0.42	0.39	—	0.39	—	4,379	4,379	0.18	0.04	—	4,394
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.39	0.33	2.23	2.42	0.01	0.08	—	0.08	0.07	—	0.07	—	725	725	0.03	0.01	—	727

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	0.14	2.51	0.00	0.00	0.42	0.42	0.00	0.10	0.10	—	458	458	0.02	0.02	1.68	465
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	0.04	0.02	1.08	0.26	0.01	0.02	0.26	0.27	0.02	0.07	0.09	—	972	972	0.02	0.15	2.07	1,020
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.14	0.16	1.90	0.00	0.00	0.42	0.42	0.00	0.10	0.10	—	421	421	0.02	0.02	0.04	426
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	0.04	0.01	1.13	0.27	0.01	0.02	0.26	0.27	0.02	0.07	0.09	—	972	972	0.02	0.15	0.05	1,018
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.12	1.43	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	305	305	0.01	0.01	0.52	309
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	0.03	0.01	0.81	0.19	< 0.005	0.01	0.18	0.20	0.01	0.05	0.06	—	694	694	0.01	0.11	0.64	728
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.26	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	50.4	50.4	< 0.005	< 0.005	0.09	51.1
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	0.01	< 0.005	0.15	0.03	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	115	115	< 0.005	0.02	0.11	121

3.5. Trenching and Install (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	2.94	2.46	16.2	18.6	0.06	0.54	—	0.54	0.50	—	0.50	—	6,135	6,135	0.25	0.05	—	6,156
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	0.43	2.86	3.28	0.01	0.10	—	0.10	0.09	—	0.09	—	1,080	1,080	0.04	0.01	—	1,084
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.09	0.08	0.52	0.60	< 0.005	0.02	—	0.02	0.02	—	0.02	—	179	179	0.01	< 0.005	—	179
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.15	0.13	0.14	1.77	0.00	0.00	0.42	0.42	0.00	0.10	0.10	—	412	412	0.01	0.02	0.04	417
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	0.04	0.01	1.09	0.26	0.01	0.02	0.26	0.27	0.02	0.07	0.09	—	955	955	0.02	0.15	0.05	1,002
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.03	0.33	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	73.5	73.5	< 0.005	< 0.005	0.12	74.5
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	0.01	< 0.005	0.19	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.02	—	168	168	< 0.005	0.03	0.15	176
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.02	12.3
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	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.9	27.9	< 0.005	< 0.005	0.02	29.2

3.7. Resurfacing (2024) - Unmitigated

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

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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	9.31	11.6	0.02	0.42	—	0.42	0.39	—	0.39	—	1,623	1,623	0.07	0.01	—	1,629
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	1.68	2.08	< 0.005	0.08	—	0.08	0.07	—	0.07	—	292	292	0.01	< 0.005	—	293
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.31	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.4	48.4	< 0.005	< 0.005	—	48.6
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.13	1.42	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	298	298	0.01	0.01	0.03	301
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	0.27	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.3	54.3	< 0.005	< 0.005	0.10	55.0
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	—	8.98	8.98	< 0.005	< 0.005	0.02	9.11
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

3.9. Resurfacing (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	1.34	1.12	8.90	11.5	0.02	0.36	—	0.36	0.34	—	0.34	—	1,623	1,623	0.07	0.01	—	1,629
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.34	1.12	8.90	11.5	0.02	0.36	—	0.36	0.34	—	0.34	—	1,623	1,623	0.07	0.01	—	1,629
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.96	0.80	6.36	8.18	0.01	0.26	—	0.26	0.24	—	0.24	—	1,159	1,159	0.05	0.01	—	1,163
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.15	1.16	1.49	< 0.005	0.05	—	0.05	0.04	—	0.04	—	192	192	0.01	< 0.005	—	193
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.10	0.10	1.74	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	317	317	0.01	0.01	1.17	322
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	0.11	0.09	0.11	1.31	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	292	292	0.01	0.01	0.03	295
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	0.08	0.07	0.08	0.99	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	211	211	0.01	0.01	0.36	214
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	0.01	0.01	0.02	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.9	34.9	< 0.005	< 0.005	0.06	35.4

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Resurfacing (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	1.27	1.06	8.59	11.4	0.02	0.33	—	0.33	0.30	—	0.30	—	1,623	1,623	0.07	0.01	—	1,628
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	1.51	2.01	< 0.005	0.06	—	0.06	0.05	—	0.05	—	286	286	0.01	< 0.005	—	287
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.37	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.3	47.3	< 0.005	< 0.005	—	47.5
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.23	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	285	285	< 0.005	0.01	0.03	289
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	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	50.9	50.9	< 0.005	< 0.005	0.08	51.6
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.43	8.43	< 0.005	< 0.005	0.01	8.54
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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Trenching and Install	Grading	10/1/2024	3/31/2026	5.00	391	—
Resurfacing	Paving	10/1/2024	3/31/2026	5.00	391	—

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
Trenching and Install	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Trenching and Install	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Trenching and Install	Off-Highway Trucks	Diesel	Average	5.00	6.00	376	0.38
Trenching and Install	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Trenching and Install	Dumpers/Tenders	Diesel	Average	2.00	8.00	16.0	0.38
Trenching and Install	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Resurfacing	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Resurfacing	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Resurfacing	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36

Resurfacing	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Resurfacing	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Resurfacing	Air Compressors	Diesel	Average	2.00	8.00	37.0	0.48
Resurfacing	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Resurfacing	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Trenching and Install	—	—	—	—
Trenching and Install	Worker	32.5	18.5	LDA,LDT1,LDT2
Trenching and Install	Vendor	—	10.2	HHDT,MHDT
Trenching and Install	Hauling	14.1	20.0	HHDT
Trenching and Install	Onsite truck	—	—	HHDT
Resurfacing	—	—	—	—
Resurfacing	Worker	22.5	18.5	LDA,LDT1,LDT2
Resurfacing	Vendor	—	10.2	HHDT,MHDT
Resurfacing	Hauling	0.00	20.0	HHDT
Resurfacing	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Apply dust suppressants to unpaved roads	84%	84%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

Sweep paved roads once per month	9%	9%

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)
Trenching and Install	22,055	22,055	0.00	0.00	—
Resurfacing	0.00	0.00	0.00	0.00	1.32

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Asphalt Surfaces	1.32	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

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

2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29.5	annual days of extreme heat
Extreme Precipitation	2.30	annual days with precipitation above 20 mm

Sea Level Rise	—	meters of inundation depth
Wildfire	6.30	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	4	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	4	1	1	4
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	95.3
AQ-PM	53.4
AQ-DPM	83.3
Drinking Water	19.5
Lead Risk Housing	82.8
Pesticides	70.3
Toxic Releases	30.5

Traffic	76.5
Effect Indicators	—
CleanUp Sites	58.2
Groundwater	71.1
Haz Waste Facilities/Generators	28.3
Impaired Water Bodies	0.00
Solid Waste	93.2
Sensitive Population	—
Asthma	61.7
Cardio-vascular	87.1
Low Birth Weights	56.9
Socioeconomic Factor Indicators	—
Education	92.9
Housing	76.0
Linguistic	76.9
Poverty	93.6
Unemployment	88.1

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	7.04478378
Employed	9.264724753
Median HI	13.37097395
Education	—
Bachelor's or higher	1.963300398

High school enrollment	100
Preschool enrollment	11.35634544
Transportation	—
Auto Access	28.94905685
Active commuting	35.01860644
Social	—
2-parent households	17.60554344
Voting	1.270370846
Neighborhood	—
Alcohol availability	44.00102656
Park access	20.42858976
Retail density	58.38573078
Supermarket access	53.04760683
Tree canopy	3.156679071
Housing	—
Homeownership	32.22122418
Housing habitability	17.10509432
Low-inc homeowner severe housing cost burden	13.85859104
Low-inc renter severe housing cost burden	31.8747594
Uncrowded housing	10.22712691
Health Outcomes	—
Insured adults	6.557166688
Arthritis	48.2
Asthma ER Admissions	41.6
High Blood Pressure	36.7
Cancer (excluding skin)	87.6
Asthma	6.7

Coronary Heart Disease	47.4
Chronic Obstructive Pulmonary Disease	19.2
Diagnosed Diabetes	21.5
Life Expectancy at Birth	14.2
Cognitively Disabled	10.7
Physically Disabled	49.3
Heart Attack ER Admissions	10.4
Mental Health Not Good	6.5
Chronic Kidney Disease	27.1
Obesity	3.4
Pedestrian Injuries	76.6
Physical Health Not Good	9.8
Stroke	26.0
Health Risk Behaviors	—
Binge Drinking	68.3
Current Smoker	6.3
No Leisure Time for Physical Activity	6.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	35.2
Elderly	93.7
English Speaking	32.7
Foreign-born	61.0
Outdoor Workers	5.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	78.2

Traffic Density	60.6
Traffic Access	23.0
Other Indices	—
Hardship	96.1
Other Decision Support	—
2016 Voting	5.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	94.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Description

Construction: Off-Road Equipment	Project Description

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Extension of Sewer to Highway 74 (Alignment 2) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Extension of Sewer to Highway 74 (Alignment 2)
Construction Start Date	10/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	9.00
Location	33.77223528020015, -117.24471696168303
County	Riverside-South Coast
City	Unincorporated
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5519
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Asphalt Surfaces	27.7	1000sqft	0.64	0.00	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.	4.40	3.68	24.8	32.3	0.07	0.92	0.70	1.62	0.85	0.16	1.01	—	8,298	8,298	0.34	0.09	2.82	8,338
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.81	6.52	50.7	57.2	0.14	1.90	1.51	3.41	1.75	0.38	2.13	—	15,578	15,578	0.59	0.49	0.23	15,737
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.40	2.85	19.9	24.8	0.06	0.73	0.57	1.30	0.67	0.14	0.81	—	6,577	6,577	0.26	0.10	1.09	6,615
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.62	0.52	3.62	4.53	0.01	0.13	0.10	0.24	0.12	0.02	0.15	—	1,089	1,089	0.04	0.02	0.18	1,095
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Threshol	—	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	—	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes

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	4.40	3.68	24.8	32.3	0.07	0.92	0.70	1.62	0.85	0.16	1.01	—	8,298	8,298	0.34	0.09	2.82	8,338
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	7.81	6.52	50.7	57.2	0.14	1.90	1.51	3.41	1.75	0.38	2.13	—	15,578	15,578	0.59	0.49	0.23	15,737
2025	7.40	6.16	47.2	56.4	0.14	1.66	1.51	3.18	1.53	0.38	1.91	—	15,535	15,535	0.59	0.47	0.21	15,691
2026	4.24	3.56	23.7	31.1	0.07	0.84	0.70	1.54	0.77	0.16	0.94	—	8,228	8,228	0.32	0.09	0.07	8,264
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.41	1.17	9.12	10.3	0.02	0.34	0.27	0.61	0.32	0.07	0.38	—	2,807	2,807	0.11	0.09	0.68	2,836
2025	3.40	2.85	19.9	24.8	0.06	0.73	0.57	1.30	0.67	0.14	0.81	—	6,577	6,577	0.26	0.10	1.09	6,615
2026	0.75	0.63	4.17	5.49	0.01	0.15	0.12	0.27	0.14	0.03	0.16	—	1,451	1,451	0.06	0.02	0.19	1,457
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.26	0.21	1.67	1.89	< 0.005	0.06	0.05	0.11	0.06	0.01	0.07	—	465	465	0.02	0.01	0.11	470
2025	0.62	0.52	3.62	4.53	0.01	0.13	0.10	0.24	0.12	0.02	0.15	—	1,089	1,089	0.04	0.02	0.18	1,095
2026	0.14	0.11	0.76	1.00	< 0.005	0.03	0.02	0.05	0.02	0.01	0.03	—	240	240	0.01	< 0.005	0.03	241

3. Construction Emissions Details

3.1. Open Trench Installation (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.87	2.40	17.1	17.0	0.06	0.62	—	0.62	0.57	—	0.57	—	5,878	5,878	0.24	0.05	—	5,898
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	0.43	3.09	3.05	0.01	0.11	—	0.11	0.10	—	0.10	—	1,058	1,058	0.04	0.01	—	1,062
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.09	0.08	0.56	0.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	175	175	0.01	< 0.005	—	176

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.16	0.14	0.17	1.89	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	397	397	0.02	0.01	0.04	402
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	0.06	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	47.1	47.1	< 0.005	0.01	< 0.005	49.4
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.36	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	72.4	72.4	< 0.005	< 0.005	0.13	73.4
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	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.48	8.48	< 0.005	< 0.005	0.01	8.90
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.02	12.1
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.40	1.40	< 0.005	< 0.005	< 0.005	1.47

3.3. Open Trench Installation (2025) - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.77	2.32	15.6	16.7	0.06	0.55	—	0.55	0.51	—	0.51	—	5,886	5,886	0.24	0.05	—	5,906
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.77	2.32	15.6	16.7	0.06	0.55	—	0.55	0.51	—	0.51	—	5,886	5,886	0.24	0.05	—	5,906
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.98	1.66	11.1	12.0	0.04	0.39	—	0.39	0.36	—	0.36	—	4,204	4,204	0.17	0.03	—	4,219
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.36	0.30	2.03	2.18	0.01	0.07	—	0.07	0.07	—	0.07	—	696	696	0.03	0.01	—	698

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.13	0.13	2.32	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	423	423	0.02	0.01	1.55	429
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	0.05	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.4	46.4	< 0.005	0.01	0.10	48.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.14	1.75	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	389	389	0.02	0.01	0.04	394
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	0.05	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.4	46.4	< 0.005	0.01	< 0.005	48.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.11	1.32	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	281	281	0.01	0.01	0.48	285
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	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	33.1	33.1	< 0.005	0.01	0.03	34.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	46.6	46.6	< 0.005	< 0.005	0.08	47.2
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	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.48	5.48	< 0.005	< 0.005	0.01	5.75

3.5. Open Trench Installation (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	2.73	2.28	14.7	16.8	0.06	0.51	—	0.51	0.47	—	0.47	—	5,891	5,891	0.24	0.05	—	5,911
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.40	2.60	2.95	0.01	0.09	—	0.09	0.08	—	0.08	—	1,037	1,037	0.04	0.01	—	1,041
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.09	0.07	0.47	0.54	< 0.005	0.02	—	0.02	0.01	—	0.01	—	172	172	0.01	< 0.005	—	172
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.13	0.12	0.13	1.63	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	380	380	0.01	0.01	0.04	385
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	0.05	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.6	45.6	< 0.005	0.01	< 0.005	47.8
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.03	0.30	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	67.9	67.9	< 0.005	< 0.005	0.11	68.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.02	8.02	< 0.005	< 0.005	0.01	8.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.02	11.4
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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.39

3.7. Trenchless Installation (2024) - Unmitigated

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

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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.02	2.52	21.2	23.5	0.05	0.81	—	0.81	0.75	—	0.75	—	4,951	4,951	0.20	0.04	—	4,968
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.45	3.82	4.23	0.01	0.15	—	0.15	0.13	—	0.13	—	891	891	0.04	0.01	—	895
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.10	0.08	0.70	0.77	< 0.005	0.03	—	0.03	0.02	—	0.02	—	148	148	0.01	< 0.005	—	148
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.11	0.10	0.11	1.26	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	265	265	0.01	0.01	0.03	268
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	0.08	0.03	2.49	0.59	0.01	0.04	0.55	0.59	0.04	0.15	0.19	—	2,116	2,116	0.04	0.34	0.12	2,218
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.09	48.9
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	0.02	0.01	0.45	0.10	< 0.005	0.01	0.10	0.11	0.01	0.03	0.03	—	381	381	0.01	0.06	0.35	400
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.99	7.99	< 0.005	< 0.005	0.01	8.10
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	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	63.0	63.0	< 0.005	0.01	0.06	66.2

3.9. Trenchless Installation (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	2.86	2.38	19.8	23.3	0.05	0.70	—	0.70	0.65	—	0.65	—	4,956	4,956	0.20	0.04	—	4,973

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	0.22	1.86	2.19	< 0.005	0.07	—	0.07	0.06	—	0.06	—	466	466	0.02	< 0.005	—	467
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.05	0.04	0.34	0.40	< 0.005	0.01	—	0.01	0.01	—	0.01	—	77.1	77.1	< 0.005	< 0.005	—	77.3
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 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	0.09	0.08	0.10	1.17	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	259	259	0.01	0.01	0.03	262
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	0.08	0.03	2.41	0.57	0.01	0.04	0.55	0.59	0.04	0.15	0.19	—	2,082	2,082	0.04	0.33	0.11	2,180

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	24.7	24.7	< 0.005	< 0.005	0.04	25.0
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	0.01	< 0.005	0.23	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	195	195	< 0.005	0.03	0.18	205
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.08	4.08	< 0.005	< 0.005	0.01	4.14
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	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	32.4	32.4	< 0.005	0.01	0.03	33.9

3.11. Resurfacing (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	9.36	11.6	0.02	0.42	—	0.42	0.39	—	0.39	—	1,626	1,626	0.07	0.01	—	1,632
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	1.69	2.09	< 0.005	0.08	—	0.08	0.07	—	0.07	—	293	293	0.01	< 0.005	—	294
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.31	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.5	48.5	< 0.005	< 0.005	—	48.6
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.13	1.42	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	298	298	0.01	0.01	0.03	301
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	0.27	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.3	54.3	< 0.005	< 0.005	0.10	55.0
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	—	8.98	8.98	< 0.005	< 0.005	0.02	9.11
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

3.13. Resurfacing (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	1.34	1.12	8.96	11.5	0.02	0.37	—	0.37	0.34	—	0.34	—	1,626	1,626	0.07	0.01	—	1,632
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.34	1.12	8.96	11.5	0.02	0.37	—	0.37	0.34	—	0.34	—	1,626	1,626	0.07	0.01	—	1,632
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.96	0.80	6.40	8.20	0.01	0.26	—	0.26	0.24	—	0.24	—	1,162	1,162	0.05	0.01	—	1,166
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.17	1.50	< 0.005	0.05	—	0.05	0.04	—	0.04	—	192	192	0.01	< 0.005	—	193
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.10	0.10	1.74	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	317	317	0.01	0.01	1.17	322
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	0.11	0.09	0.11	1.31	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	292	292	0.01	0.01	0.03	295
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	0.08	0.07	0.08	0.99	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	211	211	0.01	0.01	0.36	214
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	0.01	0.01	0.02	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.9	34.9	< 0.005	< 0.005	0.06	35.4
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Resurfacing (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	1.28	1.07	8.65	11.4	0.02	0.33	—	0.33	0.31	—	0.31	—	1,626	1,626	0.07	0.01	—	1,631
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	1.52	2.01	< 0.005	0.06	—	0.06	0.05	—	0.05	—	286	286	0.01	< 0.005	—	287
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.37	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.4	47.4	< 0.005	< 0.005	—	47.6
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.23	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	285	285	< 0.005	0.01	0.03	289
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	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	50.9	50.9	< 0.005	< 0.005	0.08	51.6
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.43	8.43	< 0.005	< 0.005	0.01	8.54
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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Open Trench Installation	Grading	10/1/2024	3/31/2026	5.00	391	—
Trenchless Installation	Grading	10/1/2024	2/17/2025	5.00	100	—
Resurfacing	Paving	10/1/2024	3/31/2026	5.00	391	—

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
Open Trench Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Open Trench Installation	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Open Trench Installation	Off-Highway Trucks	Diesel	Average	5.00	6.00	376	0.38
Open Trench Installation	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Open Trench Installation	Dumpers/Tenders	Diesel	Average	2.00	8.00	16.0	0.38
Open Trench Installation	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Trenchless Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Trenchless Installation	Cranes	Diesel	Average	1.00	8.00	367	0.29
Trenchless Installation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Trenchless Installation	Off-Highway Trucks	Diesel	Average	1.00	8.00	376	0.38
Trenchless Installation	Bore/Drill Rigs	Diesel	Average	1.00	24.0	83.0	0.50
Trenchless Installation	Pumps	Diesel	Average	1.00	24.0	11.0	0.74
Trenchless Installation	Generator Sets	Diesel	Average	1.00	24.0	14.0	0.74
Trenchless Installation	Air Compressors	Diesel	Average	1.00	24.0	37.0	0.48
Resurfacing	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Resurfacing	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Resurfacing	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Resurfacing	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Resurfacing	Air Compressors	Diesel	Average	2.00	8.00	37.0	0.48
Resurfacing	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46

Resurfacing	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Resurfacing	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Open Trench Installation	—	—	—	—
Open Trench Installation	Worker	30.0	18.5	LDA,LDT1,LDT2
Open Trench Installation	Vendor	—	10.2	HHDT,MHDT
Open Trench Installation	Hauling	0.67	20.0	HHDT
Open Trench Installation	Onsite truck	—	—	HHDT
Trenchless Installation	—	—	—	—
Trenchless Installation	Worker	20.0	18.5	LDA,LDT1,LDT2
Trenchless Installation	Vendor	—	10.2	HHDT,MHDT
Trenchless Installation	Hauling	30.2	20.0	HHDT
Trenchless Installation	Onsite truck	—	—	HHDT
Resurfacing	—	—	—	—
Resurfacing	Worker	22.5	18.5	LDA,LDT1,LDT2
Resurfacing	Vendor	—	10.2	HHDT,MHDT
Resurfacing	Hauling	0.00	20.0	HHDT
Resurfacing	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction

Apply dust suppressants to unpaved roads	84%	84%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

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)
Open Trench Installation	1,050	1,050	0.00	0.00	—
Trenchless Installation	12,076	12,076	0.00	0.00	—
Resurfacing	0.00	0.00	0.00	0.00	0.64

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Asphalt Surfaces	0.64	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	532	0.03	< 0.005
2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29.5	annual days of extreme heat
Extreme Precipitation	2.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	6.30	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	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	N/A	N/A	N/A	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 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	95.3
AQ-PM	53.4
AQ-DPM	83.3
Drinking Water	19.5
Lead Risk Housing	82.8

Pesticides	70.3
Toxic Releases	30.5
Traffic	76.5
Effect Indicators	—
CleanUp Sites	58.2
Groundwater	71.1
Haz Waste Facilities/Generators	28.3
Impaired Water Bodies	0.00
Solid Waste	93.2
Sensitive Population	—
Asthma	61.7
Cardio-vascular	87.1
Low Birth Weights	56.9
Socioeconomic Factor Indicators	—
Education	92.9
Housing	76.0
Linguistic	76.9
Poverty	93.6
Unemployment	88.1

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	7.04478378
Employed	9.264724753
Median HI	13.37097395

Education	—
Bachelor's or higher	1.963300398
High school enrollment	100
Preschool enrollment	11.35634544
Transportation	—
Auto Access	28.94905685
Active commuting	35.01860644
Social	—
2-parent households	17.60554344
Voting	1.270370846
Neighborhood	—
Alcohol availability	44.00102656
Park access	20.42858976
Retail density	58.38573078
Supermarket access	53.04760683
Tree canopy	3.156679071
Housing	—
Homeownership	32.22122418
Housing habitability	17.10509432
Low-inc homeowner severe housing cost burden	13.85859104
Low-inc renter severe housing cost burden	31.8747594
Uncrowded housing	10.22712691
Health Outcomes	—
Insured adults	6.557166688
Arthritis	48.2
Asthma ER Admissions	41.6
High Blood Pressure	36.7

Cancer (excluding skin)	87.6
Asthma	6.7
Coronary Heart Disease	47.4
Chronic Obstructive Pulmonary Disease	19.2
Diagnosed Diabetes	21.5
Life Expectancy at Birth	14.2
Cognitively Disabled	10.7
Physically Disabled	49.3
Heart Attack ER Admissions	10.4
Mental Health Not Good	6.5
Chronic Kidney Disease	27.1
Obesity	3.4
Pedestrian Injuries	76.6
Physical Health Not Good	9.8
Stroke	26.0
Health Risk Behaviors	—
Binge Drinking	68.3
Current Smoker	6.3
No Leisure Time for Physical Activity	6.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	35.2
Elderly	93.7
English Speaking	32.7
Foreign-born	61.0
Outdoor Workers	5.5

Climate Change Adaptive Capacity	—
Impervious Surface Cover	78.2
Traffic Density	60.6
Traffic Access	23.0
Other Indices	—
Hardship	96.1
Other Decision Support	—
2016 Voting	5.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	94.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Description
Construction: Off-Road Equipment	Project Description

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APPENDIX B
BIOLOGICAL RESOURCES ASSESSMENT REPORT

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Eastern Municipal Water District Extension of Sewer to Highway 74 Project

Biological Resources Assessment

prepared for

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April 2024

RINCON CONSULTANTS, INC. SINCE 1994

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1 Introduction

Woodard and Curran retained Rincon Consultants, Inc. (Rincon) on behalf of the Eastern Municipal Water District (EMWD) to conduct a Biological Resources Assessment (BRA) in support of an Initial Study for the EMWD Extension of Sewer to Highway 74 Project (project) in the city of Perris in Riverside County, California. Rincon prepared this BRA to document existing conditions and to evaluate the potential for impacts to biological resources during implementation of the project, which proposes to upsize sewer pipeline and install new sewer pipeline in the vicinity of California State Route 74 (Highway 74) and W Ellis Avenue, Perris, California. This report has been prepared in accordance with the California Environmental Quality Act (CEQA) and the Western Riverside Multiple Species Habitat Conservation Plan (WRMSHCP) guidelines for examining biological resources.

1.1 Project Location

The project site is located in Perris primarily along Highway 74 between W 4th Street and W Ellis Avenue, along W Ellis Avenue between Highway 74 and S B Street, and along S G Street between Case Avenue and E 2nd Street (Figure 1 and Figure 2). The project site also includes the southeast segment of Navajo Road off of Highway 74. The project site is located in the United States Geological Survey *Perris* CA 7.5-minute quadrangle. Surrounding land use includes a high school and a public park at the eastern end of the project site along W Ellis Avenue, undeveloped lands along the rest of W Ellis Avenue, and commercial and residential lots along Highway 74 and S G Street. Possible staging areas for construction equipment include a lot on the west side of Highway 74 (Assessor's Parcel Number [APN] 326-240-079), a lot off of W 11th Street within the undeveloped land between Highway 74 and W Ellis Avenue (APN 313-180-013), and a lot on the west side of S G Street (APN 310-123-006) (Figure 2).

1.2 Project Description

The proposed project aims to expand the sewer system in the city of Perris by upsizing the existing sewer pipeline and installing new sewer pipeline in the project site. Specifically, this will be accomplished by:

1. Upsizing 3,790 linear feet (LF) of sewer pipeline along S G Street between 2nd Street and Case Road from 12 inches to 18 inches,
2. Upsizing 670 LF of sewer pipeline along Indian Hills Circle and Arapaho Road north of Navajo Road from 8 inches to 15 inches,
3. Installing 2,670 LF of new 15-inch gravity sewer along Navajo Road from Indian Hills Circle to Highway 74 and along Highway 74 from Navajo Road to 300 LF south of Dockery Lane,
4. Installing 1,760 LF sewer pipeline along Highway 74 between 300 LF south of Dockery Lane to W Ellis Avenue,
5. Installing 5,600 LF of new gravity sewer along W Ellis Avenue between Highway 74 and S B Street (alternative pipeline option to item 4), and
6. Installing 1,400 LF of new pipeline along Highway 74 and Kruse Street from Navajo Road to W 3rd Street (alternative pipeline option to item 2).

Crews will be doing open excavation along Highway 74 which will tunnel underneath culverts and drainages. Crews will also likely be doing open excavation along W Ellis Avenue and S G Street. Work will be confined to existing paved and dirt roads within the BSA.

1.3 Regulatory Summary

Regulated or sensitive resources studied and analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, regionally protected resources (e.g., from county-wide Habitat Conservation Plans [HCPs] and Natural Community Conservation Plans [NCCPs]), and locally protected resources, such as protected trees. Regulatory authority over biological resources is shared by Federal, State, and local authorities. Primary authority for regulation of general biological resources lies within the land use control and planning authority of local jurisdictions (in this instance, the City of Perris).

1.3.1 Definition of Special Status Species

For the purposes of this report, special status species include:

- Species listed as threatened or endangered under the federal Endangered Species Act (ESA); including proposed and candidate species
- Species listed as candidate, threatened, or endangered under the California Endangered Species Act (CESA)
- Species designated as Fully Protected by the California Fish and Game Code (CFGC), and Species of Special Concern or Watch List by the California Department of Fish and Wildlife (CDFW)
- Native Plant Protection Act (NPPA) – State Rare (SR)
- California Native Plant Society (CNPS) California Rare Plant Ranks (CRPR) 1A, 1B, 2A and 2B
- Species designated as locally important by the Local Agency and/or otherwise protected through ordinance, local policy, or HCPs/NCCPs

1.3.2 Environmental Statutes

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes (Appendix A):

- CEQA
- ESA
- CESA
- Federal Clean Water Act (CWA)
- CFGC
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- WRMSHCP

Figure 1 Regional Location Map

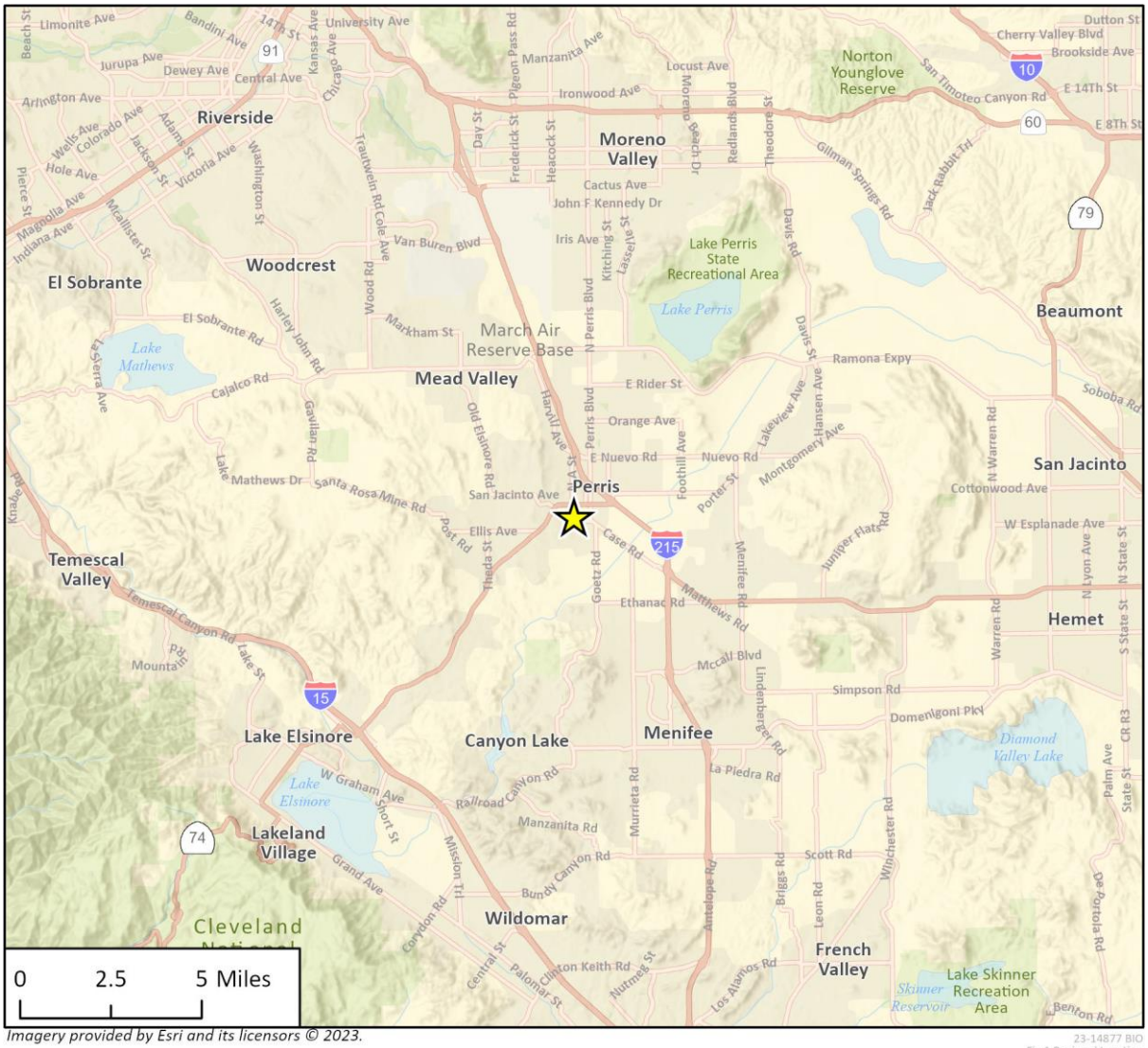
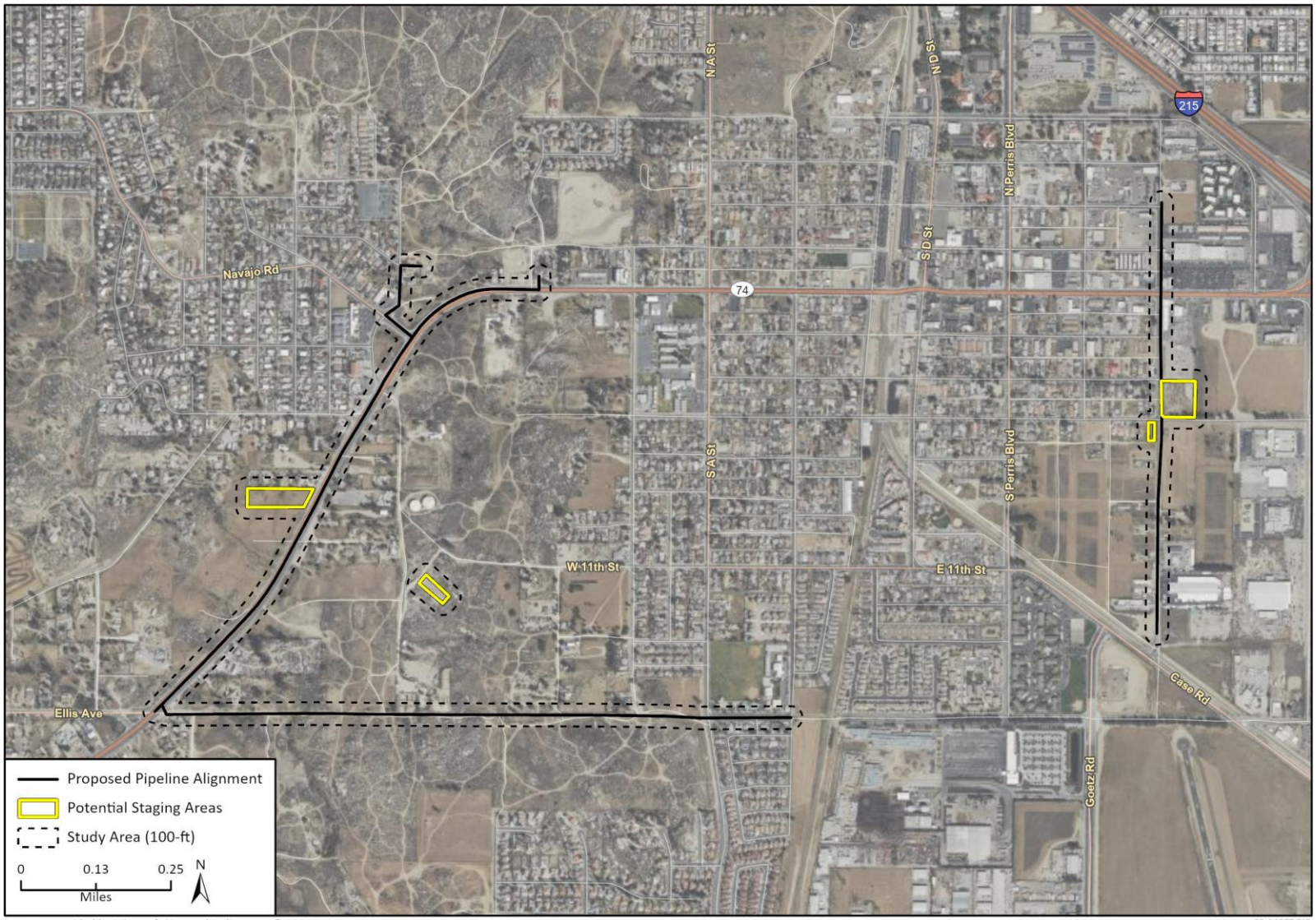


Figure 2 Project Location Map



1.3.3 Guidelines for Determining CEQA Significance

The following threshold criteria, as defined by the CEQA Guidelines Appendix G Initial Study Checklist, were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

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

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.*

c) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

2 Methodology

Biological conditions within the project site were evaluated by confirming applicable biological regulations, policies, and standards; reviewing biological literature and querying available databases pertinent to the project site and vicinity; and conducting a reconnaissance-level biological survey of the project site. The methods employed are described in detail below. The findings and opinions conveyed in this report are based on this methodology; therefore, all quantitative impact assumptions are estimates.

2.1 Biological Study Area

Biologists conducted the survey within a Biological Study Area (BSA) defined for this project as the approximately 15,300 linear feet work area where the proposed construction will occur and a 100-foot survey buffer. The BSA also includes four potential staging areas with 100-foot buffers (Figure 2). The BSA is approximately 88.78 acres in total area. The western portion of the BSA includes Highway 74 and W Ellis Avenue and the staging areas off of Highway 74 and W 11th Street; the eastern portion of the BSA includes S G Street and the two associated staging areas.

2.2 Literature Review

Rincon conducted a literature review to characterize the nature and extent of biological resources on and adjacent to the BSA. The literature review included an evaluation of current and historical aerial photographs of the site (Google Earth 2024), regional and site-specific topographic maps, and climatic data.

Queries of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation system (IPaC; UFWS 2023b), CDFW California Natural Diversity Database (CNDDB; CDFW 2023b), and California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants of California (2024a) were conducted to obtain comprehensive information regarding State and Federally listed species, and other special status species, considered to have potential to occur within the *Perris, California* USGS 7.5-minute topographic quadrangle and the surrounding eight quadrangles (*Riverside East, Sunnymead, El Casco, Lakeview, Winchester, Romoland, Lake Elsinore, Steele Peak*). The results of database queries and lists of special status species were reviewed by Rincon's regional biological experts for accuracy and completeness. The final list of special status biological resources (species and sensitive natural communities) was evaluated based on documented occurrences within the nine-quadrangle search area and biologists' expert opinions on species known to occur in the region. The evaluation results and justification were compiled into a table (Appendix D).

The following resources were reviewed for additional information on existing conditions relating to biological resources within the BSA:

- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (2024b)
- USFWS Critical Habitat Portal (2023a)
- CDFW Biogeographic Information and Observation System (BIOS, CDFW 2023a)
- CDFW Special Animals List (2024a)

- CDFW Special Vascular Plants, Bryophytes, and Lichens List (2024b)
- National Hydrography Dataset (NHD, USGS 2023)
- National Wetlands Inventory (NWI, USFWS 2023c)

The vegetation community characterizations for this analysis are based on the classification systems presented in *A Manual of California Vegetation, Second Edition* (MCV2; Sawyer et al. 2009). The land cover types that are not described in MCV2 are classified using conventional naming practices (e.g., disturbed/developed). Additionally, some vegetation communities not recognized by the MCV2 are described using WRMSHCP guidelines.

The potential for wildlife movement corridors was evaluated based on the California Essential Habitat Connectivity Project commissioned by the California Department of Transportation and CDFW (Spencer et al. 2010).

2.3 Field Reconnaissance Survey

Rincon Biologists Jacob Hargis and Molly Morrissey conducted a field survey on December 8, 2023, between 8:15 AM and 4:30 PM to document existing conditions of the BSA. Wind conditions during the survey were calm, with temperatures between 50 degrees and 68 degrees Fahrenheit and 10 percent cloud cover. All accessible portions of the BSA were surveyed on foot. Inaccessible areas included a homeless encampment on W Ellis Avenue, the fenced and inaccessible staging area on the undeveloped land between Highway 74 and W Ellis Avenue, and properties in the BSA with private homes or businesses. The inaccessibility of these areas did not affect the biologists' ability to complete a thorough survey. The biologists mapped vegetation communities and noted all observations of wildlife and plant species. The survey was conducted outside of the typical bird nesting season (February 1 through August 31).

A second field survey was conducted on February 16, 2024, after an additional sewer alignment and staging area on S G Street was added to the project footprint. This survey was conducted by Molly Morrissey between 7:30 AM and 8:30 AM. Wind conditions during this survey were calm, with temperatures between 48 and 50 degrees Fahrenheit and 100 percent cloud cover. The new staging area was inaccessible due to fencing; however the biologist was still able to map the vegetation community and observe wildlife species present.

2.4 Impact Evaluation

Impacts are defined as project-related activities that destroy, damage, alter, or otherwise affect biological resources. This may include injury or mortality to plant or wildlife species, effects on an animal's behavior (such as through harassment or frightening off an animal by construction noise), as well as the loss, modification, or disturbance of natural resources or habitats. Impacts are defined as either direct or indirect, and either permanent or temporary.

Direct impacts are generally those that occur during project implementation and at the same time and location as the cause of the impact. Direct impacts for this project may include injury, death, and/or harassment of special status wildlife species, if present in the work areas or vicinity. Direct impacts may also include the destruction of vegetation communities necessary for special status species breeding, feeding, or sheltering. Direct impacts to plants can include crushing of plants, bulbs, or seeds where present in the impact areas.

Indirect impacts are those that are reasonably foreseeable and caused by a project but occur later in time and/or potentially at locations of some distance from the source of the impact. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect impact. Specific examples for this project may include soil compaction that, in the future, following completion of the project, prevents wildlife from digging burrows or allows weedy plant species to thrive. Other examples may include dust that drifts outside of project disturbance areas and covers native plants, thereby decreasing their photosynthetic capacity, and unintentional introduction of invasive species (particularly weedy plant species that outcompete native plant species) that over time negatively affect the local ecology.

Permanent impacts are those that result in the long-term or irreversible loss of biological resources. For example, widening sewers in an existing sewer system would reduce the underground area available for wildlife to dig burrows.

Temporary impacts to biological resources are those that are reversible over time, with or without implementation of Mitigation Measures. Examples include the generation of fugitive dust and noise during project implementation, trimming or crushing vegetation that will regrow following project completion, and removed vegetation that will be actively restored. These temporary impacts are anticipated to last during project implementation and shortly thereafter. However, the biological resources are anticipated to return to baseline after project completion.

3 Existing Conditions

Site conditions and physical characteristics are described below. Appendix B contains representative photographs of the BSA taken during the field reconnaissance survey.

3.1 Physical Characteristics

3.1.1 Topography and Geography

The BSA is in developed and undeveloped areas of Perris, California. The majority of the BSA is relatively flat with elevations ranging from 1,419 to 1,595 feet above mean sea level (amsl). Patches of the BSA are along moderately steep, eroded trails. The BSA is approximately 4.6 miles southeast of Lake Perris State Recreation Area and approximately 12 miles east of the Santa Ana Mountains.

The majority of W Ellis Avenue is unpaved and traverses sparsely developed land. This portion of the BSA contained evidence of human disturbance, including trash, evidence of fires, and one homeless encampment. The land south of W Ellis Avenue is steep in portions, with washouts along much of the driving trails, whereas the land north of W Ellis Avenue is flat. The eastern end of W Ellis Avenue is paved. The three possible staging areas are disturbed lots. The BSA at this location includes a park, a high school, and residential streets. The BSA along Highway 74 is mostly developed with commercial businesses. The BSA along S G Street is a mix of commercial businesses and residential homes.

3.1.2 Watershed and Drainages

The BSA is within the Perris Valley-San Jacinto River Watershed (Hydrologic Unit Code [HUC] 12-180702020306). The NWI identifies an unnamed Intermittent Riverine Streambed that is seasonally flooded (R4SBC) that flows from Highway 74 southwest to W Ellis Avenue. This assessment was based on satellite imagery from 1975, and observations from the reconnaissance survey did not confirm a streambed though the BSA (USFWS 2023c). Several dry drainages convey flows through culverts throughout the BSA. Section 4.3, Jurisdictional Waters and Wetlands, describes these drainages in detail.

3.1.3 Soils

Nine soil types in five soil series are present in the BSA (Figure 3): Cieneba rocky sandy loam, 8 to 15 percent slopes, eroded; Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded; Exeter sandy loam, deep, 0 to 2 percent slopes; Hanford coarse sandy loam, 2 to 8 percent slopes; Hanford coarse sandy loam, 8 to 8 to 15 percent slopes, eroded; Ramona sandy loam, 0 to 2 percent slopes, major land resource area (MLRA) 19; Ramona sandy loam, 8 to 15 percent slopes, eroded; Vista coarse sandy loam, 8 to 15 percent slopes, eroded; and Vista rocky coarse sandy loam, 2 to 35 percent slopes, eroded (USDA NRCS 2023b).

Cienaba Soil Series

The Cieneba series consists of very shallow and shallow, somewhat excessively drained gravelly loam soils that formed in material weathered from granitic rock. Cieneba soils are on hills and mountains and have slopes of 9 to 85 percent. The typical profile of the Cienaba soil series is as

follows: partially decomposed leaf and twig litter from 0 to 0.5 inches, fine, brown, moist gravelly loam from 0.5 to 10 inches, and reddish yellow to brown, strongly weathered granitic material from 10 to 30 inches (USDA NRCS 2023a).

Exeter Soil Series

The Exeter series consists of moderately deep to a duripan, moderately well drained loam soils that formed in alluvium mainly from granitic sources. Exeter soils are on alluvial fans and stream terraces and have slopes of 0 to 9 percent. The typical profiles of the Exeter soil series is as follows: brown to dark brown loam from 0 to 7 inches, moist, dark yellowish brown loam from 7 to 14 inches, reddish brown to yellowish red clay loam from 20 to 30 inches, reddish brown duripan from 30 to 43 inches, and light yellowish brown, moderately alkaline, gravelly sand from 43 to 60 inches (USDA NRCS 2023a).

Hanford Soil Series

The Hanford series consists of very deep, well drained soils that formed in moderately coarse textured alluvium dominantly from granite. Hanford soils are on stream bottoms, floodplains and alluvial fans and have slopes of 0 to 15 percent. The soils are medium acid to slightly alkaline, becoming more alkaline with depth. The typical profile of the Hanford series soils is as follows: pale brown to dark brown, fine sandy loam from 0 to 36 inches, and light yellowish brown, fine sandy loam and sandy loam from 36 to 60 inches (USDA NRCS 2023a).

Ramona Soil Series

The Ramona series is a member of the fine-loamy, mixed, thermic family of Typic Haploxeralfs. This soil series is well drained, with slow to rapid runoff, and moderately slow permeability. The typical profile of the Ramona soil series is as follows: brown to dark brown sandy loam from 0 to 14 inches, brown, fine sandy loam from 14 to 23 inches, dark reddish brown loam from 23 to 29 inches, reddish brown to yellowish red sandy clay loam from 29 to 68 inches, and brown to dark brown, fine sandy loam from 68 to 74 inches (USDA NRCS 2023a).

Vista Soil Series

The Vista series consists of moderately deep, well drained coarse-loamy soils that formed in material weathered from decomposed granitic rocks. Vista soils are on hills and mountainous uplands and have slopes of 2 to 85 percent. The typical profiles of the Vista soil series are as follows: coarse, dark brown sandy loam from 0 to 9 inches, coarse, dark brown sandy loam from 9 to 28 inches, coarse, yellowish brown to pale brown sandy loam from 28 to 44 inches, and very pale brown grus from 44 to 61 inches (USDA NRCS 2023a).

3.2 Vegetation and Other Land Cover

A total of 11 vegetation communities and land cover types were documented within the BSA during the field survey. Table 1 identifies each vegetation community and land cover type, as well as approximate acreage and percent of BSA covered. Figure 4 depicts the locations of each vegetation community and land cover type in the BSA. Brief descriptions of the vegetation communities and land cover types are provided in the subsections below and representative photographs are provided in Attachment B.

Figure 3 Soils

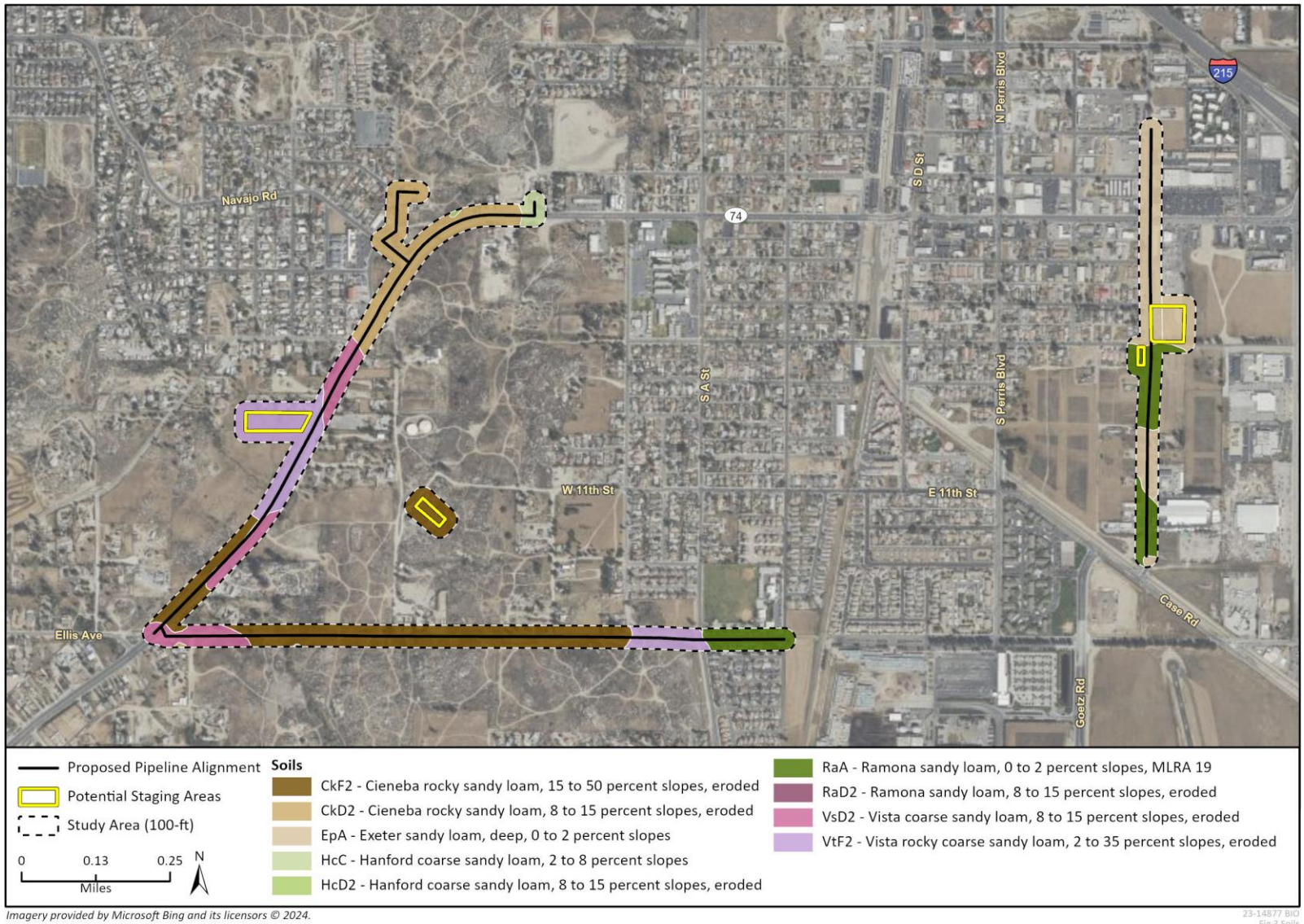


Figure 4 Vegetation Communities and Land Cover Types

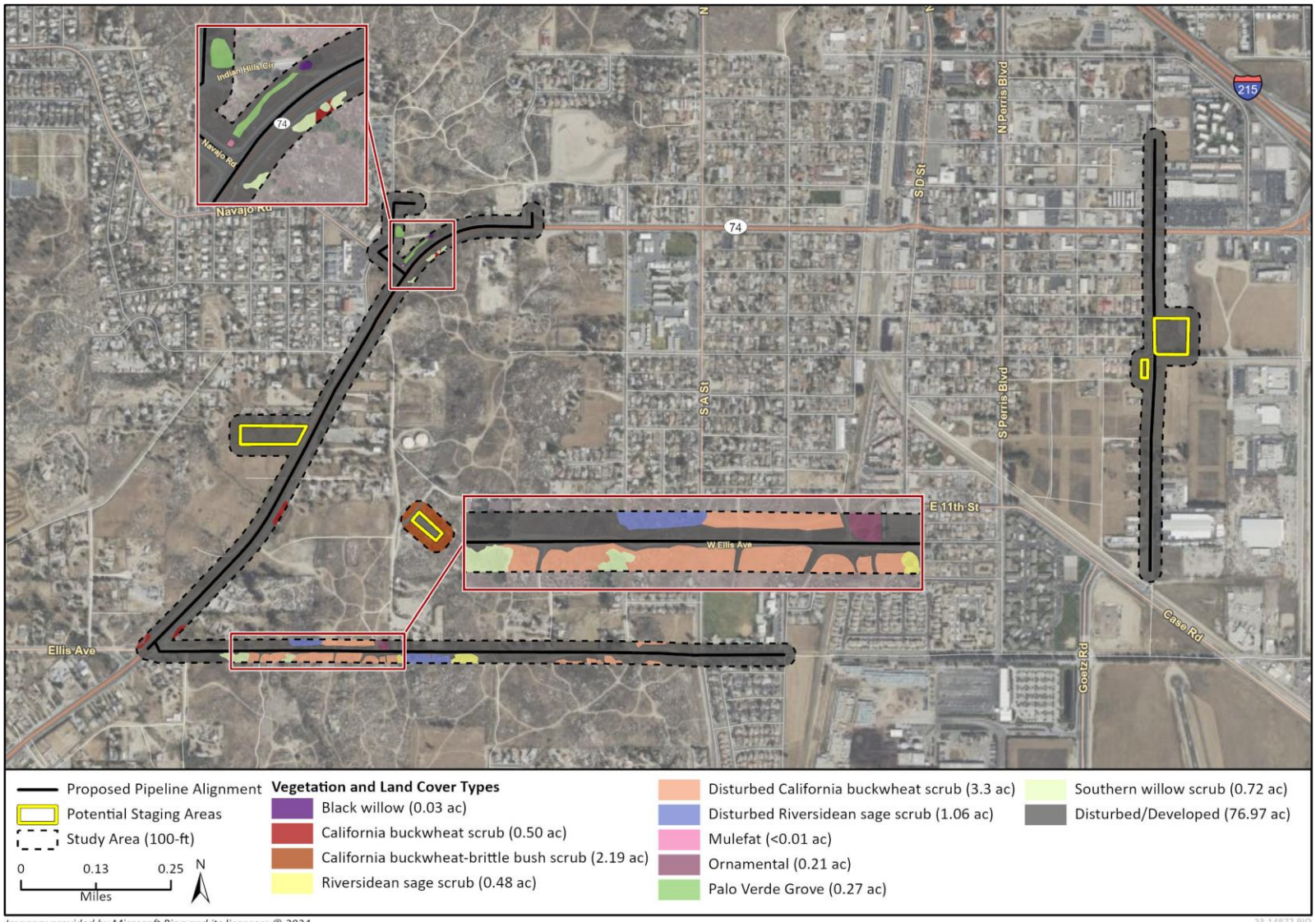


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Fig X Vegetation Communities and Land Cover

Table 1 Summary of Vegetation Communities/Land Cover Types within the BSA

Type	Approximate Acreage	Approximate Percent Area of BSA
Disturbed/Developed	79.97	90.1
California buckwheat scrub	0.5	0.56
Disturbed California buckwheat scrub	3.3	3.72
California buckwheat-brittlebush scrub	2.19	2.47
Riversidean coastal sage scrub	0.48	0.54
Disturbed Riversidean coastal sage scrub	1.06	1.19
Southern willow scrub*	0.72	0.81
Ornamental	0.21	0.24
Palo verde grove	0.27	0.30
Eucalyptus	0.04	0.05
Black willow*	0.03	0.04
Mulefat	0.008	<0.01
Total	**88.78**	**100%**

*Indicates a CDFW Sensitive Natural Community

Disturbed/Developed

Approximately 79.97acres of the BSA is disturbed/developed land, making up over 90 percent of the total land cover in the BSA. Disturbed land refers to any land where the native vegetation has been significantly altered by agriculture, construction, or other anthropogenic activities; and the species composition and site conditions are not characteristic of the disturbed phase of a particular vegetation community (e.g., disturbed California buckwheat scrub). Disturbed land is typically found in vacant lots, roadsides, material storage areas, or abandoned fields, and is often dominated by non-native species and/or bare ground. This land cover type is found throughout the BSA along W Ellis Avenue, Highway 74 and S G Street. These areas are characterized by mostly bare ground with scattered non-native and native forbs such as redstem filaree (*Erodium cicutarium*), black mustard (*Brassica nigra*), stinknet (*Oncosiphon pilulifer*), and Russian thistle (*Salsola tragus*), depending on location.

The developed land cover type consists of areas that have been developed or otherwise physically altered to the extent that they no longer support most vegetation. Developed land is characterized by the presence of permanent or semi-permanent structures, gravel lots, pavement, or hardscape. The landscaped land cover type consists of human-altered vegetative landscapes for aesthetic or recreational purposes that are typically adjacent to developed areas. This land cover type is located within the rural developed areas at the eastern end of the BSA on W Ellis Avenue (high school, sports fields, and private residences), along Highway 74 (commercial areas), and along S G Street (commercial areas and private residences). It contains structures, hardscapes, and adjacent landscape/ornamental vegetation. The ornamental species composition varied but was generally dominated by London plane (*Platanus hispanica*), Peruvian pepper (*Schinus molle*), Chinaberry (*Melia azedarach*), and Indian hawthorn (*Rhaphiolepis indica*). Disturbed/developed is not officially identified in MCV2 (Sawyer et al. 2009).

California Buckwheat Scrub

California buckwheat scrub (*Eriogonum fasciculatum* Shrubland Alliance) is a coastal scrub vegetation community that is typically found on upland slopes, intermittently flooded arroyos, and channels and washes. Soils are typically course, well drained, and moderately acidic to slightly saline. California buckwheat (*Eriogonum fasciculatum*) is the dominant species and must contain at least 50 percent relative cover in the shrub layer (Sawyer et al. 2009). Common associates include California sagebush (*Artemisia California*), coyote brush (*Baccharis pilularis*), and other common coastal sage scrub plant species. This vegetation community is not considered sensitive by the CDFW (2023c).

This vegetation community comprises 0.5 acres of the BSA and is found along Highway 74 at the intersection of W Ellis Avenue, midway along Highway 74 on the east side, and on the north side of Highway 74 amongst southern willow scrub. It is dominated by California buckwheat. Other species present include brittlebush (*Encelia farinosa,* less than 30 percent relative cover), clustered tarweed (*Deinandra fasciculata*), mustard species (*Brassica* spp.), and wild oats (*Avena* spp.).

Disturbed California Buckwheat Scrub

A disturbed form of California buckwheat scrub is present throughout W Ellis Avenue in the BSA, totaling 2.72 acres. This vegetation community generally contains the same species composition as California buckwheat scrub. However, it has less absolute cover of all native coastal scrub species and a larger degree of non-native annual forbs and grasses, which have a species composition typical of the disturbed land cover type, as well as wild oats and annual brome grasses (*Bromus* spp.). The disturbed form of this vegetation community is not recognized in the MCV2 (Sawyer et al. 2009).

California Buckwheat – Brittlebush Scrub

California buckwheat – brittlebush scrub (*Eriogonum fasciculatum-Encelia Farinosa* Shrubland Association) is a coastal vegetation community that is typically found on upland slopes, intermittently flooded arroyos, and channels and washes. Soils are typically course, well drained, and moderately acidic to slightly saline. This vegetation community is an association of the California buckwheat community, differentiated by containing at least 30 percent absolute cover of brittle bush in the shrub canopy (Sawyer et al. 2009). Common associates include California sagebush, coyote brush, and other common coastal sage scrub plant species.

California buckwheat—brittlebush scrub comprises 3.3 acres of the BSA surrounding the staging area on the undeveloped land between Highway 74 and W Ellis Avenue. California buckwheat and brittlebush are co-dominant species. Other species present included white sage (*Salvia apiana*), stinknet, and brome grasses.

Riversidean Sage Scrub

Riversidean sage scrub is a plant community comprised of low, soft-woody shrubs up to three feet tall that most actively grow in winter and early spring. Many taxa are facultatively drought-deciduous. This community typically occurs on low moisture-availability sites: steep, xeric slopes or clay-rich soils that are slow to release stored water. Characteristic species of this vegetation community include: deerweed (*Acmispon glaber*), California sagebrush, California buckwheat, Menzies' goldenbush (*Isocoma menziesii*), chaparral bush mallow (*Malacothamnus fasciculatus*), laurel sumac (*Malosma laurina*), island mallow (*Malva assurgentiflora*), lemonade berry (*Rhus*

integrifolia), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), and foothill needle grass (*Stipa lepida*). This vegetation community does not align with a MCV2 vegetation alliance; however, it is recognized by the WRMSHCP (Riverside County Planning Department 2004, Sawyer et al. 2009).

Riversidean sage scrub comprises 0.48 acres midway down W Ellis Avenue. Species present include California buckwheat, California sagebrush, brittlebush, and doveweed (*Croton setiger*), and invasive species including mustard, brome grasses, and wild oat grasses.

Disturbed Riversidean Sage Scrub

A disturbed form of Riversidean sage scrub is present along portions of W Ellis Avenue in the BSA, totaling 1.06 acres. This vegetation community generally contains the same species composition of Riversidean sage scrub, but with less absolute cover of native species and more non-native species, including mustards and invasive grasses. Trash was observed scattered in this vegetation community within the BSA, as well as evidence of small human-made fires (charred wood and burnt trash). This vegetation community is not recognized in the MCV2 nor the WRMSHCP (Riverside County Planning Department 2004; Sawyer et al. 2009).

Southern Willow Scrub

Southern willow scrub is dominated by willow (*Salix* spp.) trees and shrubs and may contain gooseberry (*Ribes* spp.) and elderberry (*Sambucus* sp.). When disturbance is high within this vegetation community, the dominant species typically is sandbar willow (*Salix exigua*). When disturbance is less, the dominant species typically is Goodding's black willow (*Salix gooddingii*). Red willow (*Salix laevigata*) occupies fast-flowing perennial streams at elevations up to 1,200 meters and often occurs with yellow willow (*Salix lutea*). Arroyo willow (*Salix lasiolepis*) occupies perennial and intermittent stream channels at elevations up to 2,460 feet. Goodding's black willow occurs along streambanks and in wet places within drier habitats at elevations below 1,470 feet (Faber and Keller 1985).

This vegetation community is not recognized in the MCV2 but is recognized in the WRMSHCP (Riverside County Planning Department 2004; Sawyer et al. 2009). It occupies 0.72 acre of the BSA along Highway 74 and along W Ellis Avenue. There is a mix of willow species in these sections, including red willow, Goodding's willow and arroyo willow. Other species present included cypress (*Cypress* sp.) and mulefat (*Baccharis salicifolia*). This vegetation community was in a low-lying area near a culvert along Highway 74.

Ornamental

The ornamental land cover type consists of human-altered vegetative landscapes for aesthetical or recreational purposes. This land cover type covers 0.21 acre of the BSA and is located adjacent to a shooting range along W Ellis Avenue. The ornamental tree species in this area includes Peruvian pepper and cypress. This vegetation community is not listed in WRMSHCP and does not have a designated alliance in the MCV2 (Riverside County Planning Department 2004; Sawyer et al. 2009).

Palo Verde Grove

Mexican palo verde (*Parkinsonia aculeata*) is native to desert grasslands and canyons in Mexico up into southern Arizona, where it often grows in association with mesquite (*Prosopis* spp.). It is grown as an ornamental in tropical and subtropical climates and has escaped cultivation and become established in California (USDA USFS 2024). This vegetation community comprises 0.27 acre of the

BSA north and south of Indian Hills Circle. It is dominated by Mexican palo verde but also includes a mixture of native and non-native shrubs and herbs, including common sunflower (*Helianthus annuus*), turf grasses, castor bean (*Ricinus communis*), and mulefat. The grove was growing in a ditch, indicating seasonal pooling of water. This vegetation community is not listed in WRMSHCP and does not have a designated alliance in the MCV2 (Riverside County Planning Department 2004, Sawyer et al. 2009).

Black Willow Thicket

Black willow thickets (*Salix gooddingii* Woodland Alliance) are found along large rivers, canyons, floodplains of streams, seeps, springs, ditches, floodplains, lake edges, low-gradient depositions. Black willow thicket comprises of 0.03 acre of the BSA along the north part of Highway 74. This vegetation community is growing in a ditch and adjacent to culverts, indicating seasonal pooling of water. Black willow thickets are considered a sensitive vegetation community (CDFW 2023c).

Mulefat Thicket

Mulefat thickets (*Baccharis salicifolia* Shrubland Alliance) are characterized by a moderately open shrub layer dominated by mulefat. Mulefat thickets are typically found in canyon bottoms, floodplains, irrigation ditches, lake margins, and stream channels. Soils are mixed alluvium (Sawyer et al. 2009). The mulefat thicket is present in the BSA along Highway 74 along a drainage feature, totaling 0.008 acres (approximately 300 square feet). Co-dominant species included blue elderberry (*Sambucus nigra* ssp. *cerulea*) and invasive tree tobacco (*Nicotiana glauca*).

3.3 General Wildlife

Common bird species observed during the field survey include Eurasian collared-dove (*Streptopelia decaocto*), American crow (*Corvus brachyrhynchos*), black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Setophaga coronata*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), Cassin's kingbird (*Tyrannus vociferans*), American kestrel (*Falco sparverius*), white-crowned sparrow (*Zonotrichia leucophrys*), and American goldfinch (*Spinus tristis*). California ground squirrels (*Otospermophilus beechey*) were also observed in the disturbed California buckwheat vegetation community along W Ellis Avenue, across from the Ornamental vegetation community.

4 Sensitive Biological Resources

This section discusses special status species and sensitive biological resources observed in the BSA and evaluates the potential for the project site to support additional sensitive biological resources.

4.1 Special Status Species

Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the BSA, previous reports for the project site, and the results of surveys of the project site. The potential for each special status species to occur in the BSA was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identifiable on the site if present (e.g., oak [*Quercus* sp.] trees). Species is not present in the vicinity of the site.
- **Low Potential.** Few of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species may occur in the region but is not very likely to be found on the site.
- **Moderate Potential**. Some of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species is known to occur in the regional vicinity and has a moderate probability of being found on the site.
- **High Potential.** All the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has been recently documented in the vicinity and has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last five years).

The literature and database review identified 96 special status plant and wildlife species in the 9-quadrangle search area. Of these, 10 species (four plant and six wildlife species) are considered to have a moderate or high potential to occur in the BSA and one special status wildlife species was present in the BSA during the field reconnaissance survey (Table 2). Special-status species determined to have low or no potential to occur within the BSA are included in Appendix C but are not discussed further in this report.

Table 2 Special Status Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status[1]	Potential habitat in BSA	Potential to Occur
Plants				
Abronia villosa var. *aurita*	chaparral sand-verbena	CPRP 1B.1	CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub	Moderate
Centromadia pungens ssp. *laevis*	smooth tarplant	CPRP 1B.1	Mulefat thicket, black willow thicket, southern willow sage scrub	Moderate
Chorizanthe parryi var. *parryi*	Parry's spineflower	CPRP 1B.1	CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub	Moderate
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	CPRP 1B.2	CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub	Moderate
Invertebrates				
Bombus crotchii	Crotch bumble bee	SCE	CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub, rodent dens along W Ellis Ave	High
Birds				
Accipiter cooperii	Cooper's hawk	WL	Open areas along W Ellis Avenue, ornamental habitat	Moderate foraging Moderate nesting
Athene cunicularia	burrowing owl	SSC	Disturbed habitat, disturbed Riversidean scrub, disturbed California buckwheat scrub, rodent dens along W Ellis Ave	High
Polioptila californica californica	coastal California gnatcatcher	FT/SSC	CA buckwheat scrub	Present
Mammals				
Dipodomys stephensi	Stephen's kangaroo rat	FT/ST	CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub	High
Eumops perotis californicus	western mastiff bat	SSC	Foraging: CA buckwheat scrub, CA buckwheat-brittlebush scrub, Riversidean coastal sage scrub; Roosting: southern willow scrub, ornamental	Moderate foraging Moderate roosting

[1]FE = Federally Endangered FT = Federally Threatened FP = State Fully Protected
SCE = State Candidate Endangered SE = State Endangered ST = State Threatened SSC = CDFW Species of Special Concern
WL = CDFW Watch List
1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B= Rare, Threatened, or Endangered in California, but more common elsewhere

4.1.1 Special Status Plant Species

The California buckwheat, California buckwheat-brittlebush, Riversidean coastal sage scrub, mulefat, black willow, and southern willow scrub vegetation communities within limited portions of the BSA are characterized by natural vegetation and soil types suitable to support special status plant species. Four special status plant species are considered to have a moderate to high potential to occur in portions of the BSA based on the presence of potentially suitable habitat, as described in detail below.

Chaparral sand-verbena

Chaparral sand-verbena (*Abronia villosa* var. *aurita*), a CRPR 1B.1 species, is an annual herb that is typically found in coastal Southern California. It grows on sandy soils in coastal scrub and chaparral at elevations between 250 to 5,250 feet amsl. It blooms from March through August. Suitable coastal scrub habitat with sandy soils is present in the BSA along W Ellis Avenue and in limited areas along Highway 74. Additionally, the BSA is within this species' documented geographic and elevational range. There are four occurrences of the species in the nine-quadrangle search area, with the closest sighting approximately four miles from the BSA occurring in 2004. Therefore, this species has moderate potential to occur within the California buckwheat, California buckwheat-brittlebush, and Riversidean coastal sage scrub communities in the BSA.

Smooth tarplant

Smooth tarplant (*Centromadia pungens* ssp*. laevis*), a CRPR 1B.1 species, is an annual herb found in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland. This species prefers alkaline soils and occurs from sea level to 2,100 feet amsl. Riparian woodland habitat is present in the BSA on the west end of W Ellis Avenue and the northern section of Highway 74. Additionally, the BSA is within the species' documented geographic and elevational range Alkaline soils are present within the BSA along the east side of W Ellis Avenue and S G Street, although these soils do not overlap with the riparian vegetation communities. There are many sightings of this species in the nine-quadrangle search area, including several recent (1990-2015) occurrences within 0.5 to two miles of the BSA. Therefore, this species has moderate potential to occur within the mulefat, black willow, and southern willow scrub communities in the BSA.

Parry's spineflower

Parry's spineflower (*Chorizanthe parryi* var. *parryi*), a CRPR 1B.1 species, is an annual herb that grows in openings with sandy soils in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations between 900 to 4,000 feet amsl. It blooms from April through June.

Coastal sage scrub habitat with sandy openings is present in the BSA along W Ellis Avenue and in limited areas along Highway 74. Additionally, the BSA is within this species' documented geographic and elevational range. CNDDB records from the 2000s are located two miles from BSA. Additionally, this species has been documented multiple times within the nine-quadrangle search area, including one occurrence from 2001 approximately two miles from the BSA. Thus, this species has a moderate potential to occur within the BSA in the California buckwheat, California buckwheat-brittlebush, and Riversidean coastal sage scrub vegetation communities.

Long-spined spineflower

Long-spined spineflower (*Chorizanthe polygonoides* var*. longispina*), a CRPR 1B.2 species, is an annual herb that grows in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland, and prefers rocky, sandy openings. Coastal scrub habitat with sandy openings is present in the BSA along W Ellis Avenue and in limited areas along Highway 74. In addition, the BSA is within this species' documented geographic and elevational range. There are multiple CNDDB records of this species within the nine-quadrangle search area, including several from the 2000s within two miles of the BSA. Therefore, this species has a moderate potential to occur within the BSA in the California buckwheat, California buckwheat-brittlebush, and Riversidean coastal sage scrub vegetation communities.

4.1.2 Special Status Wildlife Species

Six special status wildlife species are considered to have a moderate or high potential to occur in portions of the BSA based on the presence of potentially suitable habitat, as described in detail below.

Crotch bumble bee

Crotch bumble bee (*Bombus crotchii*), a CESA candidate species, inhabits grassland and scrub habitats in arid climates from coastal California east to the Sierra-Cascade Crest and south into Mexico. It is a subterranean nester and has been documented to frequently nest in abandoned rodent dens. It visits a wide range of host plants and is therefore considered a dietary generalist.

Coastal scrub habitat is present in the BSA along W Ellis Avenue and in limited areas along Highway 74. The BSA is within this species' documented geographic and elevational range. Rodent dens, including multiple California ground squirrel complexes, are present in the BSA. The species' preferred food genera *Phacelia* and *Eriogonum* are present in the BSA. Additionally, this species has been documented multiple times within the nine-quadrangle search area, with one occurrence from 1975 overlapping the BSA and one occurrence from 2020 less than two miles from the BSA. Therefore, this species has a high potential to occur within the California buckwheat, California buckwheat-brittlebush, and Riversidean coastal sage scrub and rodent dens in the BSA.

Cooper's hawk

Cooper's hawk (*Accipiter cooperii*), a CDFW Watch List species, is a yearlong resident of most of the wooded portion of California. Dense stands of live oak, riparian deciduous, and other forest habitats near water used most frequently for nesting. The species often uses patchy woodlands and edges with snags for perching. It is frequently found within urban and suburban residential areas nesting in mature ornamental trees.

Scattered riparian woodland species are present within the BSA which could be used as perching for hunting, and the BSA is within the species' geographic and elevational range. This species has been observed five times within the nine-quadrangle search area, with the closest occurrence approximately 5.75 miles from the BSA. Portions of the BSA include residential areas, including a shooting range on W Ellis Avenue that has large ornamental trees on the property. This species has a moderate potential for foraging among the open areas along W Ellis Avenue in the BSA and a moderate potential to nest in the ornamental tree habitat along W Ellis Avenue.

Burrowing owl

Burrowing owls (*Athene cunicularia*), a CDFW Species of Special Concern, are yearlong residents of open, dry grasslands, sage scrub, and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. The species' population has markedly reduced in recent decades. Burrowing owls use rodent and other small mammal burrows for roosting and nesting, commonly ground squirrel burrows.

Sage scrub is present in the BSA, as are ground squirrel burrow complexes. The BSA is within the species' documented geographic and elevational range. In addition, the BSA overlaps with the burrowing owl species survey area within the WRMSHCP Conservation Plan Area (RCA 2024). The species has been observed almost 100 times in the nine-quadrangle search area, including several occurrences from the 1990s through 2010s within three miles of the BSA. Therefore, this species has a high potential to occur within the disturbed habitat, disturbed Riversidean scrub, and disturbed California buckwheat scrub along W Ellis Avenue, particularly near the ground squirrel burrow complexes, and in the open disturbed habitat within the staging areas along Highway 74 and S G Street.

Coastal California gnatcatcher

Coastal California gnatcatcher (*Polioptila californica california*), a Federally Threatened and CDFW Species of Special Concern, is a yearlong resident of dense coastal scrub habitat in arid washes, on mesas, and on slopes of coastal hills. They are particularly found within buckwheat habitat, where they glean insects and spiders off California buckwheat and other sage scrub species.

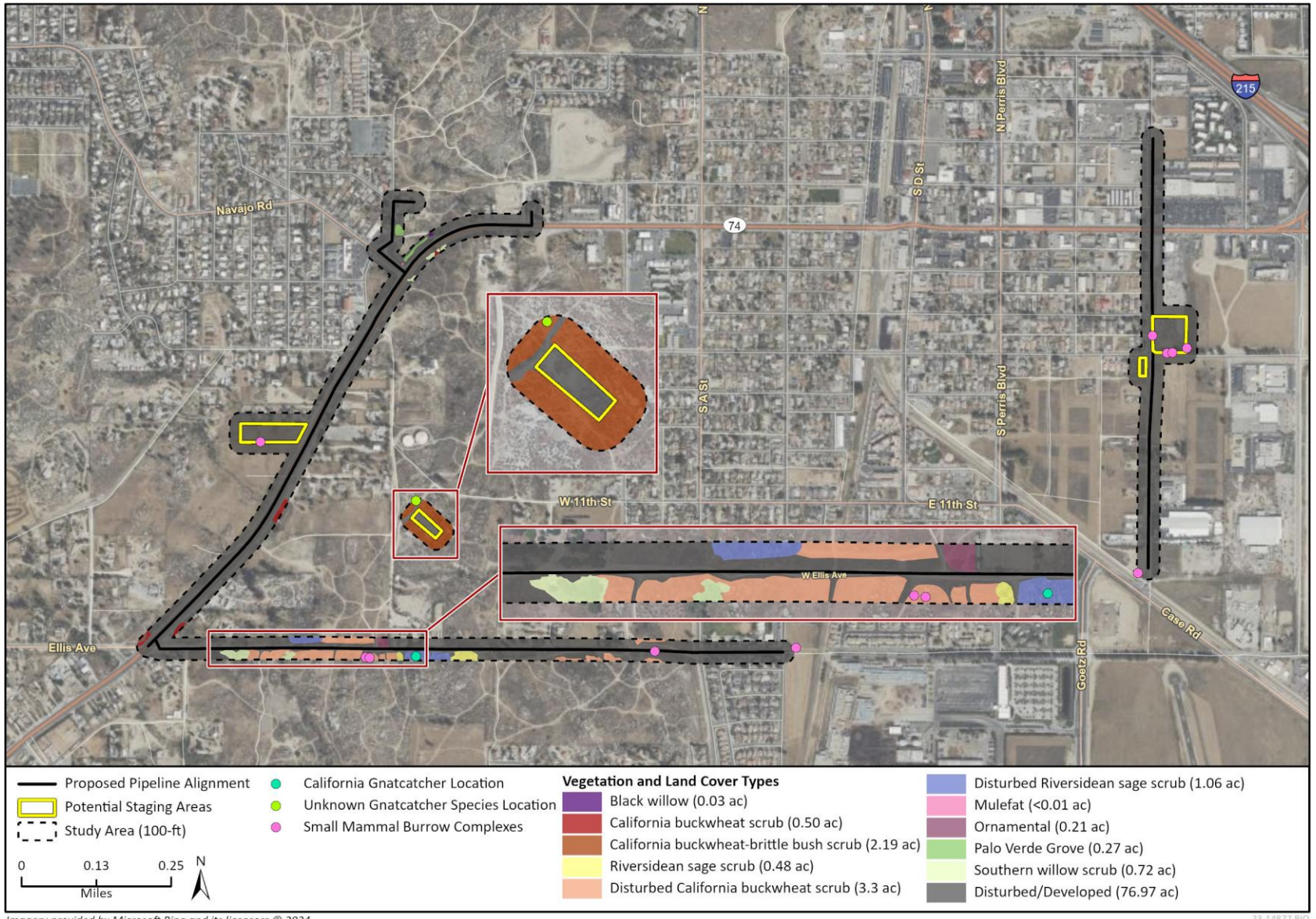
Suitable coastal sage scrub habitat is found along W Ellis Avenue. Coastal California gnatcatcher are particularly likely to occupy the California buckwheat scrub habitat in the BSA. In addition, one pair of coastal California gnatcatchers was observed in the disturbed Riversidean sage scrub habitat during the reconnaissance survey, and a third individual was suspected to be present in the California buckwheat-brittlebush scrub habitat near the potential staging area in between Highway 74 and W Ellis Avenue, although not confirmed (Figure 5).

Stephen's kangaroo rat

Stephen's kangaroo rat (*Dipodomys stephensi*), a Federally and State Threatened species, is known to occur in western Riverside County and western and central San Diego County. The species occurs primarily in annual and perennial grassland habitats, but may occur in coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas. The species' preferred food items are buckwheat (*Eriogonum* sp.), chamise (*Adenostemma fasciculatum*), brome grasses and filaree (*Erodium* sp.).

Coastal scrub, sagebrush with sparse canopy cover, and disturbed habitats are found throughout the BSA, as are buckwheat, brome grasses and filaree along W Ellis Avenue and in limited areas along Highway 74. This species has been observed over 100 times in the nine-quadrangle search area, including one occurrence in 1923 overlapping the BSA and many occurrences in the 1980s and 1990s within four miles of the BSA. In addition, the BSA falls within the Stephen's Kangaroo Rat Mitigation Fee area (see Habitat Conservation Plans). Therefore, this species has a high potential to occur within the California buckwheat, California buckwheat-brittlebush, and Riversidean coastal sage scrub in the BSA.

Figure 5 Gnatcatcher and Small Mammal Burrow Locations



Western mastiff bat

Western mastiff bat (*Eumops perotis californicus*), a CDFW Species of Special Concern, is an uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through southern California. This species occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. They roost in rock crevices, high buildings, trees or tunnels.

Coastal scrub and tall trees are present in the BSA. The species has been observed five times in the nine-quadrangle search area, including two occurrences within four miles of the BSA in 1957 and 1990. Therefore, this species has a moderate potential to forage in the BSA and moderate potential to roost in the BSA in the riparian trees and ornamental trees along W Ellis Avenue.

4.1.3 Nesting Birds

The BSA contains habitat that can support nesting birds, including raptors, protected under CFGC Section 3503 and the MBTA (16 United States Code Sections 703–712). Suitable nesting bird habitat within the BSA includes the native and ornamental trees, snags, coastal scrub, boulders, burrowing mammal complexes for burrowing owl, and buildings.

4.2 Sensitive Natural Communities and Critical Habitat

Vegetation communities are considered sensitive biological resources if they have limited distributions, have high-wildlife value, include special status species, or are particularly susceptible to disturbance. The CDFW ranks natural and sensitive communities using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the CNDDB.

Black willow thickets are ranked as S3 and are therefore considered sensitive by the CDFW. Southern willow scrub is not recognized in the MCV2, however other native *Salix* spp. habitat communities are ranked as S3 and are thus considered as sensitive.

4.3 Jurisdictional Waters and Wetlands

There are several potential state jurisdictional features within the BSA, including 12 drainages along Highway 74 and nine ditches along Highway 74, W. Ellis Avenue, and S. G Street (Figure 6).Two culverts and two drainages are located on the northern part of Highway 74 by Navajo road, nine culverts and one drainage are located at the southern end of Highway 74 by the intersection with W Ellis Avenue, four drainages are located on the eastern end of W Ellis Avenue, and two drainages are located on S G Street.

None of the potentially jurisdictional features in the BSA meet the United States Army Corps of Engineers (USACE) definition of a relatively permanent water (i.e., they do not contain flow for at least 3 months out of the year) and they do not have direct surface connection to a Navigable Water or a Traditional Navigable Water (TNW), therefore these features are not likely jurisdictional waters of the U.S. However, these features and the culverts within the BSA potentially fall under the jurisdiction of the Santa Ana RWQCB and CDFW as waters of the state.

4.4 Wildlife Movement

Wildlife corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as between foraging and denning areas, or they may be regional in nature, allowing movement across the landscape. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats in the linkage do not necessarily need to be the same as the habitats that are being linked. Rather, the linkage merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (e.g., rock outcroppings, vernal pools, or oak trees) may need to be in the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

The BSA does not contain areas of land considered “essential connectivity areas” identified by the Essential Habitat Connectivity Areas (EHCA) project (Spencer et al. 2010). Portions of the BSA contain developed land, such as existing roadways, suburban residences, and commercial businesses. This development may limit terrestrial wildlife movement through the BSA; however, the natural and semi-natural vegetation communities along W Ellis Avenue have the potential to provide refuge and food for migrating avian species as well as common reptiles and mammals. The culverts along Highway 74 (Figure 6) may provide passages for terrestrial species connecting the open spaces on either side of the highway, although much of the western side of the highway is developed. The BSA likely supports a low level of local wildlife movement.

4.5 Resources Protected by Local Policies and Ordinances

4.5.1 Protected Trees

According to Chapter 12.24 of the Riverside County Municipal Code, any native trees at or above 12 inches in diameter at breast height (DBH) above grade and 30 feet in height shall be protected above 5,000 feet amsl (County of Riverside 2024). Native trees with a DBH of 12 inches or greater with a height of 30 feet or more are present within the Study Area; however, the BSA is below 5,000 feet amsl. Therefore, there are no protected trees within the Study Area per the Riverside County Municipal Code.

Chapter 12.08 of the Riverside County Municipal Code states that a permit must be acquired if any trees will be removed or severely trimmed along a county highway. No trees will be trimmed or removed along Highway 74 as part of project activities, therefore no permit is required.

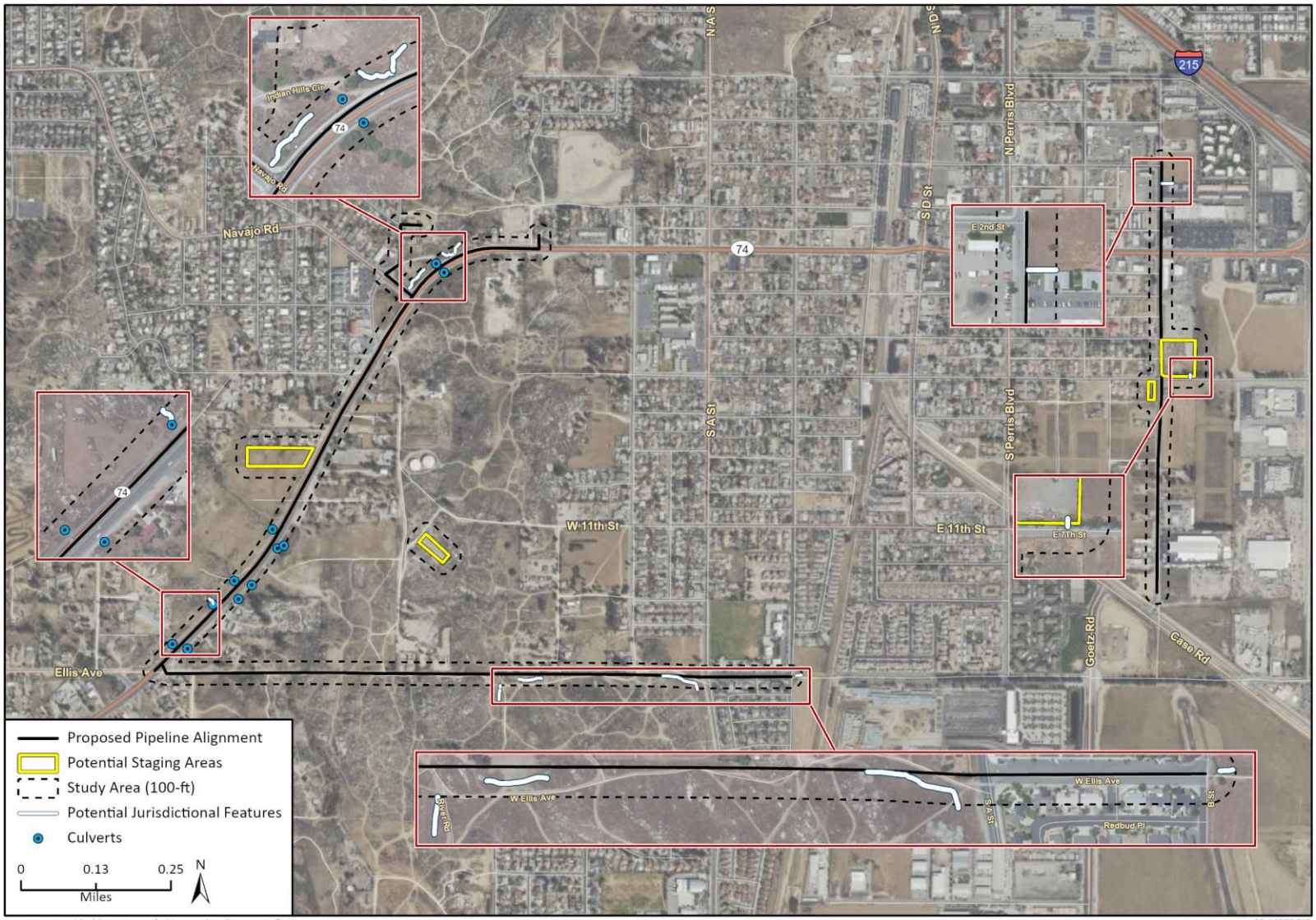
4.6 Habitat Conservation Plans

The BSA lies within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (WRMSHCP); however, EMWD is not a signatory to the WRMSHCP.

The BSA falls within the WRMSHCP burrowing owl species survey area (Western Riverside County Regional Conservation Authority 2024).

The BSA is also within the Stephen's Kangaroo Rat (SKR) Mitigation Fee area. Parcels proposed for development within this area are subject to a $500 mitigation fee per acre of development. However, EMWD is not a signatory to the SKR HCP, EMWD is the lead agency for the Project (not the County), and therefore this requirement does not apply to this Project.

Figure 6 Potential Jurisdictional Features



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23-14877 BIO
Fig 5 Potential JD Features

5 Impact Analysis and Recommendations

This section discusses the potential adverse impacts to regulated biological resources that may occur from implementation of the project and provides recommendations for additional surveys and actions to further evaluate or avoid/minimize potential impacts.

5.1 Special Status Species

The proposed project would have a significant effect on biological resources if it would:

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

5.1.1 Special Status Plant Species

Four special status plant species are present or have a high or moderate potential to occur within the BSA. Table 2 includes these species, their listing or rarity status, and their potential to occur. Direct impacts to special status plants are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street (Figure 7). In addition, the staging areas are heavily disturbed lots lacking native vegetation and are not expected to support special status species. Indirect impacts could occur if they are present within the BSA through habitat modification resulting from the introduction of invasive plants during Project-related activities and/or incidental encroachment of equipment from adjacent construction areas. Potential impacts to these species would be avoided and/or reduced through implementation of avoidance and minimization measure (AMM) BIO-4 through BIO-7 in the Avoidance and Minimization Measures section below.

5.1.2 Special Status Wildlife Species

Seven special status wildlife species are present or have a high or moderate potential to occur within the BSA. Table 2 includes these species, their listing status, and their potential to occur. Direct impacts to these species are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street, and the disturbed lots in the staging areas (Figure 7). Indirect impacts could occur to all special status wildlife species with a potential to occur due to noise and dust generation during heavy equipment operation and through habitat loss due to the introduction of invasive plants. Impacts can be avoided with implementation of AMMs BIO-5 through BIO-7.

Indirect impacts to nesting birds could occur if active nests within the 100-foot buffer of the BSA are abandoned due to Project-related disturbance. Impacts can be avoided with AMMs BIO-1, BIO-5, and BIO-7.

Crotch's bumble bee, a CDFW State Candidate Endangered species, has high potential to occur in the BSA. Direct impacts to this species are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street, and staging areas are also disturbed/developed lands lacking native vegetation. No potential host plants and no burrows

that could support nest sites were observed in the road or staging areas during the reconnaissance survey. Indirect impacts could occur if Project related disturbances result in bees abandoning nest burrows in adjacent areas. Indirect impacts could also occur if they are present within the BSA through habitat modification resulting from the introduction of invasive plants during Project-related activities and/or incidental encroachment of equipment from adjacent construction areas. Impacts to would Crotch's bumble bee be avoided through the implementation of AMMs BIO-4 through BIO-7.

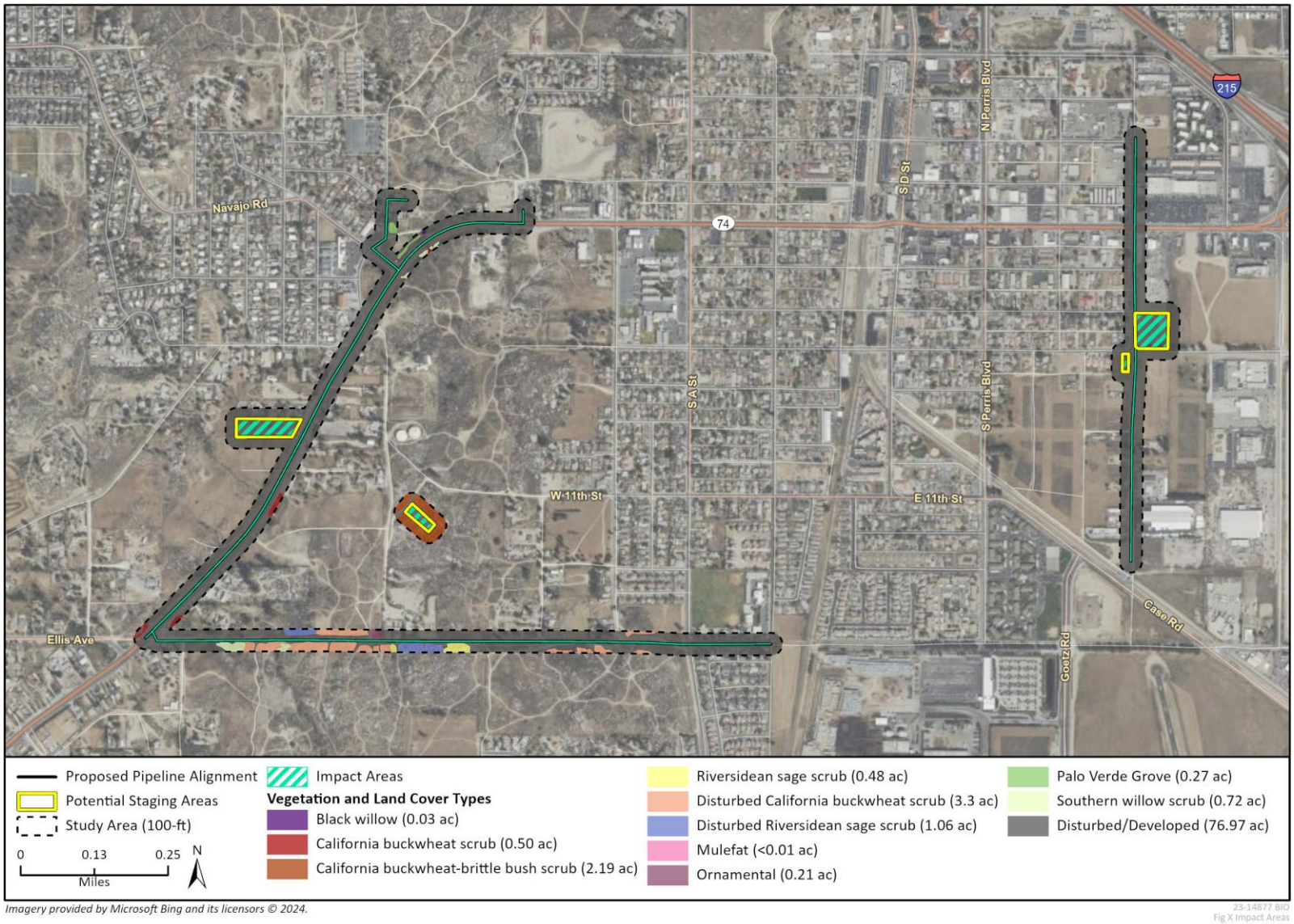
Western mastiff bat, a CDFW Species of Special Concern, has moderate foraging potential in the BSA and may roost in adjacent habitats. Impacts to day or maternal nesting roosts are not anticipated as this species is unlikely to roost in the BSA and any potential roost sites in adjacent habitats are subject to regular anthropogenic and vehicle disturbance under the current conditions. Temporary work associated with the project does not present a potentially significant increase in disturbance and implementation of AMMs BIO-5 through BIO-7 require implementation of construction practices to minimize dust and other potential indirect effects. Additionally, impacts are not anticipated to foraging individuals since this species is nocturnal and construction will take place during the day.

Coastal California gnatcatchers, a Federally Threatened and CDFW Species of Special Concern, are present in scrub habitats of the BSA (Figure 5). Direct impacts this species are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street, and suitable nesting habitat is located adjacent to the roads; however, Project-related impacts to this species could occur if an active nest is present within the Project vicinity and is abandoned due to Project-related disturbance. Impacts would be avoided through the implementation of AMMs BIO-2, BIO-4, BIO-5, and BIO-7.

Burrowing owl, a CDFW Species of Special Concern, has high potential to occur in the BSA. In addition, the BSA overlaps with the burrowing owl species survey area within the WRMSHCP Conservation Plan Area (RCA 2024). Ground squirrel burrow complexes, which burrowing owls use for nesting, are located in the scrub habitat along W Ellis Avenue and S G Street (Figure 5). Direct impacts this species are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street, and suitable nesting habitat is located adjacent to the roads; however, Project-related impacts to this species could occur if an active burrow is present within the Project vicinity and is abandoned due to Project-related disturbance. Impacts would be avoided through the implementation of AMMs BIO-3, BIO-4, BIO-5, and BIO-7.

Stephen's kangaroo rat, a Federally and State Threatened species, has high potential to occur in the BSA. Direct impacts to this species are unlikely as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street and no burrows were observed in the road or staging areas during the reconnaissance survey. Indirect impacts could occur if Project related disturbances result in Stephen's kangaroo rats abandoning active burrows. Impacts would be avoided through the implementation of AMMs BIO-4, BIO-5, and BIO-7.

Figure 7 Project Impacts



5.2 Sensitive Natural Communities and Critical Habitat

The proposed project would have a significant effect on biological resources if it would:

b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

Southern willow scrub and black willow thicket are present in the BSA and are considered sensitive natural communities. Direct impacts to these communities are not anticipated as the Project impacts will be limited to existing paved and dirt roadways along Highway 74, W Ellis Avenue, and S G Street. Indirect impacts could result during and following the Project through the introduction of invasive plant species or from inadvertent contact with heavy machinery. Potential impacts would be avoided or minimized through the implementation of AMMs BIO-5 through 7 in the Avoidance and Minimization Measures section.

5.3 Jurisdictional Waters and Wetlands

The proposed project would have a significant effect on biological resources if it would:

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Impacts to jurisdictional waters are not anticipated for this Project. The work plan states that crews will be excavating underneath potentially jurisdictional drainages and culverts along Highway 74 and W Ellis Avenue, thus avoiding impacts to these features. Removal of riparian trees or vegetation is not anticipated. Potential indirect impacts would be avoided or minimized through the implementation of AMMs BIO-5 through 7 in the Avoidance and Minimization Measures section.

5.4 Wildlife Movement

The proposed project would have a significant effect on biological resources if it would:

d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.

The Project activities would be limited to existing roads in the developed/disturbed portions of the BSA, which offer little to no value to wildlife movement. The BSA likely does not support substantial wildlife movement, therefore impacts to wildlife movement are not anticipated from Project activities.

5.5 Resources Protected by Local Policies and Ordinances

The proposed project would have a significant effect on biological resources if it would:

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

Protected Trees

There are no protected trees within the BSA; therefore, there are no anticipated impacts to protected trees. Tree removal is not proposed as part of this Project.

5.6 Habitat Conservation Plans

The proposed project would have a significant effect on biological resources if it would:

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

Since EMWD is not a signatory to the Western Riverside County MSHCP, a formal Consistency Analysis is not required. The infrastructure project is confined to disturbed and developed lands; thus, no loss of covered species habitat will occur. Additionally, the Avoidance and Minimization Measures described below to be implemented during construction activities adjacent to sensitive areas are consistent with mitigation measures outlined in the MSHCP.

5.7 Avoidance and Minimization Measures

The following AMMs can be incorporated into the Project design to the maximum extent feasible to avoid and minimize impacts to special status species and other sensitive biological resources.

BIO-1 Pre-construction Nesting Bird Surveys

To avoid disturbance of nesting birds, including special status species and birds protected by the MBTA and CFGC Section 3503, Project activities shall occur outside of the breeding season for nesting birds (generally February 1 through August 31), if feasible.

If construction occurs during the breeding season, then a pre-construction nesting bird survey shall be conducted no more than seven days prior to the initiation of Project activities. The nesting bird survey shall be conducted on foot inside the project area and include a 500-foot buffer for raptors and special status species and a 100-foot buffer for all other species. The survey shall be conducted by a biologist familiar with avian species known to inhabit Southern California. If nests are found, an avoidance buffer of up to 500 feet for raptors and special status species and up to 100 feet for non-raptors (dependent upon the species, the proposed work activity, and existing disturbances associated with land use outside of the workspace) shall be determined and demarcated by the biologist with construction fencing, flagging, or other means to mark the boundary. The buffer shall be maintained and nest avoided until the young have fledged and/or the nest is no longer active.

BIO-2 California Gnatcatcher Take Avoidance and Minimization

Measures required during the project construction to avoid and/or minimize direct take of California gnatcatcher include:

- All brushing, grading, or excavation taking place adjacent to occupied habitat of the coastal California gnatcatcher (defined as within 500 feet of any gnatcatcher sightings [USFWS 2007]) shall be conducted from September 1 through February 14, which is outside the coastal California gnatcatcher breeding season.
- When conducting any other construction activities during the coastal California gnatcatcher breeding season of February 15 through August 30, adjacent to habitat in which coastal

California gnatcatcher are known to occur or have potential to occur (within 500 feet of suitable scrub habitat), the following avoidance measures shall apply:

- A USFWS-permitted biologist shall survey for coastal California gnatcatcher within 10 calendar days prior to initiating activities in an area. If coastal California gnatcatcher are present, but not nesting, a USFWS permittee biologist shall survey for nesting coastal California gnatcatcher approximately once per week within 500 feet of the construction area, where accessible, for the duration of the activity in that area during the breeding season. The standard California gnatcatcher survey protocol shall be followed for all surveys.
- If an active nest is located, a 500-foot no-construction buffer shall be established around each nest site; however, there may be a reduction of this buffer zone depending on site-specific conditions such as topography, line-of-sight to the nest, or the existing ambient level of activity at the discretion of the qualified biologist. No construction shall take place within this buffer until the nest is no longer active.

BIO-3 Burrowing Owl Take Avoidance and Minimization

Measures that shall be implemented during the project construction to avoid and/or minimize direct take of burrowing owl include:

- Burrowing owl pre-construction surveys shall be conducted by a qualified wildlife biologist within 14 days of the start of ground disturbing construction. The survey area shall include the project site and a 500-foot buffer around the project boundary, as accessible in open areas adjacent to the project site, or via visual survey where inaccessible.
- • If active burrowing owl burrows are detected in the project boundary or the 500-foot survey buffer, they can be avoided through implementation of a “no disturbance” buffer designated by a barricade. Use of a haybale or other visual screen can help shelter the burrow from construction activities and potentially reduce buffer zones. Such screening would be placed at the edge of, but within, the project area.
- The need for passive relocation of burrowing owls, which can only be carried out during the non-breeding season, is not anticipated to be necessary as the suitable burrow owl habitat is located outside the project impact area. Therefore, implementation of avoidance and non-disturbance buffers/barricades as well as periodic biological monitoring (once per week) will be the primary avoidance measures if burrowing owls are detected.
- Any materials on site during construction shall be made unsuitable for burrowing owl occupation by various methods, including capping open pipes or other materials that could attract burrowing owls.

BIO-4 Biological Pre-Construction Survey and Monitoring

A qualified biologist shall conduct a pre-construction survey of the project area and a 50-foot buffer zone where accessible (such as open areas adjacent to the construction impact area) for special-status plant species and potential burrows that could support Stephen’s kangaroo rat or Crotch bumble bee nest(s) within 14 days prior to the start of ground disturbance. If found, these areas shall be avoided and clearly marked with non-disturbance buffer zone. A biological monitor shall be on site if special-status plant species or potential Stephen’s kangaroo rat burrows or Crotch bumble bee nest(s), are determined to be present within 50 feet of the work areas. The biologist shall be on site during all vegetation removal or grading activities within 50 feet of these regulated biological

resources. The biologist will oversee and provide recommendations to facilitate avoidance of these regulated biological resources and will have the authority to temporarily halt work to protect them.

BIO-5 Worker Environmental Awareness Training

Prior to the initiation of the Project, an approved biologist shall present a Worker Environmental Awareness Training (WEAT) to all on-site personnel. The WEAT will educate the personnel on the identification of special status species and regulated biological resources that are present or have the potential to occur within the BSA, will cover the applicable regulatory policies and provisions regarding their protection, and will provide an overview of the Project's AMMs. Furthermore, on-site personnel will be briefed on the reporting process if an inadvertent injury or mortality should occur to a special status species during construction.

BIO-6 Invasive Plant Species Control

Invasive plant species, for the purpose of this document, shall include all species with a California Invasive Plant Council (Cal-IPC) rating of limited, moderate, or high. Construction personnel and equipment shall be free of invasive plant seeds, propagules, and any material which may contain them (e.g., soil) prior to entering the BSA. All potentially contaminated equipment will be carefully cleaned prior to the initiation of Project activities. Staging areas and temporary work areas shall avoid weed infestations and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., gravel, straw, and fill) will be used for the Project.

BIO-7 General Best Management Practices

General requirements that shall be followed by construction personnel are listed below.

- The contractor shall clearly delineate the Project limits, staging areas, and access points and prohibit any construction-related traffic outside of these boundaries.
- All food-related trash items, such as wrappers, cans, bottles, and food scraps generated during proposed Project construction, shall be disposed of in closed containers only and removed from the workspace.
- Best management practices (BMPs) shall be implemented throughout the Project and shall include, but not be limited to, erosion and sediment controls to minimize erosion during construction. BMPs shall be implemented for the duration of the Project until disturbed areas have been stabilized by long-term erosion control measures.
- Materials shall be stored at least 50 feet from streams and wetlands, as feasible, or equipment will utilize secondary containment.
- Construction materials and spoils shall be protected from stormwater runoff using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
- Vegetation trimming shall be limited to the maximum extent feasible.
- Any substances that could be hazardous to wildlife resulting from Project-related activities shall be prevented from contaminating the soil and/or entering waterways.
- Construction shall only take place during daylight hours.

6 Limitations, Assumptions, and Use Reliance

This Biological Resources Assessment has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. Reconnaissance biological surveys for certain taxa may have been conducted as part of this assessment but were not performed during a particular blooming period, nesting period, or particular portion of the season when positive identification would be expected if present, and therefore, cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile wildlife species could occupy the site on a transient basis, or re-establish populations in the future. Our field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site reconnaissance, jurisdictional areas, review of CNDDB RareFind5, and specified historical and literature sources. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

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Appendix A

Regulatory Setting

Regulatory Setting

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. A number of federal and state statutes provide a regulatory structure that guides the protection of biological resources. Agencies with the responsibility for protection of biological resources within the project site include the following:

- U.S. Army Corps of Engineers (wetlands and other waters of the United States)
- U.S. Fish and Wildlife Service (federally listed species and migratory birds)
- National Marine Fisheries Service (marine wildlife and anadromous fishes)
- Santa Ana Regional Water Quality Control Board (waters of the State)
- California Department Fish and Wildlife (riparian areas, streambeds, and lakes; state-listed species; nesting birds, marine resources)
- Western Riverside Multiple Species Habitat Conservation Plan (WRMSHCP)

United States Army Corps of Engineers

The United States Army Corps of Engineers (USACE) is responsible for administering several federal programs related to ensuring the quality and navigability of the nation's waters.

Clean Water Act Section 404

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the CWA authorizes the Secretary of the Army, acting through the USACE, to issue permits regulating the discharge of dredged or fill materials into the "navigable waters at specified disposal sites."

Section 502 of the CWA further defines "navigable waters" as "waters of the United States, including the territorial seas." "Waters of the United States" are broadly defined at 33 CFR Part 328.3 to include navigable, tidal, and interstate waters and certain impoundments, tributaries, and wetlands. The agencies' most recent regulatory definition of the term was promulgated in January 2023, following failed attempts in prior years that had been frustrated by legal challenges. However, in May 2023 the U.S. Supreme Court issued its ruling in *Sackett v. Environmental Protection Agency,* which invalidated portions of the updated regulations. To address this ruling, in September 2023 the agencies issued a "conforming rule" (88 FR 61964-61969) modifying their definition of "waters of the United States" to comport with the Court's ruling. This definition is described in detail below.

Waters of the U.S.

Current USACE and USEPA regulations, reflecting of the January 2023 definition as modified by the September 2023 Conforming Rule, define "waters of the United States" as follows (33 CFR 328.3; see also 88 FR 61964-61969):

(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.

The definition specifies that the following features are not "waters of the United States" even where they otherwise meet the terms of provisions (2) through (5) above:

(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.

The lateral limits of USACE jurisdiction in non-tidal waters is defined by the "ordinary high-water mark" (OHWM) unless adjacent wetlands are present. The OHWM is a line on the shore or edge of a channel established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed upon the bank, shelving, changes in the character of soil, destruction of vegetation, or the presence of debris (33 CFR 328.3(c)(1)). As such, waters are recognized in the

field by the presence of a defined watercourse with appropriate physical and topographic features. If wetlands occur within, or adjacent to, waters of the United States, the lateral limits of USACE jurisdiction extend beyond the OHWM to the outer edge of the wetlands (33 CFR 328.4 (c)). The upstream limit of jurisdiction in the absence of adjacent wetlands is the point beyond which the OHWM is no longer perceptible (33 CFR 328.4; see also 51 FR 41217).

Wetlands

The USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(c)(1)). The USACE's delineation procedures identify wetlands in the field based on indicators of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. The following is a discussion of each of these parameters.

Hydrophytic Vegetation

Hydrophytic vegetation dominates areas where frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of their occurring in wetlands. More than fifty percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. The USACE published the National Wetland Plant List (USACE 2018), which separates vascular plants into the following four basic categories based on plant species frequency of occurrence in wetlands:

- **Obligate Wetland (OBL).** Almost always occur in wetlands
- **Facultative Wetland (FACW).** Usually occur in wetlands, but occasionally found in non-wetlands
- **Facultative (FAC).** Occur in wetlands or non-wetlands
- **Facultative Upland (FACU).** Usually occur in non-wetlands, but may occur in wetlands
- **Obligate Upland (UPL).** Almost never occur in wetlands

The USACE considers OBL, FACW and FAC species to be indicators of wetlands. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not appearing on the United States Fish and Wildlife Service's list is assumed to be an upland species, almost never occurring in wetlands. In addition, an area needs to contain at least 5% vegetative cover to be considered as a vegetated wetland.

Hydric Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of wetland soils include observations of ponding, inundation, saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), gleying (indicates reducing conditions by a blue-grey color), or accumulation of organic material. Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soils survey, both of which must be verified in the field.

Wetland Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by field indicators, such as water marks, drift lines, sediment deposits, or drainage patterns in wetlands.

Limitations on Jurisdiction based on Sackett v. USEPA Supreme Court Decision

On May 25, 2023, the Supreme Court issued its decision on the petition from the Sacketts, a family in Idaho that was subject to a compliance order from the USEPA for backfilling their lot near Priest Lake, which the USEPA claimed contained federally regulated wetlands. The wetlands in question were adjacent to a ditch that fed a creek that ultimately drained into Priest Lake, a navigable water body. The USEPA asserted that the Sacketts had violated the law by filling the wetlands on their property without a permit. The Court's decision addressed controversy over whether, and under what conditions, the CWA reaches navigable waters' tributaries or adjacent wetlands. The Supreme Court's decision in *Sackett* provides definitive guidance to the agencies in determining the limits of their Clean Water Act authority. Major tenets of the decision have been incorporated into the agencies' current regulations through the September 2023 Conforming Rule.

The Court decided:

- "Adjacent wetlands" are WOTUS only if there is a continuous surface connection between the wetland and a navigable or relatively permanent water body, such that it is difficult to determine the boundary between the wetland and the water body. The opinion notes that "temporary interruptions to surface connection may sometimes occur because of phenomena like low tides or dry spells." The agencies addressed this element by defining the term "adjacent" to mean "having a continuous surface connection" in the Conforming Rule.
- The Significant Nexus Standard, introduced by the Court in prior decisions, is not mentioned in the Clean Water Act and should not be used. The Court determined that the standard applies ecological factors whose use in determining jurisdiction is not supported by the statute. The Conforming Rule removed significant nexus considerations from the definition.
- Although jurisdiction over tributaries was not addressed by the Court, the decision stated that "…the [Clean Water Act's] use of "waters" encompasses only those relatively permanent, standing or continuously flowing bodies of water forming geographical features that are described in ordinary parlance as streams, oceans, rivers, and lakes." The Conforming Rule makes clear that only relatively permanent tributaries qualify as "waters of the United States."

Rivers and Harbors Act Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, re-channelization, or any other modification of a navigable water of the United States, and applies to all structures and work. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank

protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction. It is important to note that Section 10 applies only to navigable waters, and thus does not apply to work in non-navigable wetlands or tributaries. In some cases, Section 10 authorization is issued by the USACE concurrently with CWA Section 404 authorization, such as when certain Nationwide Permits are used.

Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code sec. 13050(e)). These agencies also have responsibilities for administering portions of the CWA.

Clean Water Act Section 401

Section 401 of the CWA requires an applicant requesting a federal license or permit for an activity that may result in any discharge into navigable waters (such as a Section 404 Permit) to provide state certification that the proposed activity will not violate state and federal water quality standards. In California, CWA Section 401 Water Quality Certification (Section 401 Certification) is issued by the RWQCBs and by the SWRCB for multi-region projects. The process begins when an applicant submits an application to the RWQCB and informs the USACE (or the applicable agency from which a license or permit was requested) that an application has been submitted. The USACE will then determine a "reasonable period of time" for the RWQCB to act on the application; this is typically 60 days for routine projects and longer for complex projects but may not exceed one year. When the period has elapsed, if the RWQCB has not either issued or denied the application for Section 401 Certification, the USACE may determine that Certification has been waived and issue the requested permit. If a Section 401 Certification is issued it may include binding conditions, imposed either through the Certification itself or through the requested federal license or permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code section 13000 et seq.), the policy of the State is as follows:

- The quality of all the waters of the State shall be protected
- All activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason
- The State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation

The Porter-Cologne Act established nine RWQCBs (based on watershed boundaries) and the SWRCB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The SWRCB provides program guidance and oversight,

allocates funds, and reviews RWQCB decisions. In addition, the SWRCB allocates rights to the use of surface water. The RWQCBs have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The SWRCB and RWQCBs have numerous nonpoint source related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

Section 13260 of the Porter-Cologne Act requires any person discharging or proposing to discharge waste that could affect the quality of waters of the State to file a Report of Waste Discharge with the appropriate RWQCB. The RWQCB may then authorize the discharge, subject to conditions, by issuing Waste Discharge Requirements (WDRs). While this requirement was historically applied primarily to outfalls and similar point source discharges, the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, effective May 2020, make it clear that the agency will apply the Porter-Cologne Act's requirements to discharges of dredge and fill material as well. The *Procedures* state that they are to be used in issuing CWA Section 401 Certifications and WDRs, and largely mirror the existing review requirements for CWA Section 404 Permits and Section 401 Certifications, incorporating most elements of the USEPA's *Section 404(b)(1) Guidelines*. Following issuance of the *Procedures*, the SWRCB produced a consolidated application form for dredge/fill discharges that can be used to obtain a CWA Section 401 Water Quality Certification, WDRs, or both.

Non-Wetland Waters of the State

The SWRCB and RWQCBs have not established regulations for field determinations of waters of the state except for wetlands currently. In many cases the RWQCBs interpret the limits of waters of the State to be bounded by the OHWM unless isolated conditions or ephemeral waters are present. However, in the absence of statewide guidance each RWQCB may interpret jurisdictional boundaries within their region and the SWRCB has encouraged applicants to confirm jurisdictional limits with their RWQCB before submitting applications. As determined by the RWQCB, waters of the State may include riparian areas or other locations outside the OHWM, leading to a larger jurisdictional area over a given water body compared to the USACE.

Wetland Waters of the State

Procedures for defining wetland waters of the State pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* went into effect May 28, 2020. The SWRCB defines an area as wetland if, under normal circumstances:

(i) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;

(ii) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and

(iii) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The SWRCB's Implementation Guidance for the Wetland Definition and Procedures for Discharges of Dredge and Fill Material to Waters of the State (2020), states that waters of the U.S. and waters of the State should be delineated using the standard USACE delineation procedures, taking into consideration that the methods shall be modified only to allow for the fact that a lack of vegetation does not preclude an area from meeting the definition of a wetland.

United States Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) implements several laws protecting the Nation's fish and wildlife resources, including the Endangered Species Act (ESA; 16 United States Code [USC] Sections 153 et seq.), the Migratory Bird Treaty Act (MBTA; 16 USC Sections 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668).

Endangered Species Act

The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. Generally, the USFWS implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in "take" of any threatened or endangered wildlife species, or a threatened or endangered plant species if occurring on federal land, are required to obtain permits from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of the ESA, depending on the involvement by the federal government in funding, authorizing, or carrying out the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. "Take" under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of the ESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

Migratory Bird Treaty Act

The MBTA of 1918 implements four international conservation treaties that the U.S. entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species. The law has been amended with the signing of each treaty, as well as when any of the treaties were amended, such as with Mexico in 1976 and Canada in 1995. The MBTA prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS.

The list of migratory bird species protected by the law, in regulations at 50 CFR Part 10.13, is primarily based on bird families and species included in the four international treaties. A migratory bird species is included on the list if it meets one or more of the following criteria:

1. It occurs in the United States or U.S. territories as the result of natural biological or ecological processes and is currently, or was previously listed as, a species or part of a family protected by one of the four international treaties or their amendments.
2. Revised taxonomy results in it being newly split from a species that was previously on the list, and the new species occurs in the United States or U.S. territories as the result of natural biological or ecological processes.
3. New evidence exists for its natural occurrence in the United States or U.S. territories resulting from natural distributional changes and the species occurs in a protected family.

In 2004, the Migratory Bird Treaty Reform Act limited the scope of the MBTA by stating the MBTA applies only to migratory bird species that are native to the United States or U.S. territories, and

that a native migratory bird species is one that is present as a result of natural biological or ecological processes. The MBTRA requires the USFWS to publish a list of all nonnative, human-introduced bird species to which the MBTA does not apply, and an updated list was published in 2020. The 2020 update identifies species belonging to biological families referred to in treaties the MBTA implements but are not protected because their presence in the United States or U.S. territories is solely the result of intentional or unintentional human-assisted introductions.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits anyone, without a permit issued by the USFWS, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

"Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) derives its authority from the Fish and Game Code of California and administers several State laws protecting fish and wildlife resources and the habitats upon which they depend.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et. seq.) prohibits take of state listed threatened or endangered. Take under CESA is defined as "Hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code sec. 86). This definition does not prohibit indirect harm by way of habitat modification, except where such harm is the proximate cause of death of a listed species. Where incidental take would occur during construction or other lawful activities, CESA allows the CDFW to issue an Incidental Take Permit upon finding, among other requirements, that impacts to the species have been minimized and fully mitigated. Unlike the federal ESA, CESA's protections extend to candidate species during the period (typically one year) while the California Fish and Game Commission decides whether the species warrants CESA listing.

Native Plant Protection Act

The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (Fish and Game Code Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare, and prohibits the take of listed plant species. Effective in 2015, CDFW promulgated regulations (14 CCR 786.9) under the authority of the NPPA, establishing that the CESA's permitting procedures would be applied to plants listed under the NPPA as "Rare." With this change, there is little practical difference for the regulated public between plants listed under CESA and those listed under the NPPA.

Fully Protected Species Laws

The CDFW enforces Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code, which prohibit take of species designated as Fully Protected. The CDFW is not allowed to issue an Incidental Take Permit for Fully Protected species; therefore, impacts to these species must be avoided. The exception is situations where a Natural Community Conservation Plan (NCCP) is in place that authorizes take of the fully protected species.

Avian Protection Laws

California Fish and Game Code sections 3503, 3503.5, and 3513 describe unlawful take, possession, or destruction of native birds, nests, and eggs. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Section 3513 makes it a state-level offense to take any bird in violation of the federal Migratory Bird Treaty Act.

Protection of Lakes and Streambeds

California Fish and Game Code section 1602 states that it is unlawful for any person to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying the California Department of Fish and Wildlife (CDFW) of that activity. Thereafter, if CDFW determines and informs the entity that the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFG determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity may be required to obtain from CDFW a Streambed Alteration Agreement (SAA), which will include reasonable measures necessary to protect the affected resource(s), before the entity may conduct the activity described in the notification. Upon receiving a complete Notification of Lake/Streambed Alteration, CDFW has 60 days to present the entity with a Draft SAA. Upon review of the Draft SAA by the applicant, any problematic terms are negotiated with CDFW and a final SAA is executed.

The CDFW has not defined the term "stream" for the purposes of implementing its regulatory program under Section 1602, and the agency has not promulgated regulations directing how jurisdictional streambeds may be identified, or how their limits should be delineated. However, four relevant sources of information offer insight as to the appropriate limits of CDFW jurisdiction as discussed below.

- **The plain language of Section 1602 of CFGC** establishes the following general concepts:
  - References "river," "stream," and "lake"
  - References "natural flow"
  - References "bed," "bank," and "channel"
- **Applicable court decisions**, in particular *Rutherford v. State of California* (188 Cal App. 3d 1276 (1987), which interpreted Section 1602's use of "stream" to be as defined in common law. The Court indicated that a "stream" is commonly understood to:
  - Have a source and a terminus
  - Have banks and a channel
  - Convey flow at least periodically, but need not flow continuously and may at times appear outwardly dry
  - Represent the depression between the banks worn by the regular and usual flow of the water
  - Include the area between the opposing banks measured from the foot of the banks from the top of the water at its ordinary stage, including intervening sand bars
  - Include the land that is covered by the water in its ordinary low stage
  - Include lands below the OHWM
- **CDFW regulations** defining "stream" for other purposes, including sport fishing (14 CCR 1.72) and streambed alterations associated with cannabis production (14 CCR 722(c)(21)), which indicate that a stream:
  - Flows at least periodically or intermittently
  - Flows through a bed or channel having banks
  - Supports fish or aquatic life
  - Can be dry for a period of time
  - Includes watercourses where surface or subsurface flow supports or has supported riparian vegetation
- **Guidance documents**, *including A Field Guide to Lake and Streambed Alteration Agreements* (CDFG 1994) and *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which suggest the following:
  - A stream may flow perennially or episodically
  - A stream is defined by the course in which water currently flows, or has flowed during the historic hydrologic course regime (approximately the last 200 years)
  - Width of a stream course can reasonably be identified by physical or biological indicators
  - A stream may have one or more channels (single thread vs. compound form)
  - Features such as braided channels, low-flow channels, active channels, banks associated with secondary channels, floodplains, islands, and stream-associated vegetation, are interconnected parts of the watercourse
  - Canals, aqueducts, irrigation ditches, and other means of water conveyance can be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife

- Biologic components of a stream may include aquatic and riparian vegetation, all aquatic wildlife including fish, amphibians, reptiles, invertebrates, and terrestrial species which derive benefits from the stream system
- The lateral extent of a stream can be measured in different ways depending on the particular situation and the type of fish or wildlife resource at risk

The tenets listed above, among others, are applied to establish the boundaries of streambeds in various environments. Importance of each factor may be weighted based on site-specific considerations and the applicability of the indicators to the streambed at hand.

Local Jurisdiction

Western Riverside County Multiple Species Habitat Conservation Plan (WRMSHCP)

The Western Riverside County Multiple Species Habitat Conservation Plan (WRMSHCP) is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of species and their associated habitats in Western Riverside County. The overall goal of this plan is to maintain biological and ecological diversity within a rapidly urbanizing region. The MSHCP allows Riverside and its Cities to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of the state and federal Endangered Species Acts.

The MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 square miles); it includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas of the Cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. This HCP is one of the largest plans ever attempted. It covers multiple species and multiple habitats within a diverse landscape, from urban centers to undeveloped foothills and montane forests, all under multiple jurisdictions. It extends across many bioregions as well, including the Santa Ana Mountains, Riverside Lowlands, San Jacinto Foothills, San Jacinto Mountains, Agua Tibia Mountains, Desert Transition, and San Bernardino Mountains. It provides a coordinated MSHCP Conservation Area and implementation program to preserve biological diversity and maintain the region's quality of life. (Riverside County Planning Department 2024).

Riverside County Municipal Code Chapter 12.24

Riverside County Code Chapter 12.24 states: “No person shall remove any living native tree on any parcel or property greater than one-half acre in size, located in an area above five thousand (5,000) feet in elevation and within the unincorporated area of the county, without first obtaining a permit to do so” (County of Riverside 2024).

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Appendix B

Site Photographs

Photograph 1. Potential jurisdicitonal feature within disturbed/developed habitat along W Ellis Avenue, facing west. December 8, 2023.

Photograph 2. Disturbed/developed habitat along W Ellis Avenue, facing west. December 8, 2023.

Photograph 3. Disturbed California buckwheat scrub (foreground) and southern willow scrub (center) along W Ellis Avenue, facing east. December 8, 2023.

Photograph 4. Riversidean sage scrub along W Ellis Avenue, facing southwest. December 8, 2023.

Photograph 5. Disturbed Riversidan sage scrub along W Ellis Avenue, facing east. December 8, 2023.

Photograph 6. Ornamental trees adjacent to a shooting range (right side of photo), opposite southern willow scrub and disturbed California buckwheat scrub (left side of photo), facing east. December 8, 2023.

Photograph 7. California buckwheat-brittlebush scrub habitat surrounding the staging location proposed on undeveloped land between Highway 74 and W Ellis Avenue, facing southwest. December 8, 2023.

Photograph 8. Mulefat thicket along Highway 74, facing northwest. December 8, 2023.

Photograph 9. Palo verde grove and disturbed/developed habitat along Highway 74, facing north. December 8, 2023.

Photograph 10. Black willow thicket (center) surrounded by disturbed/developed habitat along Highway 74, facing north. December 8, 2023.

Photograph 11. Southern willow scrub along Highway 74, facing north. December 8, 2023.

Photograph 12. Triple box culvert along Highway 74, facing west. December 8, 2023.

Photograph 13. California buckwheat scrub along Highway 74, facing northeast. December 8, 2023.

Photograph 14. Disturbed habitat located in the potential staging area on the west side of S G Street, facing west. February 16, 2024.

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Appendix C

Floral and Faunal Compendium

Plant Species Observed in the Biological Study Area on December 8, 2023

Scientific Name	Common Name	Status	Native or Introduced
Shrubs			
Artemisia californica	California sagebrush	–	Native
Baccharis salicifolia	mulefat	–	Native
Caesalpinia gilliesii	bird of paradise	–	Introduced
Callistemon sp.	bottle brush	–	Introduced
Encelia farinosa	brittlebush	–	Native
Cylindropuntia californica	California cholla	–	Native
Eriogonum fasciculatum	California buckwheat	–	Native
Nicotiana glauca	tree tobacco	–	Introduced, Cal-IPC Moderate
Optunia littoralis	coastal prickly pear	–	Native
Rhaphiolepis indica	Indian hawthorn	–	Introduced
Ricinus communis	castor bean		Introduced, Cal-IPC Limited
Salvia apiana	white sage	–	Native
Sambucus nigra ssp. *cerulea*	blue elderberry	–	Native
Salsola tragus	Russian thistle	–	Introduced, Cal-IPC Limited
Herbs			
Amsinckia intermedia	common fiddleneck	–	Native
Acmispon glaber	deerweed	–	Native
Brassica nigra	black mustard	–	Introduced, Cal IPC-Moderate
Brassica tournefortii	Sahara mustard	–	Introduced, Cal IPC-Moderate
Calystegia sp.	morning glory	–	Native
Carduus pycnocephalus	Italian thistle	–	Introduced, Cal IPC-Moderate
Chenopodium murale	nettle leaf goosefoot	–	Introduced
Croton setiger	turkey-mullein	–	Native
Deinandra fasciculata	clustered tarweed	–	Native
Erigeron canadensis	horseweed	–	Introduced
Erodium cicutarium	red stemmed filaree	–	Introduced, Cal-IPC Limited
Helianthus annuus	common sunflower	–	Introduced
Heliotropium curassavicum	heliotrope	–	Native
Heterotheca grandiflora	telegraph weed	–	Native
Lactuca serriola	prickly lettuce	–	Introduced
Malva parviflora	cheeseweed mallow	–	Introduced
Marah macrocarpa	wild cucumber	–	Native
Marrubium vulgare	white horehound	–	Introduced
Oncosiphon pilulifer	stinknet	–	Introduced, Cal-IPC High
Phacelia sp.	phacelia	–	Native
Raphanus sativus	wild radish	–	Introduced, Cal-IPC Limited
Sonchus oleraceus	sow thistle	–	Introduced
Trichostema lanceolatum	vinegarweed	–	Native

Scientific Name	Common Name	Status	Native or Introduced
Xanthium strumarium	rough cocklebur	–	Native
Trees			
Eucaluptus globulus	blue gum	–	Introduced, Cal-IPC Limited
Elaeagnus angustifolia	Russian olive	–	Introduced, Cal-IPC Moderate
Cupressus sp.	Cypress	–	Introduced
Melia azedarach	Chinaberry	–	Introduced
Parkinsonia aculeata	Mexican palo verde	–	Introduced
Pinus halepensis	Aleppo pine	–	Introduced
Platanus x hispanica	London plane	–	Introduced
Salix gooddingii	Goodding's willow	–	Native
Salix laevigata	red willow	–	Native
Salix lasiolepis	arroyo willow	–	Native
Schinus molle	Peruvian pepper	–	Introduced, Cal-IPC Limited
Tamarix ramosissima	saltcedar	–	Introduced, Cal-IPC High
Grasses			
Avena barbata	slender oat	–	Introduced, Cal-IPC High
Bromus diandrus	ripgut brome	–	Introduced, Cal-IPC Moderate
Bromus madritensis	red brome	–	Introduced, Cal-IPC High
Carex sp.	sedge	–	Native

Sources: CNPS Rare Plant Inventory (CNPS 2024a), CNPS Calscape (CNPS 2024b), California Invasive Plant Council (Cal-IPC 2023); Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2024b)

Wildlife Species Observed in the Biological Study Area on December 8, 2023

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Buteo jamaicensis	red-tailed hawk	–	Native
Calypte anna	Anna's hummingbird	–	Native
Corvus corax	common raven	–	Native
Corvus brachyrhynchos	American crow	–	Native
Falco sparverius	American kestrel	–	Native
Haemorhous mexicanus	house finch	–	Native
Melospiza melodia	song sparrow	–	Native
Melozone crissalis	California towhee	–	Native
Mimus polyglottos	northern mockingbird	–	Native
Polioptila californica californica	coastal California gnatcatcher	FT, SSC	Native
Polioptila caerulea	blue-gray gnatcatcher	–	Native
Psaltriparus minimus	bushtit	–	Native
Salpinctes obsoletus	rock wren	–	Native
Sayornis nigricans	black phoebe	–	Native
Setophaga coronata	yellow-rumped warbler	–	Native
Spinus psaltria	lesser goldfinch	–	Native
Streptopelia decaocto	Eurasian collared-dove	–	Introduced
Sturnus vulgaris	European starling	–	Introduced
Thryomanes bewickii	Bewick's wren	–	Native
Tyrannus vociferans	Cassin's kingbird	–	Native
Zenaida macroura	mourning dove	–	Native
Zonotrichia leucophrys	white-crowned sparrow	–	Native
Reptiles			
Sceloporus occidentalis	western fence lizard	-	Native
Mammals			
Canis familiaris	domestic dog	–	Non-native
Felis catus	domestic cat	–	Non-native
Otospermophilus beecheyi	California ground squirrel	–	Native

Sources: CDFW Special Animals List (CDFW 2024a), California's Wildlife (Zeiner et al. 1998-1990), Check-list of North American birds (Chesser et al. 2023)

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Appendix D

Special Status Species Evaluation Tables

Special Status Plant Species in the Regional Vicinity of the Project Site

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Abronia villosa var. *aurita* chaparral sand-verbena	None/None G5T2?/S2 1B.1	Annual herb. Chaparral, coastal scrub, desert dunes. Sandy. Elevations: 245-5250ft. (75-1600m.) Blooms (Jan)Mar-Sep.	Moderate potential	Coastal scrub and sandy soils are present in the BSA. CNDDB records from the 2000s are five miles from the BSA
Allium marvinii Yucaipa onion	None/None G1/S1 1B.2	Perennial bulbiferous herb. Chaparral. In openings on clay soils. Elevations: 2495-3495ft. (760-1065m.) Blooms Apr-May.	No potential	Species is found outside of the elevation range of the BSA.
Allium munzii Munz's onion	FE/ST G1/S1 1B.1	Perennial bulbiferous herb. Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Clay, mesic. Elevations: 975-3510ft. (297-1070m.) Blooms Mar-May.	Low potential	Coastal scrub and clay soils are present in the BSA, although they do not overlap. CNDDB records from the 2010s are seven miles from the BSA.
Ambrosia pumila San Diego ambrosia	FE/None G1/S1 1B.1	Perennial rhizomatous herb. Chaparral, coastal scrub, valley and foothill grassland, vernal pools. Alkaline (sometimes), clay (sometimes), disturbed areas (often), sandy (sometimes). Elevations: 65-1360ft. (20-415m.) It is adapted to dry habitat, but only on upper floodplain fringes, or adjoining depressions containing vernal pools or similar structures. Blooms Apr-Oct.	No potential	Species is found outside of the elevation range of the BSA. Floodplain fringes and vernal pools are not present in the BSA.
Arctostaphylos rainbowensis Rainbow manzanita	None/None G2/S2 1B.1	Perennial evergreen shrub. Chaparral. Usually found in gabbro chaparral. Elevations: 675-2200ft. (205-670m.) Blooms Dec-Mar.	No potential	Chaparral is not present in the BSA. This species is conspicuous and was not observed during the site visit.
Arenaria paludicola marsh sandwort	FE/SE G1/S1 1B.1	Perennial stoloniferous herb. Marshes and swamps. Openings, sandy. Elevations: 10-560ft. (3-170m.) Blooms May-Aug.	No potential	Marshes and swamps are not present in the BSA Species is found outside of the elevation range of the BSA.
Astragalus hornii var. *hornii* Horn's milk-vetch	None/None GUT1/S1 1B.1	Annual herb. Meadows and seeps, playas. Alkaline, lake margins. Elevations: 195-2790ft. (60-850m.) Blooms May-Oct.	No potential	Meadows, seeps, and playas are not present in BSA.
Astragalus pachypus var. *jaegeri* Jaeger's milk-vetch	None/None G4T1/S1 1B.1	Perennial shrub. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Rocky (sometimes), sandy (sometimes). Elevations: 1200-3200ft. (365-975m.) Blooms Dec-Jun.	Low potential	Coastal sage scrub and sandy soils are present in the BSA. Only CNDDB record from 1922 in the 9-quad search area is 13 miles from the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Atriplex coronata var. *notatior* San Jacinto Valley crownscale	FE/None G4T1/S1 1B.1	Annual herb. Playas, valley and foothill grassland, vernal pools. Alkaline. Elevations: 455-1640ft. (139-500m.) Blooms Apr-Aug.	No potential	Playas, valley and foothill grassland, and vernal pools are not present in the BSA.
Atriplex parishii Parish's brittlescale	None/None G1G2/S1 1B.1	Annual herb. Chenopod scrub, playas, vernal pools. Alkaline. Elevations: 80-6235ft. (25-1900m.) Blooms Jun-Oct.	No potential	Chenopod scrub, playas, and vernal pools are not present in BSA.
Atriplex serenana var. *davidsonii* Davidson's saltscale	None/None G5T1/S1 1B.2	Annual herb. Coastal bluff scrub, coastal scrub. Alkaline. Elevations: 35-655ft. (10-200m.) Blooms Apr-Oct.	No potential	Species is found outside of the elevation range of the BSA.
Berberis nevinii Nevin's barberry	FE/SE G1/S1 1B.1	Perennial evergreen shrub. Chaparral, cismontane woodland, coastal scrub, riparian scrub. Gravelly (sometimes), sandy (sometimes). Elevations: 230-2705ft. (70-825m.) Blooms (Feb)Mar-Jun.	No potential	Coastal sage scrub and sandy soils are present in BSA; however, species is conspicuous and was not observed during the field visit.
Brodiaea filifolia thread-leaved brodiaea	FT/SE G2/S2 1B.1	Perennial bulbiferous herb. Chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Clay (often). Elevations: 80-3675ft. (25-1120m.) Blooms Mar-Jun.	Low potential	Coastal sage scrub and clay soils are present; however the species is typically associated with grasslands and vernal pools. Critical habitat is located less than one mile from BSA.
Calochortus weedii var. *intermedius* intermediate mariposa-lily	None/None G3G4T3/S3 1B.2	Perennial bulbiferous herb. Chaparral, coastal scrub, valley and foothill grassland. Rocky. Elevations: 345-2805ft. (105-855m.) Blooms May-Jul.	Low potential	Coastal sage scrub present, however this species is typically associated with rocky slopes.
Carex comosa bristly sedge	None/None G5/S2 2B.1	Perennial rhizomatous herb. Coastal prairie, marshes and swamps, valley and foothill grassland. Lake margins, wet places; site below sea level is on a Delta island. Elevations: 0-2050ft. (0-625m.) Blooms May-Sep.	No potential	Coastal prairie, marshes and swamps, valley and foothill grassland are not present in BSA.
Centromadia pungens ssp. *laevis* smooth tarplant	None/None G3G4T2/S2 1B.1	Annual herb. Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland. Alkaline. Elevations: 0-2100ft. (0-640m.) Blooms Apr-Sep.	Moderate potential	Some riparian habitat and alkaline soils present in BSA.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE/SE G4?T1/S1 1B.2	Annual herb (hemiparasitic). Coastal dunes, marshes and swamps. Limited to the higher zones of salt marsh habitat. Elevations: 0-100ft. (0-30m.) Blooms May-Oct(Nov).	No potential	Coastal dunes, marshes and swamps are not present in the BSA. Species is found outside of the elevation range of the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Chorizanthe parryi var. *parryi* Parry's spineflower	None/None G3T2/S2 1B.1	Annual herb. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Openings, Rocky (sometimes), sandy (sometimes). Elevations: 900-4005ft. (275-1220m.) Blooms Apr-Jun.	Moderate potential	Coastal sage scrub and sandy soils are present in BSA. CNDDB records from the 2000s are located two miles from the BSA.
Chorizanthe polygonoides var. *longispina* long-spined spineflower	None/None G5T3/S3 1B.2	Annual herb. Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Clay (often). Elevations: 100-5020ft. (30-1530m.) Blooms Apr-Jul.	Moderate potential	Coastal sage scrub and clay soils are present in the BSA. CNDDB records from the 2000s are three miles from BSA.
Chorizanthe xanti var. *leucotheca* white-bracted spineflower	None/None G4T3/S3 1B.2	Annual herb. Coastal scrub, Mojavean desert scrub, pinyon and juniper woodland. Gravelly (sometimes), sandy (sometimes). Elevations: 985-3935ft. (300-1200m.) Blooms Apr-Jun.	No potential	Coastal sage scrub is present in the BSA, however the species preferred microhabitat requirements (alluvial plain) not present. Mojavean desert scrub and pinyon and juniper woodlands are not present in the BSA. No CNDDB records are in the 9-quad search area.
Cuscuta obtusiflora var. *glandulosa* Peruvian dodder	None/None G5T4?/SH 2B.2	Annual vine (parasitic). Marshes and swamps. Freshwater marsh. Elevations: 50-920ft. (15-280m.) Blooms Jul-Oct.	No potential	No marshes or swamps are present in the BSA. Species is found outside of the elevation range of the BSA.
Dodecahema leptoceras slender-horned spineflower	FE/SE G1/S1 1B.1	Annual herb. Chaparral, cismontane woodland, coastal scrub. Flood deposited terraces and washes; associates include *Encelia*, *Dalea*, *Lepidospartum*, etc. Sandy soils. Elevations: 655-2495ft. (200-760m.) Blooms Apr-Jun.	Low potential	Coastal sage scrub is present in BSA, however deposited terraces and washes are not present in the BSA. *Encelia* sp. are present in the BSA. The only CNDDB occurrence in the 9-quad search area is historic (more than 100 years ago)
Dudleya multicaulis many-stemmed dudleya	None/None G2/S2 1B.2	Perennial herb. Chaparral, coastal scrub, valley and foothill grassland. In heavy, often clayey soils or grassy slopes. Elevations: 50-2590ft. (15-790m.) Blooms Apr-Jul.	Low potential	Coastal sage scrub is present in the BSA; however, soils are not heavy and no grassy slopes are present.
Eriastrum densifolium ssp. *sanctorum* Santa Ana River woollystar	FE/SE G4T1/S1 1B.1	Perennial herb. Chaparral, coastal scrub. In sandy soils on river floodplains or terraced fluvial deposits. Elevations: 300-2000ft. (91-610m.) Blooms Apr-Sep.	Low potential	Coastal sage scrub is present in the BSA; however, river floodplains and/or terraced fluvial deposits are not present in the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Galium californicum ssp. *primum* Alvin Meadow bedstraw	None/None G5T2/S2 1B.2	Perennial herb. Chaparral, lower montane coniferous forest. Grows in shade of trees and shrubs at the lower edge of the pine belt, in pine forest-chaparral ecotone. Granitic, sandy soils. Elevations: 4430-5580ft. (1350-1700m.) Blooms May-Jul.	No potential	Chaparral and lower montane coniferous forest are not present in the BSA. Species is found outside of the elevation range of the BSA.
Helianthus nuttallii ssp. *parishii* Los Angeles sunflower	None/None G5TX/SX 1A	Perennial rhizomatous herb. Marshes and swamps. Elevations: 35-5005ft. (10-1525m.) Blooms Aug-Oct.	No potential	Marshes and swamps are not present in the BSA.
Horkelia cuneata var. *puberula* mesa horkelia	None/None G4T1/S1 1B.1	Perennial herb. Chaparral, cismontane woodland, coastal scrub. Sandy or gravelly sites. Elevations: 230-2660ft. (70-810m.) Blooms Feb-Jul(Sep).	Low potential	Coastal sage scrub and sandy soils are present in BSA. No sightings in 9-quad CNDDB search.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	None/None G4T2/S2 1B.1	Annual herb. Marshes and swamps, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-. Elevations: 5-4005ft. (1-1220m.) Blooms Feb-Jun.	No potential	Marshes and swamps, playas, and vernal pools are not present in the BSA.
Lycium parishii Parish's desert-thorn	None/None G4/S1 2B.3	Perennial shrub. Coastal scrub, Sonoran desert scrub. Elevations: 445-3280ft. (135-1000m.) Blooms Mar-Apr.	Low potential	Coastal sage scrub present in the BSA, however Sonoran desert scrub not present. No sightings in 9-quad CNDDB search.
Malacothamnus parishii Parish's bush-mallow	None/None GXQ/SX 1A	Perennial deciduous shrub. Chaparral, coastal scrub. In a wash. Elevations: 1000-1495ft. (305-455m.) Blooms Jun-Jul.	Low potential	Coastal scrub and some ditches present in BSA; however no washes present in the BSA.
Monardella pringlei Pringle's monardella	None/None GX/SX 1A	Annual herb. Coastal scrub. Sandy hills. Elevations: 985-1310ft. (300-400m.) Blooms May-Jun.	No potential	Sandy hills are not present in the BSA. Species is found outside of the elevation range of the BSA.
Nama stenocarpa mud nama	None/None G4G5/S1S2 2B.2	Annual/perennial herb. Marshes and swamps. Lake shores, river banks, intermittently wet areas. Elevations: 15-1640ft. (5-500m.) Blooms Jan-Jul.	No potential	Marshes, swamps, lakes shores and river banks are not present in the BSA.
Nasturtium gambelii Gambel's water cress	FE/ST G1/S1 1B.1	Perennial rhizomatous herb. Marshes and swamps. Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. Elevations: 15-1085ft. (5-330m.) Blooms Apr-Oct.	No potential	Marshes and swamps are not present in the BSA. Species is found outside of the elevation range of the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Navarretia fossalis spreading navarretia	FT/None G2/S2 1B.1	Annual herb. Chenopod scrub, marshes and swamps, playas, vernal pools. San Diego hardpan and San Diego claypan vernal pools; in swales and vernal pools, often surrounded by other habitat types. Elevations: 100-2150ft. (30-655m.) Blooms Apr-Jun.	No potential	Chenopod scrub, marshes and swamps, playas, and vernal pools are not present in BSA.
Orcuttia californica California Orcutt grass	FE/SE G1/S1 1B.1	Annual herb. Vernal pools. Elevations: 50-2165ft. (15-660m.) Blooms Apr-Aug.	No potential	Vernal pools are not present in the BSA.
Phacelia stellaris Brand's star phacelia	None/None G1/S1 1B.1	Annual herb. Coastal dunes, coastal scrub. Open areas. Elevations: 5-1310ft. (1-400m.) Blooms Mar-Jun.	No potential	Species is found outside of the elevation range of the BSA.
Ribes divaricatum var. parishii Parish's gooseberry	None/None G5TX/SX 1A	Perennial deciduous shrub. Riparian woodland. *Salix* swales in riparian habitats. Elevations: 215-985ft. (65-300m.) Blooms Feb-Apr.	No potential	Species is found outside of the elevation range of the BSA.
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Annual herb. Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. Elevations: 50-2625ft. (15-800m.) Blooms Jan-Apr(May).	Low potential	Coastal sage scrub is present in the BSA; however, no drying alkaline flats are present.
Sidalcea neomexicana salt spring checkerbloom	None/None G4/S2 2B.2	Perennial herb. Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas. Alkali springs and marshes. Elevations: 50-5020ft. (15-1530m.) Blooms Mar-Jun.	No potential	Coastal sage scrub present in the BSA; however, no alkali springs or marshes are present.
Sphenopholis obtusata prairie wedge grass	None/None G5/S2 2B.2	Perennial herb. Cismontane woodland, meadows and seeps. Open moist sites, along rivers and springs, alkaline desert seeps. Elevations: 985-6560ft. (300-2000m.) Blooms Apr-Jul.	No potential	Cismontane woodland, meadows and seeps are not present in the BSA.
Symphyotrichum defoliatum San Bernardino aster	None/None G2/S2 1B.2	Perennial rhizomatous herb. Cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, meadows and seeps, valley and foothill grassland. Vernally mesic grassland or near ditches, streams and springs; disturbed areas. Elevations: 5-6695ft. (2-2040m.) Blooms Jul-Nov.	Low potential	Coastal sage scrub and ditches are present in the BSA. The last record in the CNDDB is 15 miles from the BSA in the 1950s.
Tortula californica California screw moss	None/None G2G3/S2? 1B.2	Moss. Chenopod scrub, valley and foothill grassland. Moss growing on sandy soil. Elevations: 35-4790ft. (10-1460m.)	No potential	Chenopod scrub, valley and foothill grassland are not present in the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Trichocoronis wrightii var. *wrightii* Wright's trichocoronis	None/None G4T3/S1 2B.1	Annual herb. Marshes and swamps, meadows and seeps, riparian forest, vernal pools. Mud flats of vernal lakes, drying river beds, alkali meadows. Elevations: 15-1425ft. (5-435m.) Blooms May-Sep.	No potential	Mud flats of vernal lakes, drying river beds, and alkali meadows are not present in the BSA.

Regional Vicinity refers to within a 9-quad search radius of site.

Status (Federal/State)

FE = Federal Endangered
FT = Federal Threatened
FPE = Federal Proposed Endangered
FPT = Federal Proposed Threatened
FD = Federal Delisted
FC = Federal Candidate
SE = State Endangered
ST = State Threatened
SCE = State Candidate Endangered
SCT = State Candidate Threatened
SR = State Rare
SD = State Delisted
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List

CRPR (CNPS California Rare Plant Rank)

1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B= Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)
.2 = Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat)
.3 = Not very endangered in California (<20% of occurrences threatened/low degree and immediacy of threat)

Other Statuses

G1 or S1 Critically Imperiled Globally or Subnationally (state)
G2 or S2 Imperiled Globally or Subnationally (state)
G3 or S3 Vulnerable to extirpation or extinction Globally or Subnationally (state)
G4/5 or S4/5 Apparently secure, common and abundant
GH or SH Possibly Extirpated – missing; known from only historical occurrences but still some hope of rediscovery

Additional notations may be provided as follows

T – Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)
Q – Questionable taxonomy that may reduce conservation priority
? – Inexact numeric rank

Special Status Wildlife Species in the Regional Vicinity of the Project Site

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Invertebrates				
Bombus crotchii Crotch bumble bee	None/SCE G2/S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	High potential	The species' preferred food genera *Phacelia* and *Eriogonum* were observed on site. Coastal sage scrub habitat is present in the BSA. CNDDB records from 2020 are approximately 1.5 miles northeast of the BSA.
Branchinecta lynchi vernal pool fairy shrimp	FT/None G3/S3	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	No potential	Vernal pools, grassed swales, earth slump, or basalt flow depression pools are not present in BSA.
Euphydryas editha quino quino checkerspot butterfly	FE/None G4G5T1T2/S1S2	Sunny openings within chaparral and coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants *Plantago erecta*, *P. insularis*, and *Orthocarpus purpurescens*.	No potential	Preferred food species *Plantago erecta, P. insularis,* and *Orthocarpus purpurescens* are not present in the BSA.
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	FE/None G1T1/S1	Found only in areas of the Delhi Sands formation in southwestern San Bernardino and northwestern Riverside counties. Requires fine, sandy soils, often with wholly or partly consolidated dunes and sparse vegetation. Oviposition requires shade.	No potential	Delhi Sands formation is not present in the BSA.
Streptocephalus woottoni Riverside fairy shrimp	FE/None G1G2/S2	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	No potential	Tectonic swales/earth slump basins are not present in the BSA .
Fish				
Catostomus santaanae Santa Ana sucker	FT/None G1/S1	Endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	No potential	Suitable aquatic habitat is not present in the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Gila orcuttii arroyo chub	None/None G2/S2 SSC	Native to streams from Malibu Creek to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mojave and San Diego river basins. Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.	No potential	Suitable aquatic habitat is not present in the BSA.
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	FE/SCE G5T1Q/S1	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	No potential	Suitable aquatic habitat is not present in the BSA.
Amphibians				
Spea hammondii western spadefoot	None/None G2G3/S3S4 SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	No potential	Grassland, valley-foothill hardwood woodlands and vernal pools are not present in the BSA.
Reptiles				
Anniella stebbinsi Southern California legless lizard	None/None G3/S3 SSC	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	Low potential	Sandy loamy soils under sparse vegetation are present within the BSA. Higher moisture content is in the soils near the riparian vegetation in the BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Low potential	Coastal sage scrub and loose sandy soils are present in BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats
Aspidoscelis hyperythra orange-throated whiptail	None/None G5/S2S3 WL	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	Low potential	Coastal scrub and drainage ditches are present in BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Aspidoscelis tigris stejnegeri coastal whiptail	None/None G5T5/S3 SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland and riparian areas. Ground may be firm soil, sandy, or rocky.	Low potential	The BSA is within a semi-arid open area with sparse vegetation. Some riparian areas are present within the BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats.
Coleonyx variegatus abbotti San Diego banded gecko	None/None G5T5/S1S2 SSC	Coastal and cismontane Southern California. Found in granite or rocky outcrops in coastal scrub and chaparral habitats.	No potential	Granite or rocky outcrops are not present in the BSA.
Crotalus ruber red-diamond rattlesnake	None/None G4/S3 SSC	Chaparral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains and north through western Riverside Co. into southernmost San Bernardino Co. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	No potential	Chaparral, woodland, grassland, and desert areas are not present in the BSA. There are some rocks present in the BSA, however not many rocky areas nor areas with dense vegetation.
Emys marmorata western pond turtle	FPT/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	No potential	Ponds, marshes, rivers, and streams are not present in the BSA.
Phrynosoma blainvillii coast horned lizard	None/None G4/S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Low potential	Scattered low bushes, open areas for sunning, and abundant insect prey are present in the BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats.
Salvadora hexalepis virgultea coast patch-nosed snake	None/None G5T4/S3 SSC	Brushy or shrubby vegetation in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.	Low potential	Shrub vegetation and small mammal burrows are present in the BSA. However, the BSA is unlikely to support populations due to lack of connectivity to less disturbed habitats

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Birds				
Accipiter cooperii Cooper's hawk	None/None G5/S4 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Moderate foraging potential No nesting potential	Riparian trees are present in the BSA; however they are not dense. No extensive woodlands on site. Patchy areas with large trees for perching are present in the BSA.
Agelaius tricolor tricolored blackbird	None/ST G1G2/S2 SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	No potential	No large open bodies of water within 5 miles of the BSA.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/None G5T3/S4 WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	Low potential	Coastal sage scrub present in BSA, however rocky hillsides with grass and forb patches not present in the BSA. Sightings in CNDDB in 1990s two miles from BSA.
Aquila chrysaetos golden eagle	None/None G5/S3 FP WL	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	No potential	Rolling foothills, mountain areas, sage-juniper flats, and desert not present in BSA. No cliff-walled canyons are present for nesting in the BSA.
Artemisiospiza belli belli Bell's sparrow	None/None G5T2T3/S3 WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Low potential	Coastal sage scrub habitat is present within the BSA. There are shrubs that would be appropriate size for nesting, however the present shrub communities are likely not dense enough to support a breeding population.
Asio otus long-eared owl	None/None G5/S3? SSC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	No potential	Riparian bottomlands are not present in BSA. There are some willows present in the BSA, however they are sparse.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Athene cunicularia burrowing owl	None/None G4/S2 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	High potential	Scrubland habitat present in BSA. Ground squirrel burrow colonies present, indicating BUOW may use this habitat to burrow.
Buteo regalis ferruginous hawk	None/None G4/S3S4 WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Low winter foraging potential No nesting potential	Scrub habitat and ground squirrels are present in the BSA. Winter habitat overlaps BSA, however breeding habitat does not. CNDDB records nine occurrences within the 9-quadrangle area, although most occur within fallow agricultural fields.
Buteo swainsoni Swainson's hawk	None/ST G5/S4	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Low potential	Ground squirrels and some riparian vegetation are present in the BSA; however no grasslands, juniper-sage flats, savannahs, or agricultural fields are present in the BSA.
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	None/None G5T3Q/S2 SSC	Southern California coastal sage scrub. Wrens require tall opuntia cactus for nesting and roosting.	No potential	Coastal sage scrub is present in the BSA; however, no opuntia cactus species observed in the BSA during the field survey.
Charadrius nivosus nivosus western snowy plover	FT/None G3T3/S3 SSC	Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	No potential	Sandy beaches, salt ponds and shores are not present in the BSA.
Circus hudsonius northern harrier	None/None G5/S3 SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	No potential	Coastal salt and freshwater marshes and grasslands are not present in the BSA.
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of *Rubus*, *Urtica* or *Vitis*.	No potential	No river systems or suitable riparian habitat is present in the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Elanus leucurus white-tailed kite	None/None G5/S3S4 FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	No potential	Grasslands, meadows, and marshes close to woodlands are not present in the BSA.
Empidonax traillii extimus southwestern willow flycatcher	FE/SE G5T2/S3	Riparian woodlands in Southern California.	No potential	Riparian plant species present in the BSA are not of sufficient size or structure to support this species.
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4 WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Low potential	Open habitats with few trees and large shrubs present in the BSA, however short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats are not present in the BSA.
Falco columbarius merlin	None/None G5/S3S4 WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	No potential	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches not present in BSA.
Haliaeetus leucocephalus bald eagle	FD/SE G5/S3 FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within one mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	No potential	No open body of water within one mile of BSA.
Icteria virens yellow-breasted chat	None/None G5/S4 SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	No potential	Watercourses with riparian habitat of sufficient size and structure are not present in the BSA.
Lanius ludovicianus loggerhead shrike	None/None G4/S4 SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	No potential	Scrub habitat and open country present for hunting in the BSA, however there are no patches of dense shrubs and brush for nesting present.
Laterallus jamaicensis coturniculus California black rail	None/ST G3T1/S2 FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	No potential	Freshwater marshes, wet meadows, and saltwater marshes not present in BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Plegadis chihi white-faced ibis	None/None G5/S3S4 WL	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	No potential	Freshwater marsh not present in BSA.
Polioptila californica californica coastal California gnatcatcher	FT/None G4G5T3Q/S2 SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	Present	The species was observed in the BSA during the field survey. Appropriate foraging and nesting habitat is present throughout the BSA.
Setophaga petechia yellow warbler	None/None G5/S3 SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	No potential	Riparian plant species are present in the BSA; however no bodies of water are present within the BSA.
Vireo bellii pusillus least Bell's vireo	FE/SE G5T2/S3	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually *Salix*, *Baccharis*, or *Prosopis.*	No potential	Riparian plants present in BSA, but are not sufficient in size or structure to support this species. River systems are not present in or near the BSA. Drainages within the BSA are often dry without flowing or standing water.
Xanthocephalus xanthocephalus yellow-headed blackbird	None/None G5/S3 SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.	No potential	Wetlands are not present in the BSA.
Mammals				
Dipodomys merriami parvus San Bernardino kangaroo rat	FE/SCE G5T1/S1 SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	No potential	Scrub vegetation and sandy loam present in the BSA, however no alluvial fans or flood plains are present.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Dipodomys stephensi Stephens' kangaroo rat	FT/ST G2/S3	Found primarily in annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass; filaree. Will burrow into firm soil and use the burrows of California ground squirrels and pocket gophers. Occurs only in southern California.	High potential	The BSA contains coastal sage scrub with sparse canopy cover. Buckwheat and filaree are present on site. California ground squirrel burrow complexes were observed on site. CNDDB records within the BSA in 1923, three records within two miles of the BSA in 1990 and 1991.
Eumops perotis californicus western mastiff bat	None/None G4G5T4/S3S4 SSC	Occurs in open, semi-arid to arid habitats, including coniferous and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces and caves, and buildings. Roosts typically occur high above ground.	Moderate foraging potential No roosting potential	Coastal scrub is present in the BSA. No cliff faces, caves, or buildings present in the BSA for roosting. CNDDB records from the 1990s are five miles from the BSA.
Lasiurus xanthinus western yellow bat	None/None G4G5/S3 SSC	Occurs in arid regions of the southwestern United States. Typically found in riparian woodlands, oak or pinyon-juniper woodland, desert wash, palm oasis habitats, and urban or suburban areas. Roosts in trees, often between palm fronds.	No potential	Some riparian woodland species found; however habitat is limited. Oak or pinyon-juniper woodland, desert wash, and palm oasis habitats not present in the BSA.
Neotoma lepida intermedia San Diego desert woodrat	None/None G5T3T4/S3S4 SSC	Occurs in scrub habitats of southern California from San Luis Obispo County to San Diego County.	Low potential	Scrub habitat present in BSA, however no moderate to dense canopies and slopes present in the BSA.
Nyctinomops femorosaccus pocketed free-tailed bat	None/None G5/S3 SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	No potential	Scrub habitat is present in the BSA, however there are no high cliffs present.
Onychomys torridus ramona southern grasshopper mouse	None/None G5T3/S3 SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	Low potential	Low to moderate shrub cover in scrub habitats is present in the BSA. CNDDB records overlapping the BSA from the 1920s

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/None G5T2/S1S2 SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	Low potential	Coastal sage scrub and fine sandy soils are present in the BSA, however the BSA is surrounded by dense developments and unlikely to support movement from nearby populations.
Taxidea taxus American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Low potential	Dry shrub habitat and burrowing rodents are present in the BSA; however the species requires less densely developed habitat.

Regional Vicinity refers to within a 9-quad search radius of site.

Status (Federal/State)

FE = Federal Endangered
FT = Federal Threatened
FPE = Federal Proposed Endangered
FPT = Federal Proposed Threatened
FD = Federal Delisted
FC = Federal Candidate
SE = State Endangered
ST = State Threatened
SCE = State Candidate Endangered
SCT = State Candidate Threatened
SR = State Rare
SD = State Delisted
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List

CRPR (CNPS California Rare Plant Rank)

1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B= Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)
.2 = Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat)
.3 = Not very endangered in California (<20% of occurrences threatened/low degree and immediacy of threat)

Other Statuses

G1 or S1 Critically Imperiled Globally or Subnationally (state)
G2 or S2 Imperiled Globally or Subnationally (state)
G3 or S3 Vulnerable to extirpation or extinction Globally or Subnationally (state)
G4/5 or S4/5 Apparently secure, common and abundant
GH or SH Possibly Extirpated – missing; known from only historical occurrences but still some hope of rediscovery

Additional notations may be provided as follows

T – Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)
Q – Questionable taxonomy that may reduce conservation priority
? – Inexact numeric rank

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APPENDIX C

CULTURAL RESOURCES TECHNICAL REPORT

(Confidential Report – On File with Eastern Municipal Water District)

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APPENDIX D
GEOTECHNICAL INVESTIGATION REPORT
(CONVERSE CONSULTANTS)

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Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services

GEOTECHNICAL INVESTIGATION REPORT

NORTH PERRIS SEWER PIPELINE
13 LOCATIONS ALONG G STREET AND STATE HWY 74
City of Perris, Riverside County, California

CONVERSE PROJECT NO. 23-81-219-01

Prepared For:

EASTERN MUNICIPAL WATER DISTRICT
2270 Trumble Road
Perris, CA 92752

Presented By:

CONVERSE CONSULTANTS
2021 Rancho Drive, Suite 1
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January 2, 2024

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

January 2, 2024

Mr. William Chen, PE
Associate Civil Engineer, Wastewater CIP
Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92572

Subject: **GEOTECHNICAL INVESTIGATION REPORT**
North Perris Sewer Pipeline
13 Locations along G Street and Hwy 74
City of Perris, Riverside County, CA
Converse Project No. 23-81-219-01

Dear Mr. Chen:

Converse Consultants (Converse) is pleased to submit this geotechnical investigation report to assist with the design of the North Perris Sewer Pipeline, located in the City of Perris, Riverside County, California. The report was prepared in accordance with our proposal dated July 17, 2023, and your Acceptance of Agreement and Purchase Order (PO: 143635) dated August 25, 2023.

Based upon our field investigation, laboratory data, and analyses, the proposed project is considered feasible from a geotechnical standpoint, provided the data presented in this report are incorporated into the design of the project.

We appreciate the opportunity to be of service to the Eastern Municipal Water District. Should you have any questions, please do not hesitate to contact us at 909-474-2847.

CONVERSE CONSULTANTS

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

Dist.: 1-Electronic Pdf/Addressee
HSQ/SR/EH/kvg

PROFESSIONAL CERTIFICATION

This report has been prepared by the following professionals whose seals and signatures appear herein.

The findings, recommendations, specifications and professional opinions contained in this report were prepared in accordance with the generally accepted professional engineering and engineering geologic principle and practice in this area of Southern California. We make no other warranty, either expressed or implied.

_____

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

_____

Elizabeth Hernandez
Staff Geologist

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APPENDICES

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation performed by Converse Consultants (Converse) for the North Perris Sewer Pipeline, located in the City of Perris, Riverside County, California. The approximate alignment locations are shown in Figure No. 1, *Approximate Alignment Locations Map.*

The purpose of this investigation is to determine the nature and engineering properties of the subsurface soils for the Eastern Municipal Water District to use in designing the proposed sewer pipelines.

This report is prepared for the project described herein and is intended for use solely by the Eastern Municipal Water District and their authorized agents for design purposes. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

2.0 PROJECT DESCRIPTION

Based on North Perris Sewer plans prepared by Eastern Municipal Water District (EMWD), the project will consist of removing the existing sewer manhole, constructing a 60-inch diameter precast concrete sewer manhole, reconnecting existing sewer main to new 60-inch manhole, and constructing and installing an 18-inch diameter VCP pipe approximately 5,400 LF along G Street and Hwy 74. We understand the maximum depth of the sewer pipe will be approximately 28 feet below the existing ground surface.

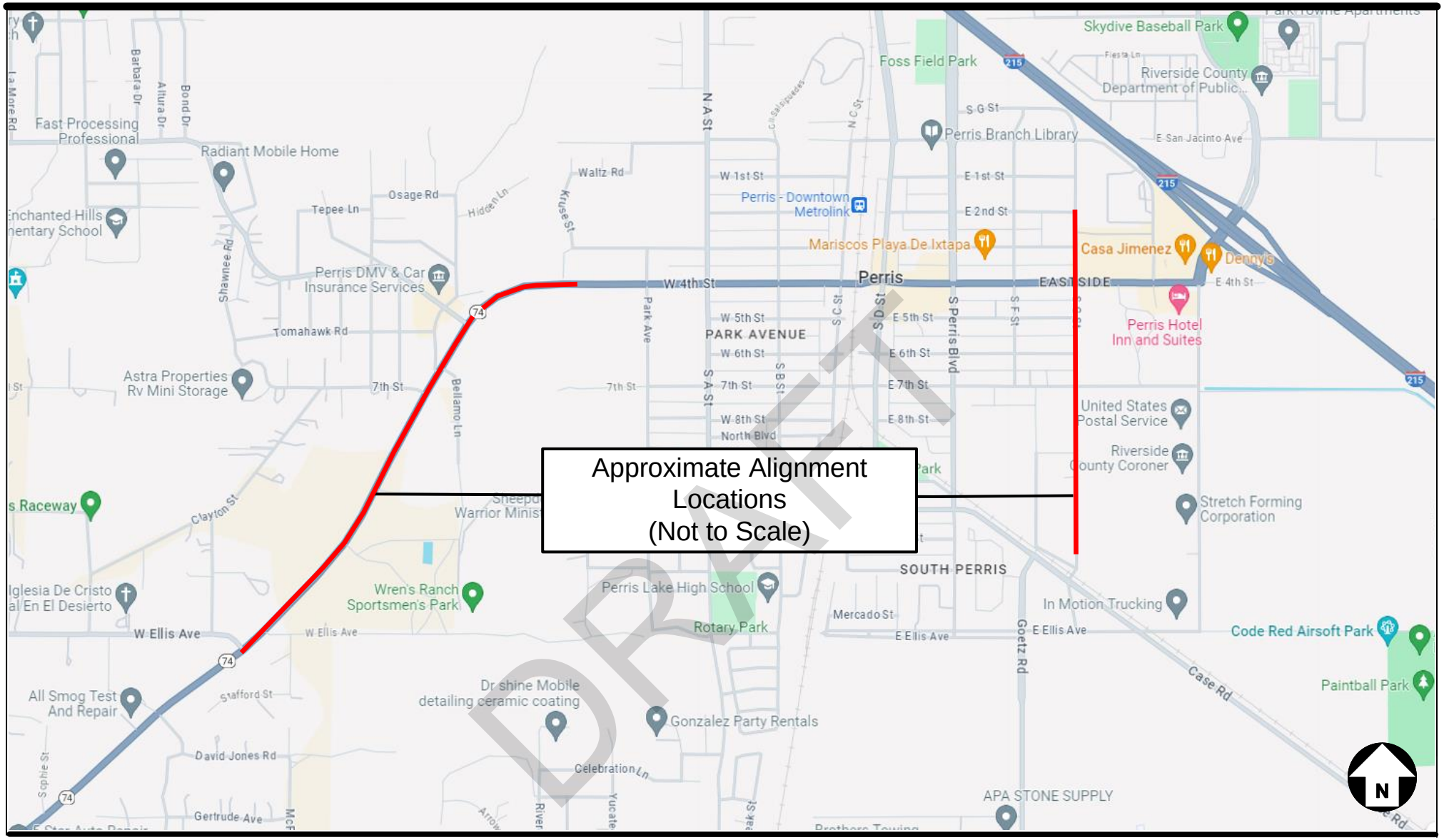
3.0 SITE DESCRIPTION

The North Perris Sewer Pipeline consists of 2 segments, designated as Priority 1 and 2. The description of each priority is presented below.

Priority 1; Highway 74

Street Name	Approx. Length Feet	Approx. Width Feet	Number Of Lanes in Each Direction	Speed Limit (mph)	Traffic Density at Time of Visit	Professional Traffic Control Required
Priority 1: Hwy 74	4,278	75	2, plus median	45 - 60	Moderate to heavy @ 4:50pm	Yes

The presented condition of Highway 74 within the project limits is described below and depicted in the subsequent photos.



Project: North Perris Sewer Pipeline
Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Approximate Alignment Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
1

- Bounded by Ellis Avenue to the southeast and Navajo Road to the northwest.
- 2 lanes plus a median lane with narrow shoulders.
- Will need traffic control to close one lane.
- No visible bridges, but some areas along the northeast side of Hwy. 74 appear to be carved out drainages near the road.
- Overhead utilities are mostly on the northwest side of Hwy. 74, but power lines run across and above the road.
- Empty lots on both sides of Hwy. 74 (more concentrated on the west side of highway) and some residential and commercial properties.

Photo No. 1: Navajo Road and Indian Circle, view towards southwest.

Photo No. 2: Hwy. 74, view towards southwest.

Photo No. 3: Hwy 74, view towards northeast.

Priority 2: G Street

Street Name	Approx. Length Feet	Approx. Width Feet	Number of Lanes in Each Direction	Speed Limit (mph)	Traffic Density at Time of Visit	Professional Traffic Control Required
Johnson Avenue/G St.	3,192	30 - 33	1	25	Low @ 5:00pm	Yes

The presented condition of Johnson Avenue within the project limits is described below and depicted in the subsequent photos.

- Bounded by 2nd Street to the north and Case Road to the south.
- 4th St – Johnson Avenue (G St.) and Case Road – Johnson Avenue (G St.) intersections are controlled by streetlights.
  - All other intersections in between are controlled by stop signs.
  - Railroad crossing right before Case Road – Johnson Ave. (G St.) intersection.
- One lane on each side, lanes widen northbound towards 2nd St. after 9th St.
  - Can accommodate a drill rig if utilizing part of the dirt shoulder.
  - Will need traffic control southbound after 9th St.
- Manhole in the southbound lane on Johnson Avenue (G St.).
- Overhead utilities running across Johnson Avenue (G St.) east-west.
- Mostly commercial areas with a few empty lots and residential properties.

Photo No. 4: G Street, view from south to north.

Photo No. 5: G Street, facing Case Rd view from north to south.

Photo No. 6: G Street, view from south to north.

- Bounded by 2nd Street to the north and Case Road to the south.
- 4th Street – Johnson Avenue (G St.) and Case Road – Johnson Avenue (G St.) intersections are controlled by streetlights.
  - All other intersections in between are controlled by stop signs.
  - Railroad crossing right before Case Road – Johnson Avenue (G St.) intersection.
- One lane on each side, lanes widen northbound towards 2nd St. after 9th St.
  - Can accommodate a drill rig if utilizing part of the dirt shoulder.
  - Will need traffic control southbound after 9th St.
- Manhole in the southbound lane on Johnson Avenue (G St.).
- Overhead utilities running across Johnson Avenue (G St.) east-west.
- Mostly commercial areas with a few empty lots and residential properties.

4.0 SCOPE OF WORK

The scope of this investigation included project set-up/permits, subsurface exploration, laboratory testing and preparing a summary report to document our findings and recommendations.

4.1 Project Set-up

As part of the project set-up, our staff performed the following tasks.

- Conducted a site reconnaissance to verify the existing conditions and marked 13 borings locations shown on the design plans provided by EMWD.

- Obtained permits from Riverside County and the City of Perris Engineering Department.
- Notified Underground Service Alert (USA) at least 48 hours prior to drilling to clear the boring locations of any conflict with existing underground utilities.
- Engaged a California-licensed driller to drill the exploratory borings and Professional Traffic Control.

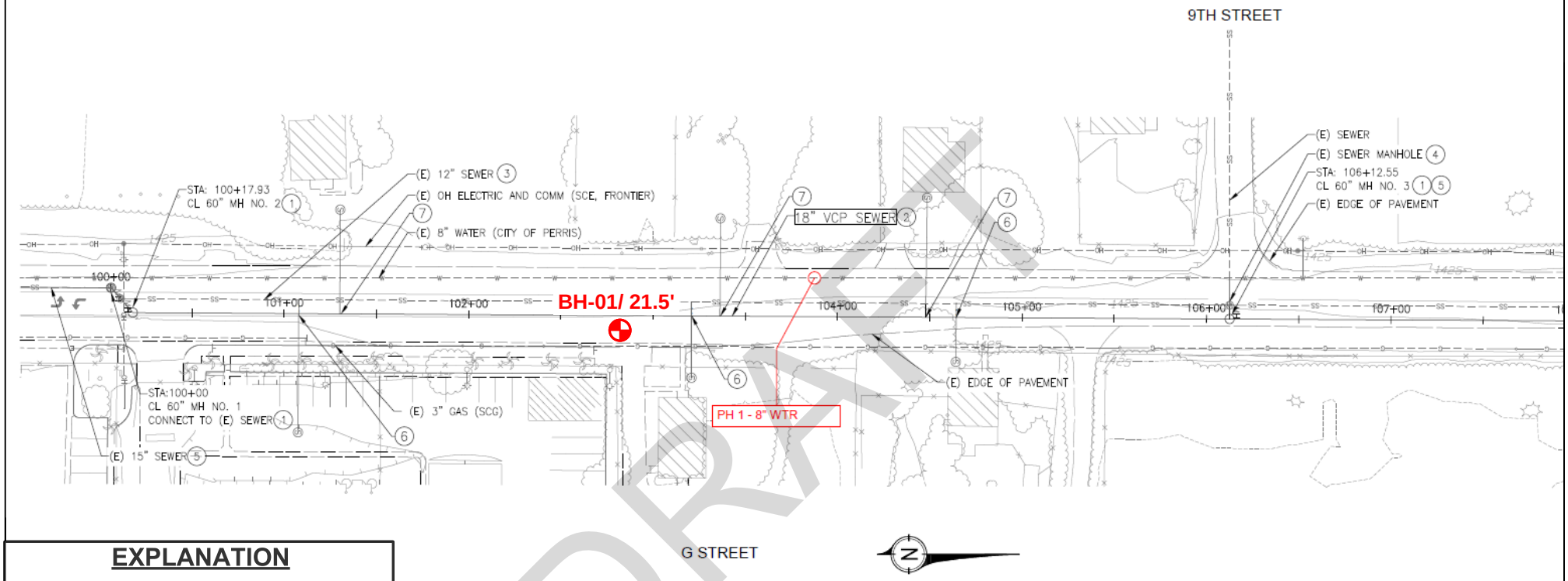
4.2 Subsurface Exploration

Thirteen exploratory borings (BH-01 through BH-13) were drilled on November 9th – 10th and November 21st – 22nd, 2023, to investigate the subsurface conditions for the sewer improvements. The borings (BH-08 through BH-11 and BH-13) were relocated after reaching refusal before the proposed maximum depth of 40.0 feet. The borings depths are presented in the table below.

Table No. 1, Boring Details

Boring No.	Street/Location	Approx. Station No.	Groundwater (ft)	Proposed Depth (ft)	Drilled Depth (ft)
BH-01	G Street	103+00	N/E	20.0	21.5
BH-02	G Street	112+00	N/E	20.0	21.5
BH-03	G Street	116+00	N/E	20.0	21.5
BH-04	G Street	123+00	N/E	20.0	21.5
BH-05	G Street	131+25	N/E	20.0	21.5
BH-06	Hwy 74	207+40	39.5	40.0	40.3
BH-07	Hwy 74	213+50	21.0	40.0	37.0
BH-08	Hwy 74	217+00	N/E	40.0	21.5
BH-09	Hwy 74	218+50	13.0	40.0	20.9
BH-10	Hwy 74	225+25	18.4	40.0	20.8
BH-11	Hwy 74	237+25	N/E	40.0	7.0
BH-12	Navajo Road	243+50	N/E	40.0	12.0
BH-13	Kruse Street	-	N/E	40.0	10.0
Note: For location of the borings, see Figures No. 2, Approximate Boring Locations Map.					

The borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers (HSA) for soils sampling.



EXPLANATION

BH-01/ 21.5' Number/Depth and Approximate Location of Exploratory Boring

80 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

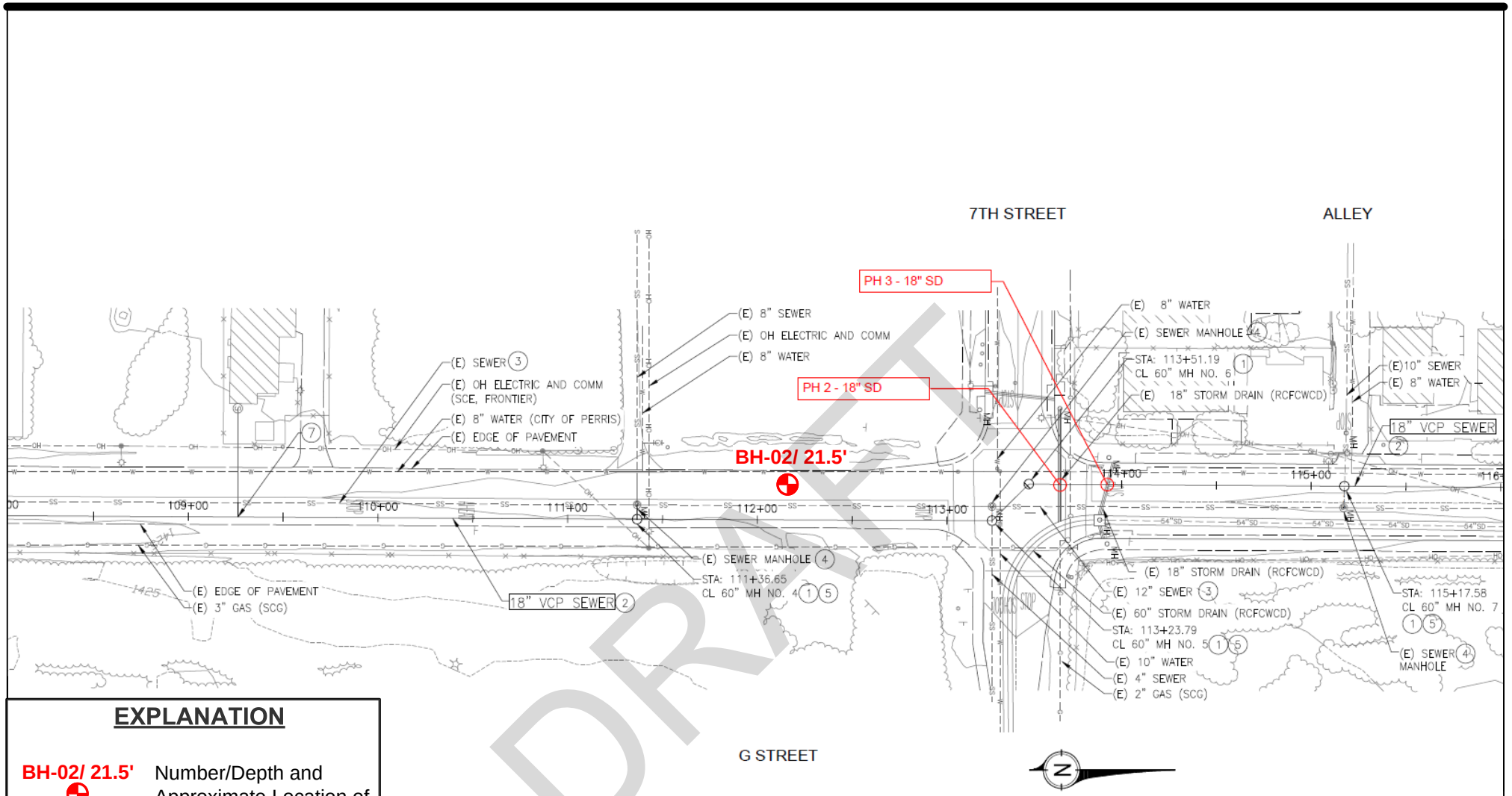
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-a



EXPLANATION

BH-02/ 21.5' Number/Depth and Approximate Location of Exploratory Boring

80 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

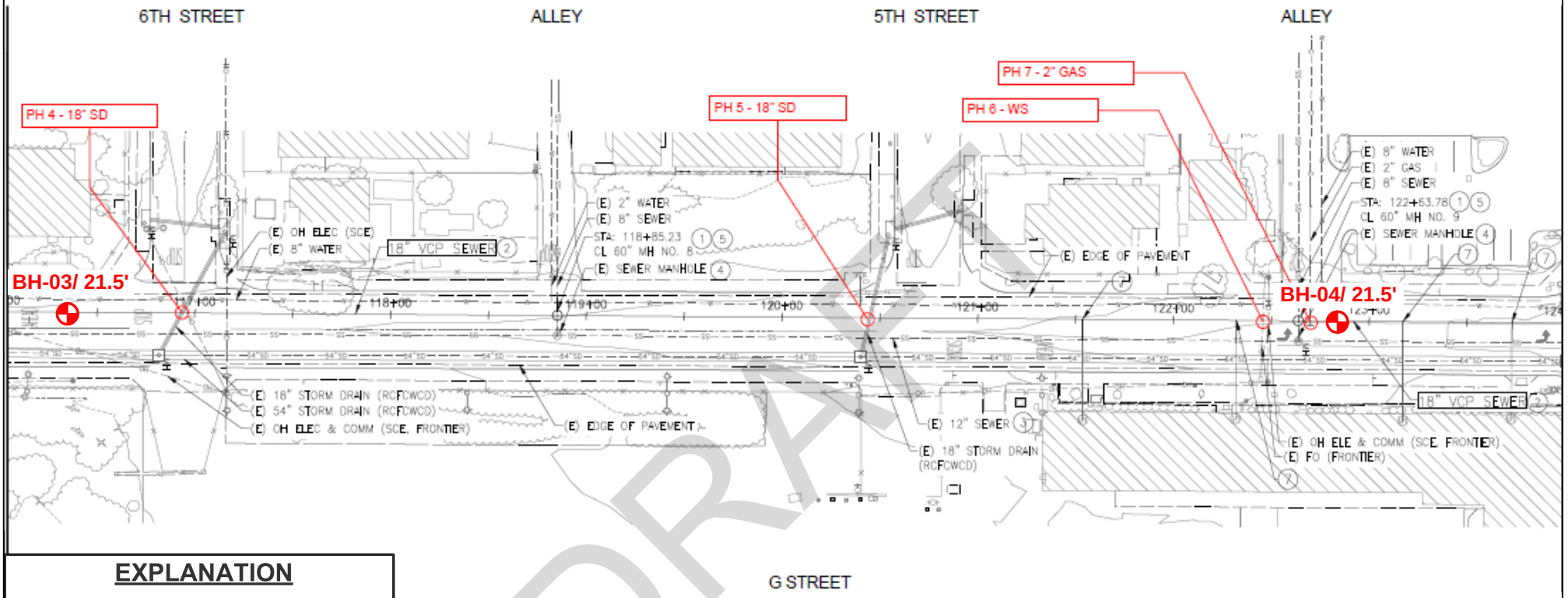
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-b



EXPLANATION

BH-04/ 21.5' Number/Depth and Approximate Location of Exploratory Borings

80 ft

N

Project: North Perris Sewer

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

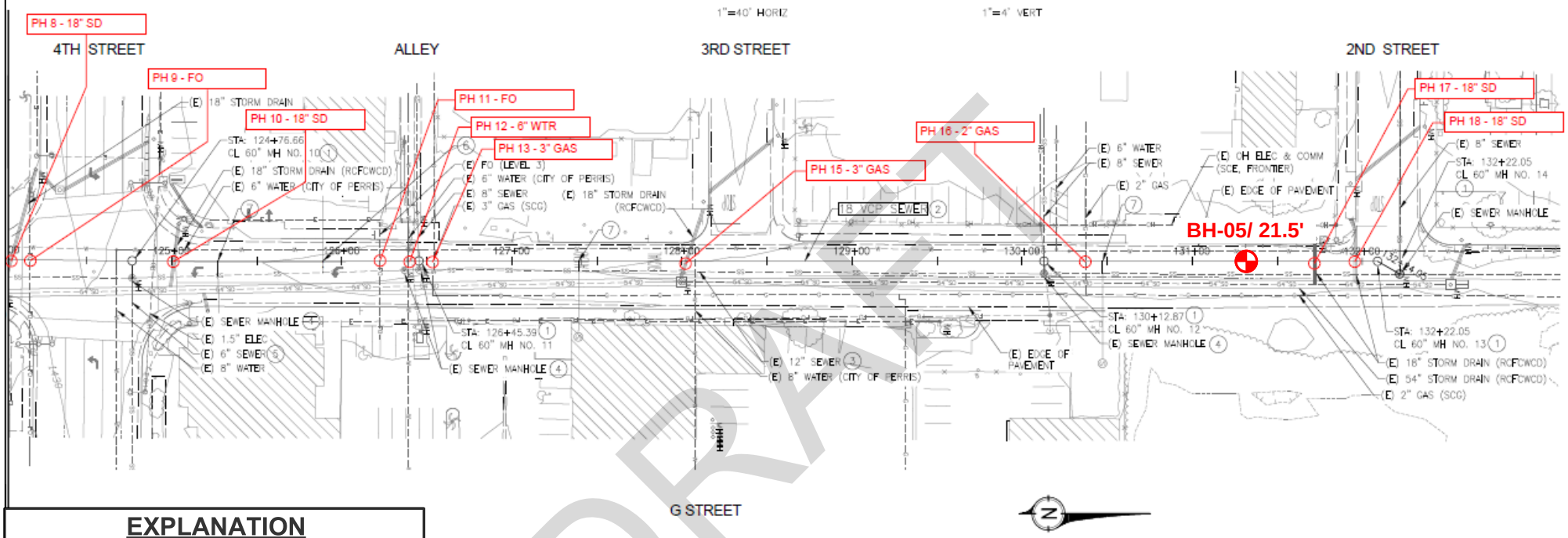
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-c



EXPLANATION

BH-05/ 21.5' Number/Depth and Approximate Location of Exploratory Boring

80 ft

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

For: EMWD

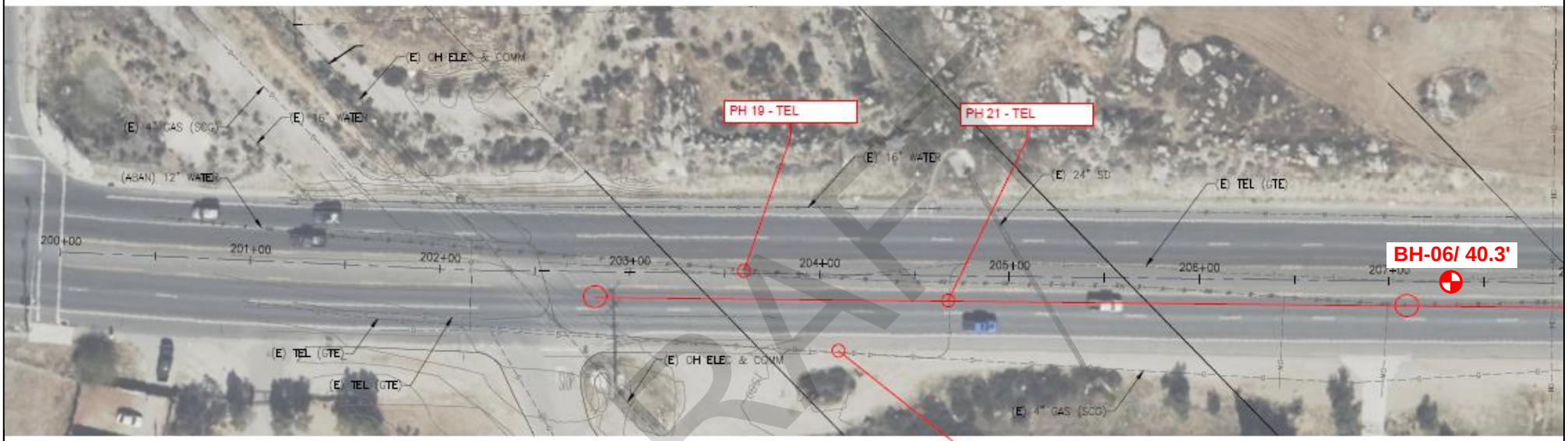
Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-d

ELLIS AVE



EXPLANATION

BH-06/ 40.3' Number/Depth and Approximate Location of Exploratory Boring

80 ft

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

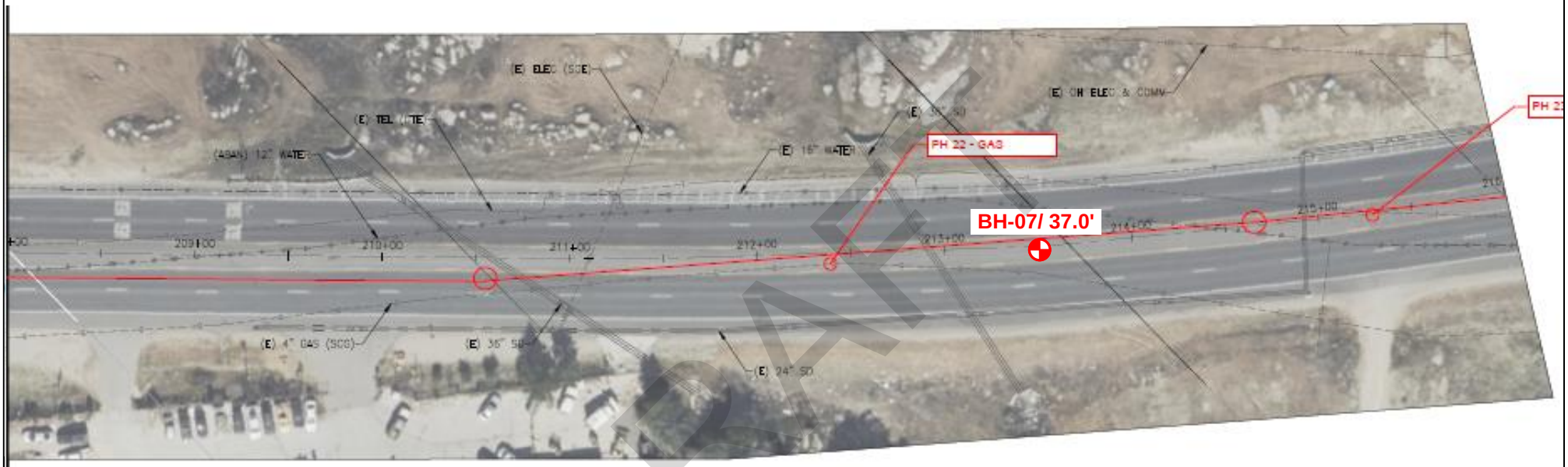
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-e



EXPLANATION

BH-07/ 37.0' Number/Depth and Approximate Location of Exploratory Boring

80 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

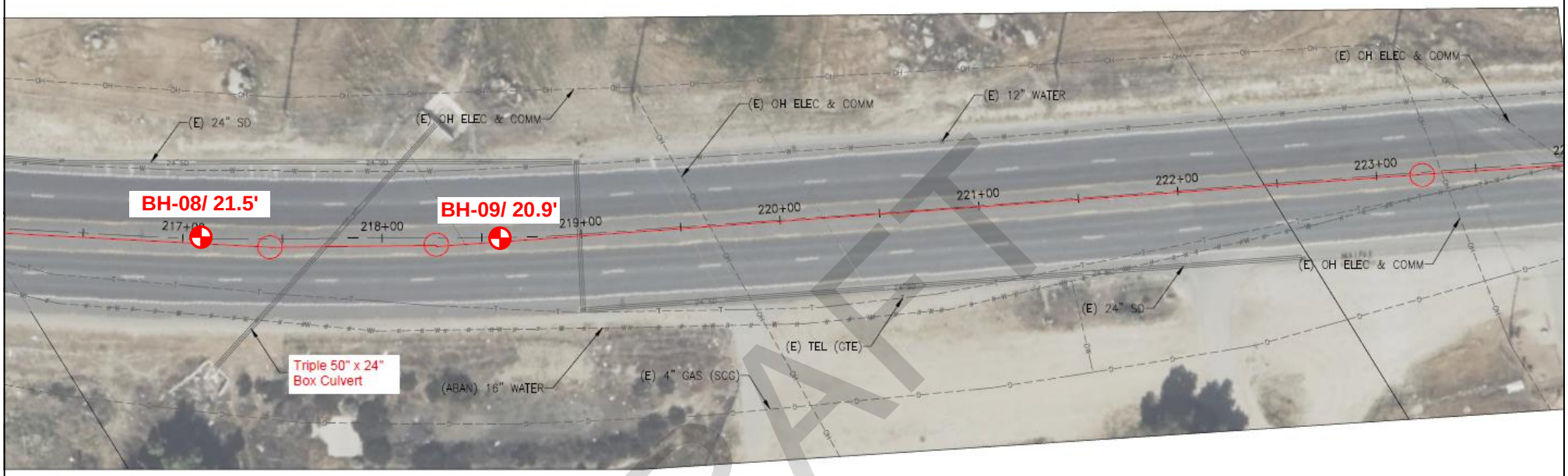
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-f



EXPLANATION

BH-08/ 21.5'
BH-09/ 20.9'
Number/Depth and Approximate Location of Exploratory Borings

80 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

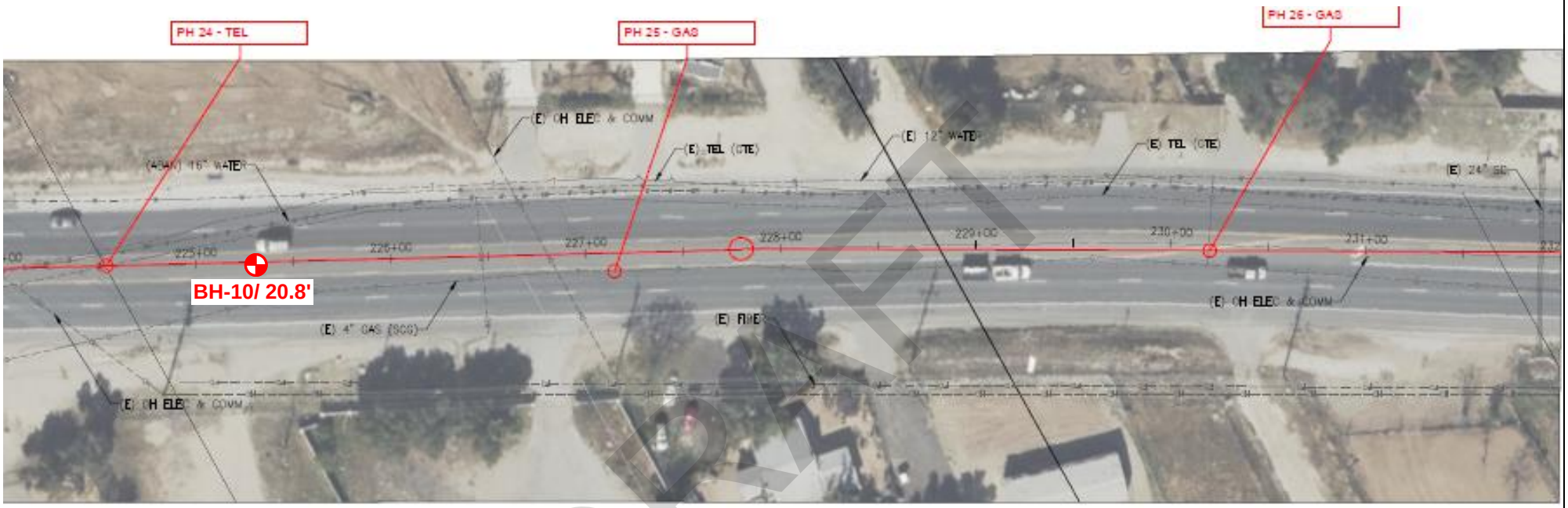
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-g



IMP ROUTE 74

EXPLANATION

BH-10/ 20.8' Number/Depth and Approximate Location of Exploratory Boring

80 ft

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

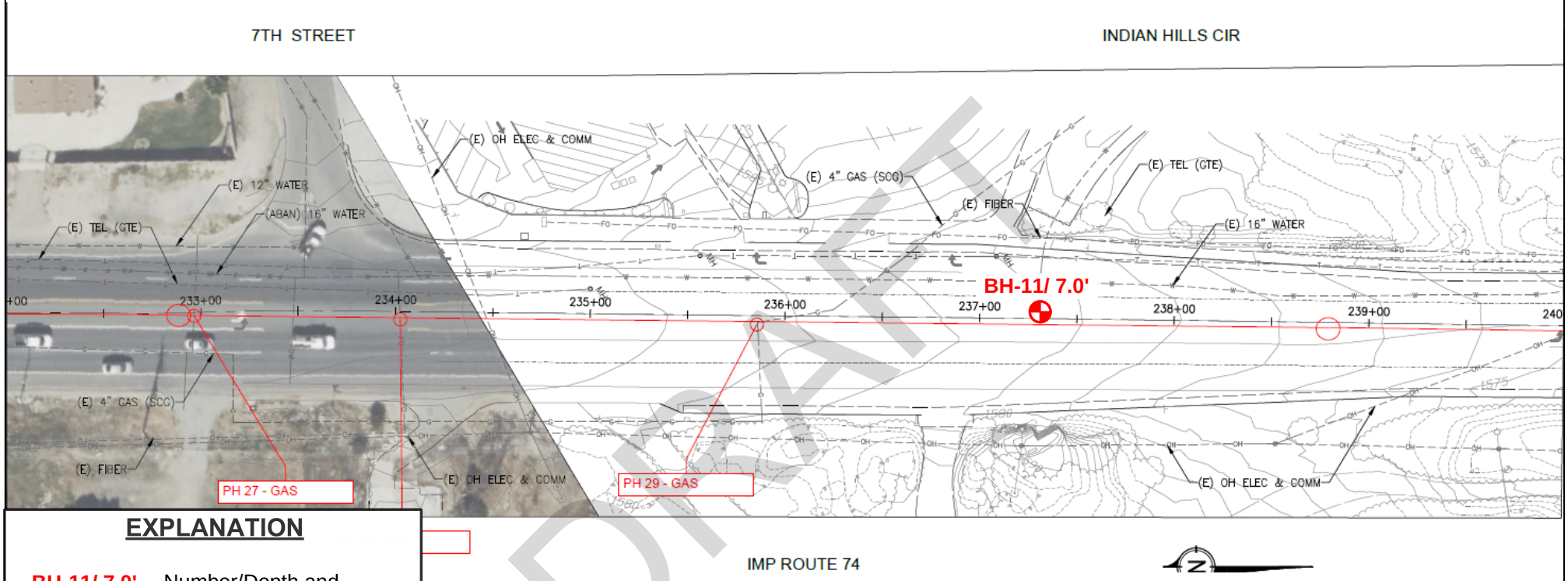
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-h



EXPLANATION

BH-11/ 7.0' Number/Depth and Approximate Location of Exploratory Boring

80 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

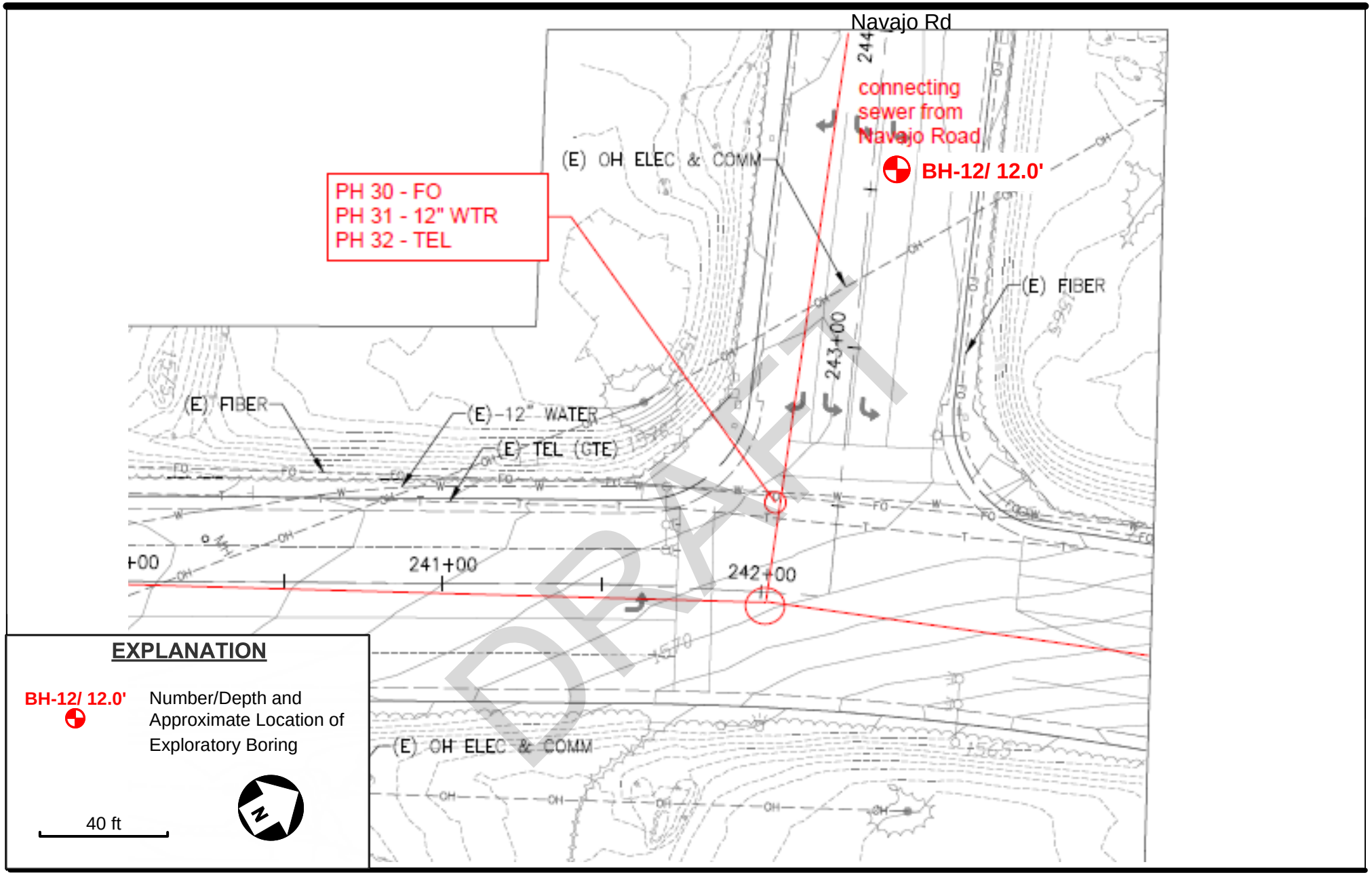
For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-i



Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-j

EXPLANATION

BH-13/ 10.0' Number/Depth and Approximate Location of Exploratory Boring

50 ft

N

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, California

For: EMWD

Approximate Boring Locations Map

Project No.
23-81-219-01

Converse Consultants

Figure No.
2-k

The approximate locations of the borings are shown on Figure No. 2, *Approximate Boring Locations Map*. A detailed discussion of subsurface exploration is presented in Appendix 1, *Field Exploration*.

4.2.1 Seismic Refraction Survey

Atlas Technical Consultants, LLC. was contracted to conduct a seismic refraction survey consisting of five seismic lines in areas of potential excavation. The purpose of the survey was to obtain a velocity profile of the subsurface materials and to assist in evaluation of the excavatability of the bedrock. Locations of the lines were proposed to and approved by William Chen at Eastern Municipal Water District (EMWD). The surveyor placed seismic lines between driveways along State Hwy 74 and Kruse Street with a focus on locations with shallow refusal depths. The seismic refraction survey report, dated December 26, 2023, is presented in Appendix 2, *Seismic Refraction Survey*.

4.3 Laboratory Testing

Representative samples of the project site soil were tested in the laboratory to aid in the soils classification and to evaluate the relevant engineering properties of the site soils. These tests included the following.

- *In*-situ moisture contents and dry densities (ASTM D2216 and ASTM D2937)
- Expansion index (ASTM D4829)
- R-value (California Test 301)
- Soil corrosivity tests (California Test 643, 422, 417, and 532)
- Sand equivalent (ASTM D2419)
- Collapse potential (ASTM Standard D4546)
- Grain size analysis (ASTM Standard D6913)
- Maximum dry density and optimum-moisture content (ASTM D1557)
- Direct shear (ASTM D3080)

For *in-situ* moisture and dry density data, see the Logs of Borings in Appendix 1, *Field Exploration*.

4.4 Summary Report

Data obtained from the field exploration and laboratory testing program were compiled and evaluated. Geotechnical analyses of the compiled data were performed, and this report was prepared to present our findings, conclusions, and recommendations for the project.

5.0 SUBSURFACE CONDITIONS

A general description of the subsurface conditions, various materials and groundwater conditions encountered at each location during our field exploration is discussed below.

5.1 Existing Pavement Sections

The measured pavement thicknesses at each boring location are listed in the following table.

Table No. 2, Existing Pavement Sections

Boring No.	Street/Location	Approx. Station No.	Asphalt Concrete Thickness (in.)	Aggregate Base Thickness (in.)
BH-01	G Street	103+00	5.0	7.0
BH-02	G Street	112+00	5.0	8.0
BH-03	G Street	116+00	4.0	5.0
BH-04	G Street	123+00	4.0	5.0
BH-05	G Street	131+25	3.5	7.0
BH-06	Hwy 74	207+40	8.0	16.0
BH-07	Hwy 74	213+50	9.0	17.0
BH-08	Hwy 74	217+00	8.0	16.0
BH-09	Hwy 74	218+50	7.0	17.0
BH-10	Hwy 74	225+25	8.0	16.0
BH-11	Hwy 74	237+25	4.0	5.0
BH-12	Navajo Road	243+50	3.5	4.0
BH-13	Kruse Street	-	0.0	0.0

Note: For location of the borings, see Figure No. 2, Approximate Boring Locations Map.

5.2 Subsurface Profile

Based on the exploratory borings and laboratory test results, the subsurface soils at the site consisted primarily of a mixture of sand, sand with silt, silty sand, clayey sand, silt, caliche, sandy clay, and clay. Bedrock (Val Verde tonalite formation) was encountered in borings BH-06 through BH-13.

The various subsurface profiles are discussed below.

Artificial Fill

Fill was encountered in three borings (BH-07 to BH-09) from the surface below the asphalt to a depth of approximately 5.0 feet to 7.5 feet bgs along State Hwy 74. This material is

generally comprised of silty sand which was fine to coarse-grained with trace to few gravel 1-inch maximum dimension, slight desiccation, trace rootlets, slight to moderate induration, medium dense to very dense, moist and dark brown. Based on information provided to Converse no geotechnical report on the placement or compaction is available at this time.

Alluvium
Alluvium was encountered in borings (BH-01 through BH-05, BH-07 through BH-09, and BH-13) below artificial fill at depths of approximately 5.0 feet to 15.0 feet bgs along G Street, State Hwy 74, and Kruse Street. Based on the observation of exploratory borings and laboratory test results, the subsurface soils in this unit consist primarily of a mixture of silty sand and clayey sand, few to little gravel up to 2 inches maximum dimension, slight to moderate desiccation, light to heavy presence of caliche, slight to moderate induration, light to heavy red and orange oxidation staining, loose to medium dense, moist, and various shades of brown and red.

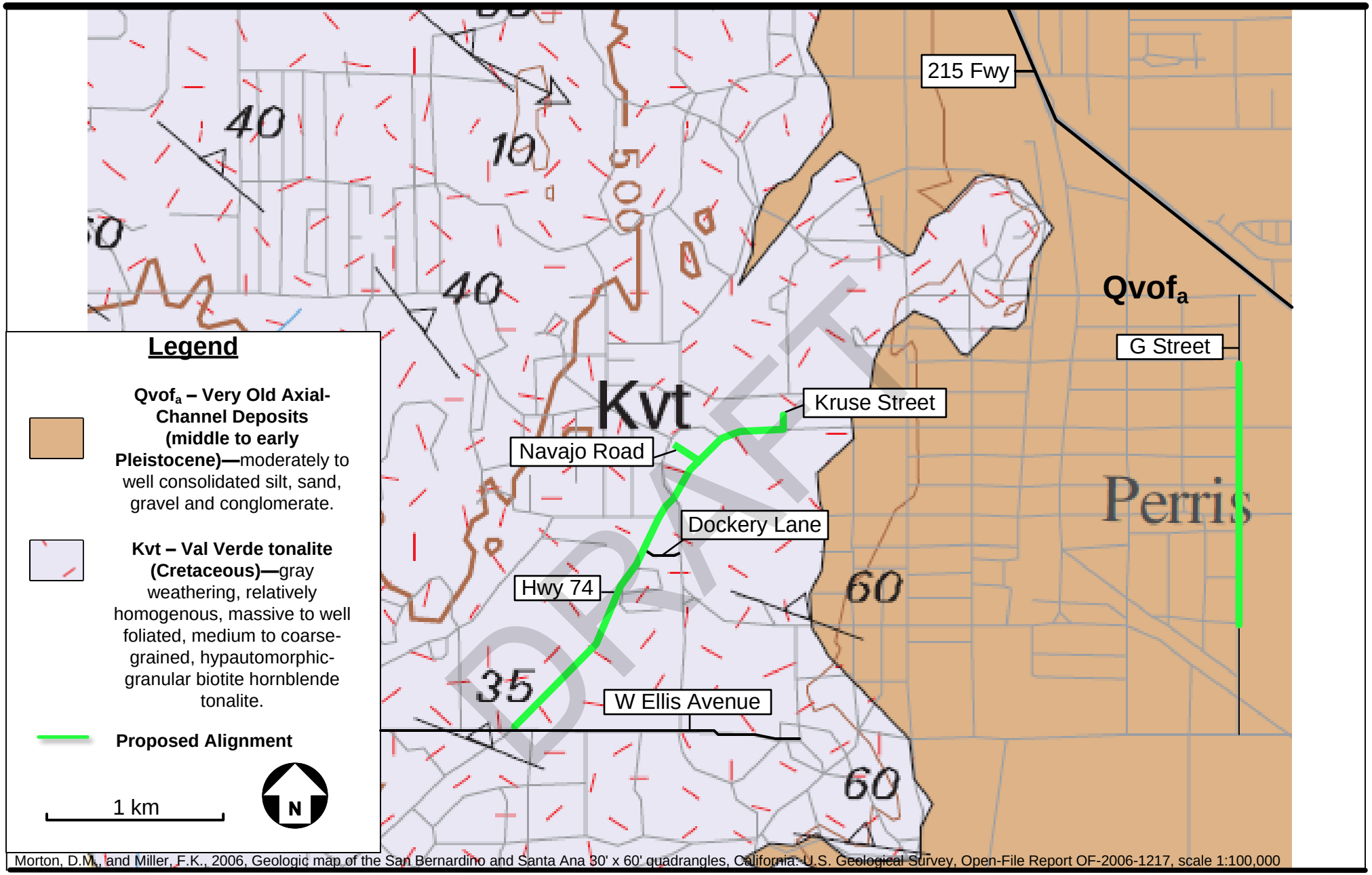
Bedrock
Bedrock was encountered in borings (BH-07 through BH-13) below the fill or alluvium starting at depths ranging from approximately 2.0 feet to 15.0 feet bgs along State Hwy 74, Navajo Road, and Kruse Street. Where observed, this material was generally comprised of biotite-hornblende tonalite with trace rock fragments up to 1 inch, slightly to moderately weathered, massive, locally desiccated, moderately hard to hard, dry to moist and were various shades of gray, white and brown. For more details, see Figure No. 3, *Geologic Map*

For a detailed description of the subsurface materials encountered in the exploratory borings, see Drawings No. A-2 through A-14 *Logs of Borings and* Appendix 1, *Field Exploration.*

5.3 Groundwater

Groundwater was encountered during the field investigation in borings BH-06, BH-07, BH-09, and BH-10. Current and historical groundwater data was reviewed near the proposed pipeline alignments. Results from the searches are provided below.

Due to the large area of the project, we used two coordinates to gather groundwater data that is representative of the entire project site. The coordinates 33.7782N,117.2217W were used to represent the eastern portion of the project on G Street and the coordinates 33.7786N, 117.2451W used were to represent the western portion of the project along Hwy 74.



Morton, D.M., and Miller, F.K., 2006, Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, Open-File Report OF-2006-1217, scale 1:100,000

Project: North Perris Sewer Pipeline

Location: 13 Locations Along G St and State Hwy 74
City of Perris, Riverside County, CA

For: EMWD

Geologic Map

Project No.
23-81-219-01

Figure No.
3

Converse Consultants

Eastern Coordinates (G Street) 33.7782N, 117.2217W.

Regional groundwater data from the GeoTracker database (SWRCB, 2023) within a one-mile radius of the coordinates was reviewed to evaluate the current and historical groundwater levels. Results are presented below.

- MOSS BROS., INC (MBI) (Site No. # T0606500140), located approximately 4,900 feet northwest of the coordinates reported groundwater at depths ranging from 47 to 60 feet bgs between 1988 and 2005.
- UNOCAL (FORMER) INTERSTATE PETROLEUM (Site No. # T0606500445), located approximately 3,700 feet northwest of the coordinates reported groundwater at depths ranging from 41 to 48 feet bgs between 2009 and 2010.
- PERRIS AUTO REPAIR (Site No. # T0606500308), located approximately 3,600 feet northwest of the coordinates reported groundwater at depths ranging from 42 to 50 feet bgs between 2008 and 2012.
- SHELL SAN JACINTO AVE (Site No. # T0606598102), located approximately 3,670 feet northeast of the coordinates reported groundwater at depths ranging from 49 to 53 feet bgs in 2015.
- OK SERVICE BULK PLANT (Site No. # T0606500567), located approximately 2,900 feet northwest of the coordinates reported groundwater at depths ranging from 42 to 52 feet bgs between 2001 and 2022.
- THRIFTY OIL #351 (Site No. # T0606500087), located approximately 1,750 feet northwest of the coordinates reported groundwater at depths ranging from 37 to 52 feet bgs between 1989 and 2009.
- ARCO #1250 (Site No. # T0606572843), located approximately 2,500 feet northwest of the coordinates reported groundwater at depths ranging from 44 to 55 feet bgs between 2004 and 2012.

The National Water Information System (USGS, 2023) was reviewed for current and historical groundwater data from sites within an approximately 1.0-mile radius of the proposed development and the results of that search are included below.

Table No. 3, Summary of USGS Groundwater Depth Data

Site Number	Location	Groundwater Depth Range (ft. bgs)	Date Range
334717117124401	Park N of San Jacinto Ave; approximately 4,000 feet northeast of project site	108-210	1974-1994
334658117122701	Vacant Lot S of San Jacinto Ave; approximately 4,300 feet northeast of project site	93-97	1995

The California Department of Water Resources database (DWR, 2023) was reviewed for historical groundwater data from sites within a 1.0-mile radius of the project site. One site was identified within a 1.0-mile radius of the project site that contained groundwater elevation data. Details of that record are listed below.

- Well No. EMWD25419 (Station 337842N1172088W001), located approximately 4,470 feet northeast of the project site, reported groundwater at a depth ranging from 83 to 95 feet bgs between 2021 and 2023.
- Well No. EMWD14497 (Station 337853N1172081W001), located approximately 4,780 feet northeast of the project site, reported groundwater at a depth ranging from 43 to 51 feet bgs between 2011 and 2023.

Western Coordinates (Highway 74) 33.7786N, 117.2451W.

Regional groundwater data from the GeoTracker database (SWRCB, 2023) within a one-mile radius of the coordinates was reviewed to evaluate the current and historical groundwater levels. Results are presented below.

- CIRCLE K #340 (Site No. # T0606500588), located approximately 470 feet north of the coordinates reported groundwater at depths ranging from 6 to 30 feet bgs between 1999 and 2010.

The National Water Information System (USGS, 2023) was reviewed for current and historical groundwater data from sites within an approximately 1.0-mile radius of the coordinates 33.7786N, 117.2451W and no data was found.

The California Department of Water Resources database (DWR, 2023) was reviewed for historical groundwater data from sites within a 1.0-mile radius of the coordinates 33.7786N, 117.2451W and no data was found.

Current and historical groundwater depths vary between approximately 6 feet and 210 feet bgs. Current groundwater is expected to be deeper than about 13.0 feet bgs. Groundwater may be encountered at locations adjacent to BH-07, BH-09, BH-10 during the construction of the project. Please note that the groundwater level could vary depending upon the seasonal precipitation and possible groundwater pumping activity in the site vicinity. Shallow perched groundwater may be present locally, particularly following precipitation or irrigation events.

5.4 Collapse Potential

Soil deposits subjected to collapse/hydro-consolidation generally exist in regions of moisture deficiency. Collapsible soils are generally defined as soils that have potential to suddenly decrease in volume upon increase in moisture content even without an increase

in external loads. Moreover, some soils may have a different degree of collapse/hydro-consolidation based on the amount of proposed fill or structure loads. Soils susceptible to collapse/ hydro-consolidation include wind-blown silt, weakly cemented sand, and silt where the cementing agent is soluble (e.g., soluble gypsum, halite), alluvial or colluvial deposits within semi-arid to arid climate, and certain weathered bedrock above the groundwater table.

Granular soils may have a potential to collapse upon wetting in arid climate regions. Collapse/hydro-consolidation may occur when the soluble cements (carbonates) in the soil matrix dissolve, causing the soil to densify from its loose/low density configuration from deposition.

The degree of collapse of soil can be defined by the collapse potential value, which is expressed as a percent of collapse of the total sample using the Collapse Potential Test (ASTM D4546). According to the ASTM guideline, the severity of collapse potential is commonly evaluated by the following Table No. 5, *Collapse Potential Values*.

Table No. 4, Collapse Potential Values

Collapse Potential Value (%)	Severity of Problem
0	None
0.1 to 2	Slight
2.1 to 6.0	Moderate
6.0 to 10.0	Moderately Severe
>10	Severe

Four collapse potential tests were conducted for the project alignments. A collapse potential values of 0 to -0.9 percent were measured at depths between 15.0 and 26.5 feet bgs. The test results indicate only a slight to no collapse potential at the site. Collapse potential distress is typically considered a concern when collapse potential is over 2% (LA County, 2013).

5.5 Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade. Depending on the extent and location below finish subgrade, expansive soils can have a detrimental effect on structures. Based on the laboratory test results, the expansion index of the upper 20 feet of site soil was between 0 and 1, corresponding to very low expansion potential.

5.6 Excavatability

The surface and subsurface soil materials for the along the pipe alignments are expected to be excavatable by conventional heavy-duty earth moving and trenching equipment. However, excavation will be difficult if bedrock or concentration of gravel is encountered.

The phrase “conventional heavy-duty excavation equipment” is intended to include commonly used equipment such as excavators and trenching machines. It does not include hydraulic hammers (“breakers”), jackhammers, blasting, or other specialized equipment and techniques used to excavate hard earth materials. Selection of an appropriate excavation equipment model should be done by an experienced earthwork contractor and may require test excavations in representative areas.

5.7 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the project site should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations.

6.0 CBC 2022 SEISMIC DESIGN PARAMETERS

Seismic parameters based on the 2022 California Building Code (CBC, 2022) and ASCE 7-16 are provided in the following table. These parameters were determined using the generalized coordinates for the location and the Seismic Design Maps ATC online tool.

Table No. 5, CBC Seismic Design Parameters

Parameter	Value	
	G-Street	Highway 74
Site Coordinates	33.7782N, 117.2217W	33.7786N, 117.2451W
Risk Category	II	II
Site Class	D-Stiff Soil	D-Stiff Soil
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	1.452g	1.456g
Mapped 1-second Spectral Response Acceleration, S_1	0.537g	0.536g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.000	1.000
Site Coefficient (from Table 1613.5.3(2)), F_v	1.763	1.764
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	1.452g	1.456g
MCE 1-second period Spectral Response Acceleration, S_{M1}	0.947g	0.946g
Design Spectral Response Acceleration for short period S_{DS}	0.968g	0.970g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.631g	0.630g
Peak Ground Acceleration, PGA_M	0.550g	0.550g

7.0 CLOSURE

This report is prepared for the project described herein and is intended for use solely by the Eastern Municipal Water District (EMWD), and their authorized agents, to assist in the design and construction of the proposed project. Our findings and recommendations were obtained in accordance with generally accepted professional principles practiced in geotechnical engineering. We make no other warranty, either expressed or implied.

Converse Consultants is not responsible or liable for any claims or damages associated with interpretation of available information provided to others. Site exploration identifies actual soil conditions only at those points where samples are taken, when they are taken. Data derived through sampling and laboratory testing is extrapolated by Converse employees who render an opinion about the overall soil conditions. Actual conditions in areas not sampled may differ. In the event that changes to the project occur, or additional, relevant information about the project is brought to our attention, the recommendations contained in this report may not be valid unless these changes and additional relevant information is reviewed, and the recommendations of this report are modified or verified in writing. In addition, the recommendations can only be finalized by observing actual subsurface conditions revealed during construction. Converse cannot be held responsible for misinterpretation or changes to our recommendations made by others during construction.

As the project evolves, continued consultation and construction monitoring by a qualified geotechnical consultant should be considered an extension of geotechnical investigation services performed to date. The geotechnical consultant should review plans and specifications to verify that the recommendations presented herein have been appropriately interpreted, and that the design assumptions used in this report are valid. Where significant design changes occur, Converse may be required to augment or modify the recommendations presented herein. Subsurface conditions may differ in some locations from those encountered in the explorations, and may require additional analyses and, possibly, modified recommendations.

Design recommendations given in this report are based on the assumption that the recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

8.0 REFERENCES

AMERICAN CONCRETE INSTITUTE (ACI), 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary, October 2014.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, SEI/ASCE Standard No. 7-16, dated, 2017.

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Appendix 1

Field Exploration

APPENDIX 1

FIELD EXPLORATION

Our field investigation included a site reconnaissance, permit obtainment from Riverside County and City of Perris, and a subsurface exploration program consisting of drilling soil borings. During the site reconnaissance, the surface conditions were noted, and the borings were marked at locations selected by Eastern Municipal Water District (EMWD), using approximate distances from local street as well as existing surroundings as a guide and should be considered accurate only to the degree implied by the method used to locate them.

Thirteen exploratory borings (BH-01 through BH-13) were drilled on November 9th – 10th, and November 21st – 22nd, 2023, to investigate the subsurface conditions for the sewer improvements. The borings (BH-08 through BH-11 and BH-13) were relocated after reaching refusal before the proposed maximum depth of 40.0 feet. The borings depths are presented in the table below.

Table No. A-1, Boring Details

Boring No.	Street/Location	Approximate Station No.	Groundwater (ft)	Proposed Depth (ft)	Drilled Depth (ft)
BH-01	G Street	103+00	N/E	20.0	21.5
BH-02	G Street	112+00	N/E	20.0	21.5
BH-03	G Street	116+00	N/E	20.0	21.5
BH-04	G Street	123+00	N/E	20.0	21.5
BH-05	G Street	131+25	N/E	20.0	21.5
BH-06	Hwy 74	207+40	39.5	40.0	40.3
BH-07	Hwy 74	213+50	21	40.0	37.0
BH-08	Hwy 74	217+00	N/E	40.0	21.5
BH-09	Hwy 74	218+50	13	40.0	20.9
BH-10	Hwy 74	225+25	18.4	40.0	20.8
BH-11	Hwy 74	237+25	N/E	40.0	7.0
BH-12	Navajo Road	243+50	N/E	40.0	12.0
BH-13	Kruse Street	-	N/E	40.0	10.0
Note: For location of the borings, see Figures No. 2, Approximate Boring Locations Map.					

The borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers (HSA) for soils sampling. Encountered materials were continuously logged by a Converse geologist and classified in the field by visual classification in accordance with the Unified Soil Classification System. Where appropriate, the field descriptions and classifications have been modified to reflect laboratory test results.

Relatively undisturbed samples were obtained using California Modified Samplers (2.4 inches inside diameter and 3.0 inches outside diameter) lined with thin sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches. Blow counts at each sample interval are presented on the boring logs. Samples were retained in brass rings (2.4 inches inside diameter and 1.0 inch in height) and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Bulk samples of typical soil types were also obtained.

Standard Penetration Testing (SPT) was also performed in accordance with the ASTM Standard D1586 test method at 10-foot intervals beginning at 20 feet bgs using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, falling 30 inches for each blow. The recorded blow counts for every 6 inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings.

The exact depths at which material changes occur cannot always be established accurately. Unless a more precise depth can be established by other means, changes in material conditions that occur between drive samples are indicated on the logs at the top of the next drive sample.

Following the completion of logging and sampling, the borings were backfilled with soil cuttings mixed with cement and compacted by pushing down with an auger using the drill rig weight. The borings that penetrated the existing asphalt concrete surface were patched with hot asphalt mix. BH-13 did not penetrate an existing asphalt concrete surface and did not require asphalt patching. If construction is delayed, the surface of the borings may settle over time. We recommend the owner monitor the boring locations and backfill any depressions that might occur or provide protection around the boring locations to prevent trip and fall injuries from occurring near the area of any potential settlement.
For a key to soil symbols and terminology used in the boring logs, refer to Drawing Nos. A-1a through A-1c, *Unified Soil Classification and Key to Boring Log Symbols*. For logs of borings, see Drawing Nos. A-2 through A-14, *Logs of Borings*. All elevations are based on Google Earth.

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, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE			SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		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 AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR 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% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 4546)
CP	Compaction Curve (ASTM D 1557)
CR	Corrosion, Sulfates, Chlorides (CTM 643-99; 417; 422)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content (ASTM D 2974)
P	Permeablility (ASTM D 2434)
PA	Particle Size Analysis (ASTM D 6913 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (ASTM D 4318)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301)
SE	Sand Equivalent (ASTM D 2419)
SG	Specific Gravity (ASTM D 854)
SW	Swell Potential (ASTM D 4546)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166)
	Unconfined Compression - Rock (ASTM D 7012)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 2937)
WA	Passing No. 200 Sieve

BORING LOG SYMBOLS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE — 2.42" I.D. sampler (CMS).
- DRIVE SAMPLE — No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

DRILLING METHOD SYMBOLS

Auger Drilling | Mud Rotary Drilling | Dynamic Cone or Hand Driven | Diamond Core

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

North Perris Sewer Pipeline
13 Locations Along G Street and State Hwy 74
City of Perris, Riverside County, CA

For: EMWD

Project No. 23-81-219-01

Drawing A-1a

CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	SPT Blow Counts	Pocket Penetrometer (tsf)	CA Sampler	Torvane (tsf)	Field Approximation
Very Soft	<0.25	< 2	<0.25	<3	<0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	2 - 4	0.25 - 0.50	3 - 6	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	5 - 8	0.50 - 1.0	7 - 12	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	9 - 15	1.0 - 2.0	13 - 25	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	16 - 30	2.0 - 4.0	26 - 50	1.0 - 2.0	Readily indented by thumbnail
Hard	>4.0	>30	>4.0	>50	>2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N_{60}- Value (blows / foot)	CA Sampler
Very Loose	<4	<5
Loose	4- 10	5 - 12
Medium Dense	11 - 30	13 - 35
Dense	31 - 50	36 - 60
Very Dense	>50	>60

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OF PROPORTION OF SOILS

Descriptor	Criteria
Trace (fine)/ Scattered (coarse)	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor		Size
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION/ Induration

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

NOTE: This legend sheet provides descriptions and associated criteria for required soil description components only. Refer to Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010), Section 2, for tables of additional soil description components and discussion of soil description and identification.

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

LEGEND OF ROCK MATERIALS


IGNEOUS ROCK


SEDIMENTARY ROCK


METAMORPHIC ROCK

BEDDING SPACING

Description	Thickness/Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in - 1 ft
Thinly Bedded	1 in - 4 in
Very Thinly Bedded	1/4 in - 1 in
Laminated	Less than 1/4 in

WEATHERING DESCRIPTORS FOR INTACT ROCK

	Diagnostic Features					
	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Leaching		
Description	Body of Rock	Fracture Surfaces		Texture	Leaching	General Characteristics
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No leaching	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull	Minor to complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty"; feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation, grain boundary conditions	All fracture surfaces are discolored or oxidized; surfaces friable	Partial separation, rock is friable; in semi-arid conditions, granitics are disaggregated	Texture altered by chemical disintegration (hydration, argillation)	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures or veinlets. Rock is significantly weakened.
Decomposed	Discolored of oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregated)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes".

PERCENT CORE RECOVERY (REC)

$$\frac{\Sigma \text{ Length of the recovered core pieces (in.)}}{\text{Total length of core run (in.)}} \times 100$$

ROCK QUALITY DESIGNATION (RQD)

$$\frac{\Sigma \text{ Length of intact core pieces } \geq 4 \text{ in.}}{\text{Total length of core run (in.)}} \times 100$$

RQD* indicates soundness criteria not met.

ROCK HARDNESS

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with a pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily with a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. Breaks with light manual pressure.

Fracturing Spacing

Description	Observed Fracture Density
Unfractured	No fractures
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

REFERENCE Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

BEDROCK CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Log of Boring No. BH-01 (G Street)

Date Drilled: 11/9/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1499 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		5" Asphalt Concrete, 7" Aggregate Base						
		ALLUVIUM: **SILTY SAND (SM):** fine to coarse-grained, trace clay, dense, trace clay, slightly to moderately dessicated, slightly indurated, moist, dark brown to reddish brown.	■	▨	10/18/21	7	112	EI, PA
5		- @ 5.0': very dense, caliche spots.	■		17/41/50-5"	6	158	DS
		- @ 7.5': pinhole porosity.	■		24/50-5.5"	10	120	
10			■		20/50-5"	11	125	
15		- @ 15.0': dense, caliche mottling, slightly desiccated.	■	▨	10/20/25	8	117	CL SE
20		**SANDY CLAY (CL):** fine to coarse-grained, soft, moist, brown.	☒	☒	1/2/2	20		CR
		End of boring at 21.5 feet below ground surface. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/9/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-2

Log of Boring No. BH-02 (G Street)

Date Drilled: 11/9/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1588 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		5" Asphalt Concrete, 8" Aggregate Base						
		ALLUVIUM **SILTY SAND (SM):** fine to coarse-grained, trace silt, loose, moist, dark brown.	■		2/5/6	10	120	
5		- @5': medium dense.	■	▨	6/8/12	9	91	SE, R, PA
		- @ 7.5': caliche, slightly indurated, very dense, red to brown.	■	▨	13/36/50-5"	11	131	DS
10			■	▨	21/50-5"	11	125	CP
15		- @ 15.0': very dense, caliche, severely desiccated, indurated.	■		14/30/45	14	124	
20		**SANDY CLAY (CL):** fine to coarse-grained, trace silt, medium stiff, moist, dark brown.	☒		4/5/7	21		
		End of boring at 21.5 feet below ground surface. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/9/2023.						

Converse Consultants

North Perris Sewer Pipeline
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Drawing No. A-3

Log of Boring No. BH-03 (G Street)

Date Drilled: 11/8/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1428 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		4" Asphalt Concrete, 5" Aggregate Base						
		ALLUVIUM						PA
		SILTY SAND (SM): fine to coarse-grained, trace clay, moderately desiccated, caliche, slightly to moderately indurated, very dense, moist, brown.	■	▨	19/30/43	6	127	
5			■		18/30/36	5	130	
		- @ 7.5': fine to coarse grained, trace clay, slightly indurated, very dense, moist, red to brown.	■		17/38/50-5"	7	131	
10		- @ 10.0': slightly desiccated.	■		22/50-3"	6	129	DS
15		- @ 15.0': caliche strings, dense.	■		15/19/27	6	113	
20		- @ 20.0': trace clay, medium dense, moist, brown to reddish brown.	☒		8/10/11	6		CR
		End of boring at 21.5 feet below ground surface. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/8/2023.						

Converse Consultants

North Perris Sewer Pipeline
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City of Perris, Riverside County, CA
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Drawing No. A-4

Log of Boring No. BH-04 (G Street)

Date Drilled: 11/8/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1431 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		4" Asphalt Concrete, 5" Aggregate Base						
		ALLUVIUM						
		CLAYEY SAND (SC): fine to coarse-grained, trace silt, indurated, micaceous, medium dense, moist, dark brown.	■		5/8/13	9	121	
5		**SILTY SAND WITH CLAY (SM):** fine to coarse-grained, indurated, medium dense, moist, dark brown.	■	▨	10/14/17	11	123	EI, R, CR
		SILTY SAND (SM): fine to coarse-grained, trace clay, trace caliche, medium dense, moist, dark brown.	■	▨	8/13/16	8	107	
10		- @ 10.0': some red oxidation staining.	■		6/10/13	8	124	
15		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, slightly indurated, light red oxidation staining, dense, moist, reddish-brown.	■	▨	16/26/23	14	120	DS SE, PA, CP
20			⊠		9/21/21	20		
		End of boring at 21.5 feet below ground surface. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/8/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-5

Log of Boring No. BH-05 (G Street)

Date Drilled: 11/9/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1435 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		3.5" Asphalt Concrete, 7" Aggregate Base						
		ALLUVIUM						
		SILTY SAND (SM): fine to coarse-grained, trace clay, micaceous, medium dense, moist, dark brown.	■	▨	7/10/14	9	120	
5		- @ 5.0': trace clay, moderately desiccated, little black oxidation staining.	■		6/8/15	6	122	
			■		6/13/20	10	118	
10		- @ 10.0': dense.	■		9/17/22	8	123	
15		- @ 15': trace clay, light orange oxidation staining, slightly indurated, dense.	■	▨	11/36/50-4"	11	128	CL EI, SE, PA
20			☒		34/37/30	10		
		End of boring at 21.5 feet below ground surface. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/9/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-6

Log of Boring No. BH-06 (Hwy 74)

Date Drilled: 11/21/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1582 Depth to Water (ft, bgs): 39.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		8" Asphalt Concrete, 16" Aggregate Base						
		BEDROCK **Val Verde tonalite (Kvt)** fine to coarse-grained, moderately to intensely weathered, hard, dry to moist, gray-white	■		50-6"	4	113	
5		**Excavates as: SAND with SILT (SP-ML):** fine to coarse-grained, little silt, very dense, dry to moist, gray.	■	▨	45/50-4"	4	118	PA, EI
		- @ 7.5': friable.	■	▨	50-5"	2	116	
10		- @ 10': micaceous.	■		15/23/50-5"	14	118	
15			■		47/50-3"	4	126	
20			▨		50-2"	1		
25			■		50-5"	8	115	CL, DS
30			▨	▨	50-2"	10		SE, CR, PA

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-7a

Log of Boring No. BH-06 (Hwy 74)

Date Drilled: 11/21/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1582 Depth to Water (ft, bgs): 39.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK **Val Verde tonalite (Kvt)** moderately weathered, moderately fractured, hard, dry to moist, grey-white. **Excavates as: SAND (SP):** fine to coarse-grained, little silt, very dense, dry to moist, gray.			50-2"			*No Recovery
40					50-4"	14		
		End of boring at 40.3 feet below ground surface. Groundwater encountered at 39.5 feet. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/21/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-7b

Log of Boring No. BH-07 (Hwy 74)

Date Drilled: 11/21/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1578 Depth to Water (ft, bgs): 21

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		9" Asphalt Concrete, 17" Aggregate Base						
		FILL **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 1-inch maximum dimension, dense, moist, dark brown.	■		37/31/23	9	84	
5		- @ 5': trace rootlets, slightly indurated, soft.	■		5/3/3	8	102	
		ALLUVIUM **CLAYEY SAND (SC):** fine to coarse-grained, few gravel up to 0.5-inch maximum dimension, medium dense, moist, reddish-brown.	■		6/6/13	11	124	
10		- @10': little gravel up to 2-inch maximum dimension, heavy red and orange oxidation staining.	■	▨	4/5/5	9	109	EI
15		**BEDROCK** **Val Verde tonalite (Kvt):** moderately weathered, moderately fractured, hard, dry to moist, gray-white	■	▨	39/50-3"	10	123	
20		**Excavates as: CLAYEY SAND and SAND (SC/SP):** fine to coarse-grained, few gravel up to 1.5-inches maximum dimension, trace clay, slightly indurated, red oxidation staining, very dense, moist to wet, red, red-brown.	☒	▨	26/50-5"	12		
25			■	▨	50-6"	18	105	
				▨				SE, CR, PA
30			☒	▨	50-3"	14		

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-8a

Log of Boring No. BH-07 (Hwy 74)

Date Drilled: 11/21/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1578 Depth to Water (ft, bgs): 21

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK **Val Verde tonalite (Kvt):** moderately weathered, moderately fractured, hard, dry to moist, gray-white **Excavates as: SAND (SP):** fine to coarse-grained, few gravel up to 1.5-inches maximum dimension, wet, red-brown and gray.			50-3"	9	107	
		End of boring at 37 feet below ground surface due to refusal. Groundwater encountered at 21 feet. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/21/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-8b

Log of Boring No. BH-08 (Hwy 74)

Date Drilled: 11/21/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1577 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		8" Asphalt Concrete, 16" Aggregate Base						
		FILL **SILTY SAND (SM):** fine to coarse-grained, trace gravel up to 1-inch maximum dimension, moderately indurated, medium dense, moist, dark brown.	■		13/20/15	8	117	
5		**ALLUVIUM** **SILTY SAND (SM):** fine to coarse-grained, trace gravel up to 1-inch maximum dimension, moderately indurated, red oxidation staining, loose to medium dense, moist, dark brown.	■	▨	4/4/6	11	113	CP
			■	▨	50-6"	9	101	
10		**BEDROCK** **Val Verde tonalite (Kvt)** fine to coarse-grained, slightly weathered, moderately fractured, hard, dry to moist, gray-white-black **Excavates as: SILTY SAND (SM):** fine to coarse-grained, very dense, dry to moist, gray.	■	▨	31/50-4"	3	101	DS
15			■		50-3"	12		*Disturbed
20			▨		50-2"	1		
		End of boring at 21.5 feet below ground surface due to refusal. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/21/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-9

Log of Boring No. BH-09 (Hwy 74)

Date Drilled: 11/22/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1576 Depth to Water (ft, bgs): 13

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		7" Asphalt Concrete, 17" Aggregate Base						
		FILL **SILTY SAND (SM):** fine to coarse-grained, slightly desicated, trace rootlets, slightly indurated, very dense, moist, dark brown.	■		28/50-6"	7	134	
5		- @ 5.0': medium dense.	■		10/10/9	11	100	
		ALLUVIUM **SILTY SAND (SM):** fine to coarse-grained, loose, moist, reddish-brown.	■		6/6/8	5	104	
10			■		4/5/6	10	105	SE, PA
15		**BEDROCK** **Val Verde tonalite (Kvt)** fine to coarse-grained, slightly weathered, slightly fractured, hard, dry to moist, grayish white	■		23/50-5"	12	117	CL
20		**Excavates as : SILTY SAND (SM):** fine to coarse-grained, very dense, wet, gray-brown.	⊠		32/50-5"	21		
		End of boring at 20.9 feet below ground surface due to refusal. Groundwater encountered at 13 feet. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/22/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-10

Log of Boring No. BH-10 (Hwy 74)

Date Drilled: 11/22/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1586 Depth to Water (ft, bgs): 18.4

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		8" Asphalt Concrete, 16" Aggregate Base						
		BEDROCK **Val Verde tonalite (Kvt)** fine to coarse-grained, moderately weathered, hard, moist, gray-white **Excavates as: SAND (SP):** fine to coarse-grained, very dense, moist, gray-white.	■		30-50-4"	3	77	
5			■	▨	15/27/36	4	117	
			■	▨	50-5"	2	113	
10			■	▨	50-6"	6	107	
15		- @15': friable.	■		30/50-3"	14	107	
20			⊠		50-5"	9		
		End of boring at 20.8 feet below ground surface due to refusal. Groundwater encountered at 18.4 feet. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/22/2023.						

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North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-11

Log of Boring No. BH-11 (Hwy 74)

Date Drilled: 11/22/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1584 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		4" Asphalt Concrete, 5" Aggregate Base						
		BEDROCK						
		Val Verde tonalite (Kvt) fine to coarse-grained, slightly to moderately weathered, hard, very dense, dry, gray-white			50-4"	1		R, PA
5		**Excavates as: SAND (SP):** fine to coarse-grained, dry, gray.			50-3"	5	88	EI
		End of boring at 7 feet below ground surface due to refusal. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/22/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-12

Log of Boring No. BH-12 (Navajo Road)

Date Drilled: 11/9/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1578 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		3.5" Asphalt Concrete, 4" Aggregate Base						
		BEDROCK						
		Val Verde tonalite (Kvt) fine to coarse-grained, intensely weathered, hard, dry to moist, gray-white	■	▨	38/50-4"	3	123	
5		**Excavates as: SAND (SP):** fine to coarse-grained, trace rock fragments up to 1-inch maximum dimension, medium dense to very dense, dry to moist, gray-brown.	■		20/12/12	3	127	
			■	▨	15/10/46	6	127	DS SE, CR
10					50-2"			*No Recovery
		End of boring at 12 feet below ground surface due to refusal. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement, compacted with auger using drill rig weight and surface patched with hot asphalt mix on 11/10/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-13

Log of Boring No. BH-13 (Kruse Street)

Date Drilled: 11/9/2023 Logged by: Elizabeth Hernandez Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 1530 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM:						R
		SILTY SAND (SM): fine to coarse-grained, slightly to moderately dessicated, slightly indurated, loose to medium dense, moist, dark brown.	■		6/9/10	5	118	
5			■		4/5/6	7	114	
		BEDROCK	■		8/24/50-0"	5	111	PA
10		**Val Verde tonalite (Kvt)** fine to coarse-grained, slightly weathered, hard, dry to moist, gray-white						
		Excavates as SILTY SAND (SM): fine to coarse-grained, slightly to moderately desiccated, slightly indurated, very dense, moist, light brown.	▬		50-1"			DIST
		End of boring at 10 feet below ground surface due to refusal.						
		No groundwater encountered.						
		Borehole backfilled with soil cuttings and compacted with auger using drill rig weight on 11/9/2023.						

Converse Consultants

North Perris Sewer Pipeline
13 Locations along G Street and State Hwy 74
City of Perris, Riverside County, CA
For: EMWD

Project No. 23-81-219-01

Drawing No. A-14

Appendix 2

Seismic Refraction Survey

GEOPHYSICAL EVALUATION

NORTH PERRIS SEWER PIPELINE PROJECT

Perris, California

PREPARED FOR:

Converse Consultants
2021 Rancho Drive, Suite 1
Redlands, CA 92373

PREPARED BY:

Atlas Technical Consultants LLC
6280 Riverdale Street
San Diego, CA 92120

December 26, 2023

6280 Riverdale Street
San Diego, CA 92120
(877) 215-4321 | oneatlas.com

December 26, 2023

Atlas No. 10649

HASHMI QUAZI, PH.D., G.E.
CONVERSE CONSULTANTS
2021 RANCHO DR. SUITE 1
REDLANDS, CA 92373

Subject: **Geophysical Evaluation**
North Perris Sewer Pipeline Project
Perris, California

Dear Mr. Quazi:

In accordance with your authorization, Atlas has performed a geophysical evaluation pertaining to the subject project located in Perris, California. Specifically, our evaluation consisted of performing five seismic P-wave refraction traverses at the site. The purpose of our evaluation was to develop a subsurface velocity profile and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on November 31 and December 1, 2023. This data report presents our methodology, equipment used, analysis, and results.

We appreciate the opportunity to be of service on this project. Should you have any questions, please contact the undersigned at your convenience.

Respectfully submitted,
Atlas Technical Consultants LLC

Frederico T. Diogo

Patrick Lehrmann

REGISTERED PROFESSIONAL GEOPHYSICIST
PATRICK F. LEHRMANN
No. 1043
Exp. 1/31/2024
STATE OF CALIFORNIA

Frederico T. Diogo
Senior Staff Geophysicist

Patrick F. Lehrmann, P.G., P.Gp. 1043
Principal Geologist/Geophysicist

FTD:ROH:ERC:PFL:ds

Distribution: HQuazi@ConverseConsultants.com

CONTENTS

TABLE

FIGURES

1. INTRODUCTION

In accordance with your authorization, Atlas has performed a geophysical evaluation pertaining to the subject project located in Perris, California (Figure 1). Specifically, our evaluation consisted of performing five seismic P-wave refraction traverses at the site. The purpose of our evaluation was to develop a subsurface velocity profile and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on November 31 and December 1, 2023. This data report presents our methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of five seismic P-wave refraction traverse (SL-1 through SL-5) at the project site.
- Compilation and analysis of the data collected.
- Preparation of this data report presenting our results and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site was located along the California State Route 74 in Perris, California (Figure 1). Specifically, the seismic lines were conducted between Dockery Lane and Park Avenue (Figure 2). The site conditions along the seismic lines generally consisted of the spaces between driveways along California State Route 74. The location of the seismic traverse was generally selected by you and your office and adjusted to accommodate current site conditions. Figures 2 and 3 present the seismic line locations and depict the general site conditions along the traverses.

4. STUDY METHODOLOGY

Five seismic P-wave (compression wave) refraction traverses were conducted at the project site in order to develop subsurface velocity profiles, and to assess the depth to bedrock and apparent rippability of the subsurface materials. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 14-Hz geophones and recorded with a 24-channel Geometrics Geode seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Geophones were placed at intervals of 5 feet for all the five lines (SL-1 through SL-5). Additionally, the profiles length includes the two innermost off-end shots for a total line length of 125 feet. The general location and length of the line was determined by surface conditions, site access, depth of investigation, and you and your office. Shot points (signal-generation locations) were conducted along the lines at the ends, midpoint, and intermediate points between the ends of the midpoint.

The seismic refraction theory requires that subsurface velocities increase with depth (generalized reciprocal method (GRM) and time-intercept modeling). In classical analysis methods, a layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, interaction with the water table (groundwater potentiometric surface)/saturated materials, lateral variations in velocity such as those caused by core stones, intrusions, boulders, lithology changes, fill materials, fractures, faults, and anisotropic materials can also result in the misinterpretation of the subsurface conditions. The application of seismic tomography methods, as was performed for this project by Atlas, produces velocity models which, in general, may not be subject to this limitation. However, even the application of seismic tomography analysis does have certain limitations regarding vertical and horizontal resolution. When a velocity anomaly target is of similar scale length to the seismic wavelet (or smaller), then diffraction behavior dominates because scattering is governing the loci of the wave-fronts. For travel time analysis, a target feature must be at a scale versus its depth that is detectable relative to the scale length of the seismic wavelet we produce and receive. There is therefore a general limit to what scale of feature seismic tomography methods can detect regarding relatively small velocity anomaly features, related to both source and to medium velocities, and travel time uncertainties. In effect, some relatively smaller scale features including "thin" velocity inversion layers or voids, and some types of lateral and vertical velocity variations caused by core stones and intrusions might not be detected in our results. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth of the length of the spread.

Generally, the seismic P-wave velocity of a material can be correlated to rippability (see Table 1 below), or to some degree "hardness." Table 1 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2018), as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

Table 1 – Rippability Classification

Seismic P-wave Velocity	Rippability
0 to 2,000 feet/second	Easy
2,000 to 4,000 feet/second	Moderate
4,000 to 5,500 feet/second	Difficult, Possible Blasting
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting
Greater than 7,000 feet/second	Blasting Generally Required

For trenching operations, the rippability values should be scaled downward. For example, P-wave velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

5. DATA ANALYSIS

The collected dataset as processed and analyzed using Rayfract® Version 4.03 (Intelligent Resources Inc., 2022) which employs wave path analysis. Rayfract® first provides forward modeling of refraction, transmission, and diffraction and then back-projects travel-time residuals along wave paths also known as Fresnel volumes instead of conventional analysis by rays. This increases the numerical robustness of the inversion. A smooth minimum-structure 1-D starting velocity-depth profile model is determined automatically directly from the seismic travel-time data first arrival picks and elevation data to produce subsurface velocities by horizontally averaging via the Delta t-V method. The Delta t-V method is based on common mid-point (CMP) sorted travel times and assumes multiple horizontal layers with constant interior velocity gradients (Rohdewald 2007; Gebrande 1985). Modeled seismic rays follow circular arcs inside each modeled layer. The Delta t-V starting model is then refined with 2D Wavepath Eikonal Traveltime (WET) inversion method (Schuster, 1993). The resulting 2-D WET velocity model provides a 2-D tomographic image of the P-wave velocities which can be used to estimate subsurface geologic conditions. Both vertical and lateral velocity information is contained in the tomography model. Changes in layer velocity are generally revealed as gradients rather than discrete contacts, which typically are more representative of actual conditions.

6. RESULTS AND CONCLUSIONS

As previously discussed, five seismic P-wave refraction traverses (SL-1 through SL-5) were conducted at the project site. Figure 4a through Figure 4e present the velocity models generated from our analysis. Based on the results, it appears that the study area is generally underlain by low velocity materials in the near subsurface and higher velocity material at depth. Distinct vertical and lateral velocity variations are evident in the model. Moreover, the degree of weathering and the depth to possible bedrock varies across the site.

Based on the refraction results, variability in the excavatability (including depth of rippability) of the subsurface materials may be expected across the project area. In addition, oversized materials should be expected. A contractor with excavation experience in similarly difficult conditions should be consulted for expert advice on excavation methodology, equipment, and production rate.

7. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Atlas should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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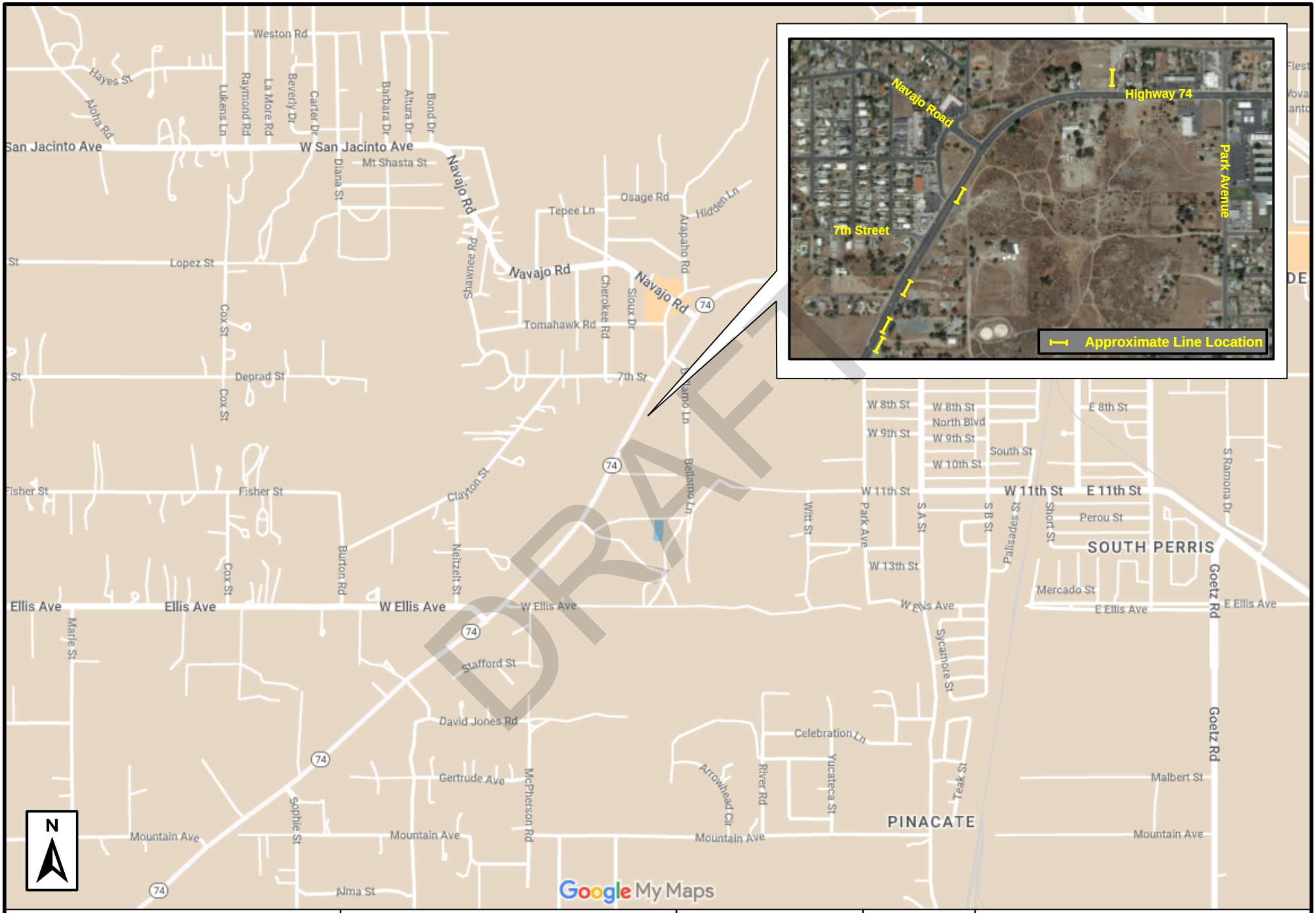
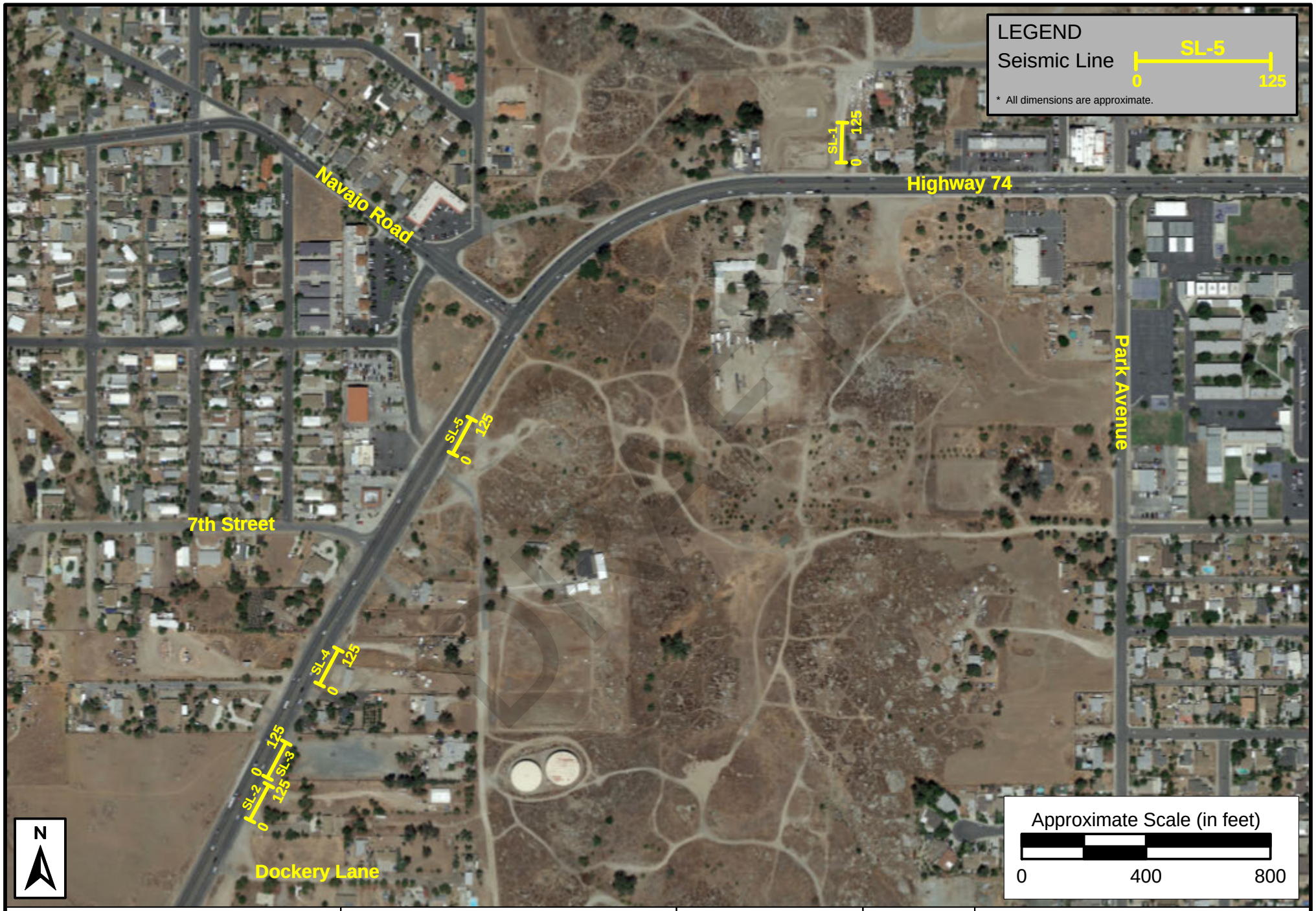
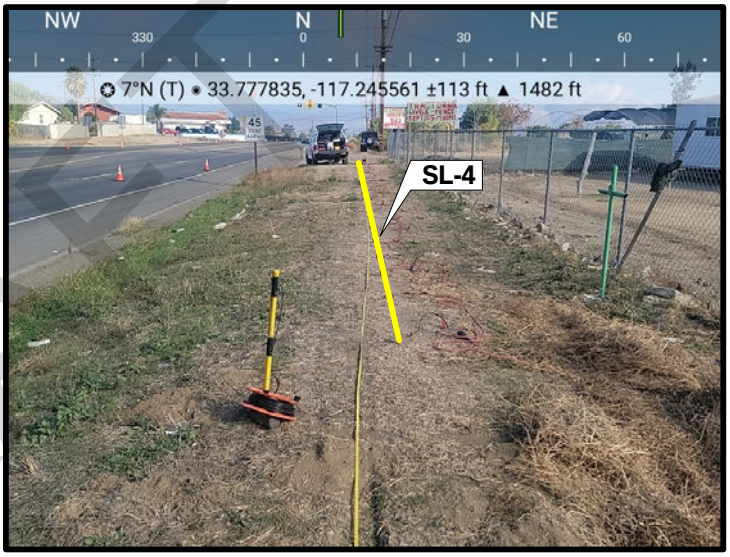


ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 1	**SITE LOCATION MAP**



ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 2	**LINE LOCATION MAP**



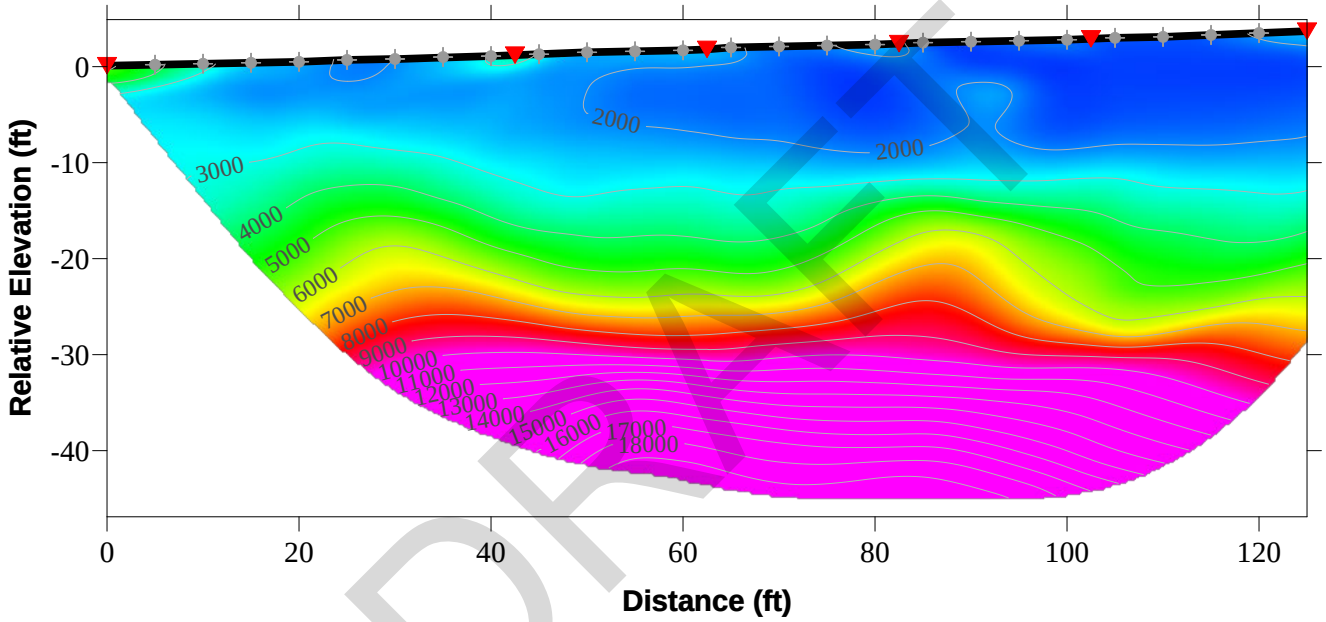
ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 3	**SITE PHOTOGRAPHS**

LEGEND

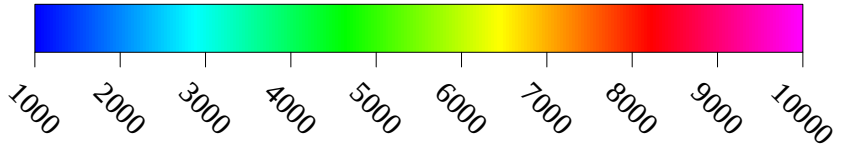
Geophone

Shot point

Tomography Model SL-1



P-Wave Velocity (ft/s)
CI = 1000 ft/s



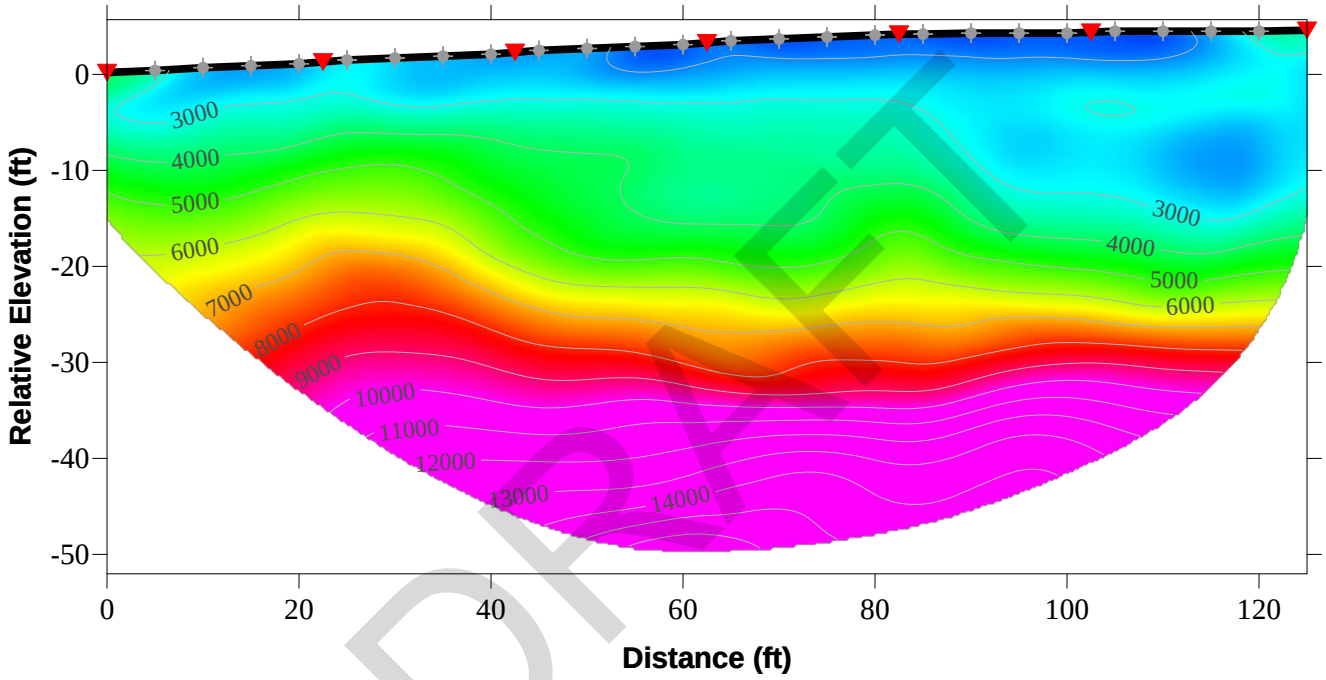
ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 4a	**P-WAVE PROFILE SL-1**

LEGEND

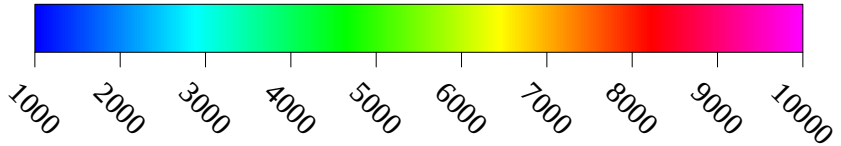
Geophone

Shot point

Tomography Model SL-2



P-Wave Velocity (ft/s)
CI = 1000 ft/s



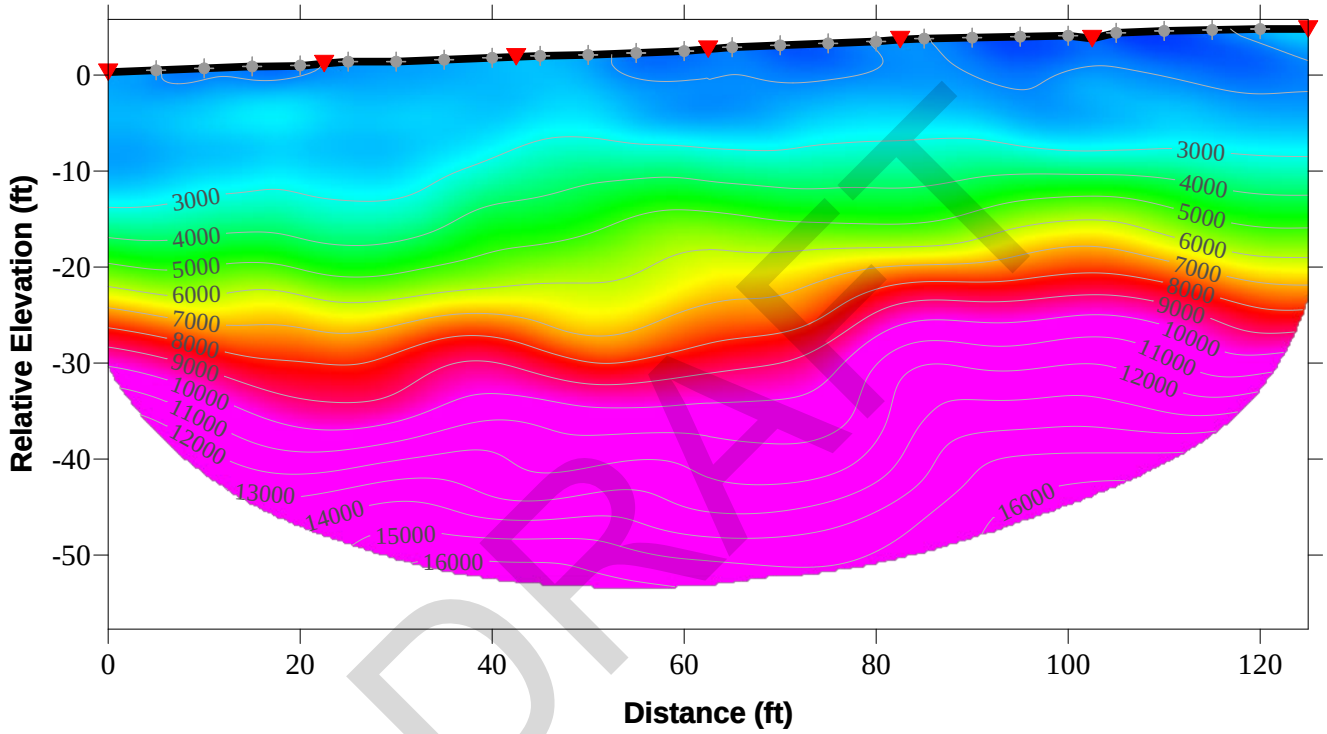
ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 4b	**P-WAVE PROFILE** **SL-2**

LEGEND

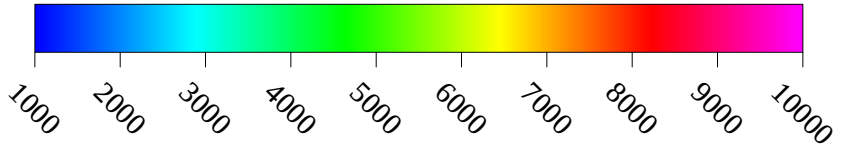
Geophone

Shot point

Tomography Model SL-3



P-Wave Velocity (ft/s)
CI = 1000 ft/s



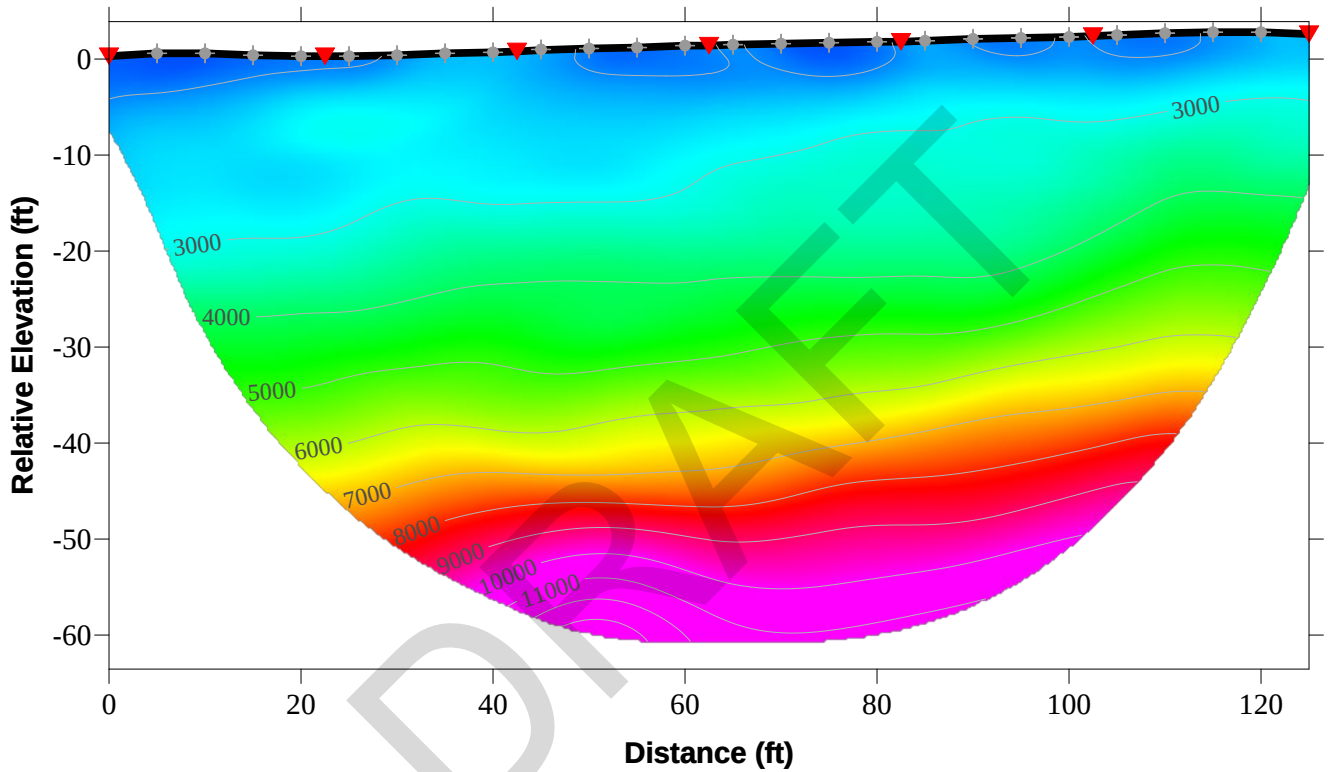
ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 4c	**P-WAVE PROFILE** **SL-3**

LEGEND

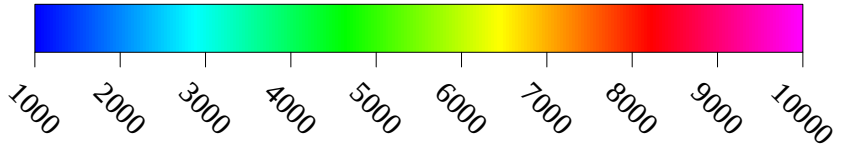
Geophone

Shot point

Tomography Model SL-4



P-Wave Velocity (ft/s)
CI = 1000 ft/s



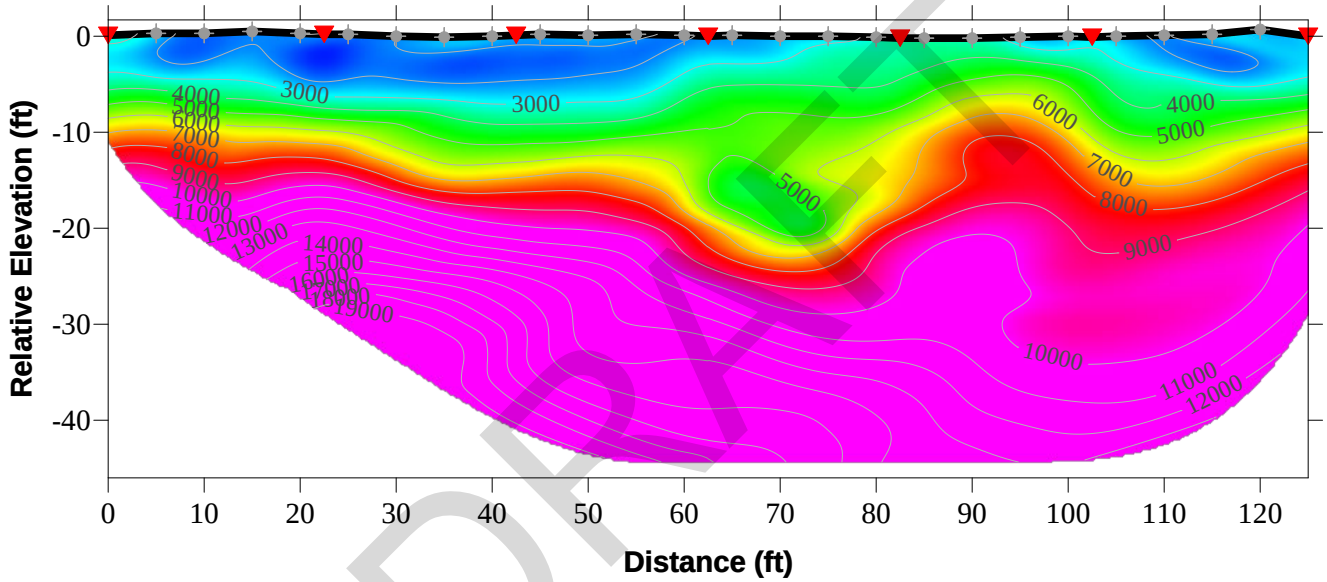
ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 4d	**P-WAVE PROFILE SL-4**

LEGEND

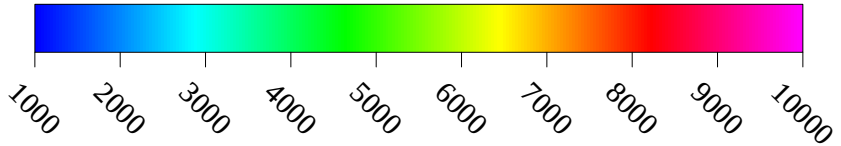
Geophone

Shot point

Tomography Model SL-5



P-Wave Velocity (ft/s)
CI = 1000 ft/s



ATLAS	North Perris Sewer Pipeline Project Perris, California	Project No.: 10649 Date: 12/23	Figure 4e	**P-WAVE PROFILE SL-5**

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APPENDIX E
GEOTECHNICAL INVESTIGATION REPORT
(INLAND FOUNDATION ENGINEERING, INC.)

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December 20, 2023
Project No. E007-810

Eastern Municipal Water District
P. O. Box 8300
2270 Trumble Road
Perris, California 92572

Attention: Mr. William Chen, P.E.
Associate Civil II Engineer, Wastewater CIP

Subject: Geotechnical Investigation
West Ellis Sewer Project
Highway 74 to B Street
Perris, California

Dear Mr. Chen:

This report presents the findings of our geotechnical investigation for the proposed West Ellis Avenue Sewer project. The primary geotechnical issue is the potential for difficult excavation in granitic bedrock during pipeline construction. The report addresses this and other issues and provides geotechnical engineering parameters and recommendations regarding project design and construction.

We appreciate the opportunity to work with you on this project. Please contact us if you have any questions or need any additional information.

Sincerely,
INLAND FOUNDATION ENGINEERING, INC.

Allen D. Evans, P.E., G.E.
Principal

ADE:es
Distribution: Addressee

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LIST OF FIGURES AND TABLES

INTRODUCTION

This report presents the results of the geotechnical investigation conducted for the proposed Eastern Municipal Water District (EMWD) West Ellis Sewer project. This report includes a summary of the site geologic conditions and geotechnical recommendations for project design and construction.

Our project understanding and scope of service were based on discussions with EMWD and review of the following document and other project information provided.

- Plans for Eastern Municipal Water District Perris West Ellis Sewer Project, 30% Design, Sheets G-1, G-2, and C-1 through C-7, prepared by Ardurra, undated

SCOPE OF SERVICE

The purpose of the geotechnical investigation was to evaluate the subsurface conditions and to provide geotechnical engineering recommendations for the proposed sewer project. Our scope of service included:

- *Review of the general geologic conditions and specific subsurface conditions of the project alignment.*

- *Evaluation of the engineering and geologic data collected.*

- *Preparation of this report with geotechnical conclusions and recommendations for design and construction.*

The tasks performed to achieve these objectives included:

- *Collection and review of new and existing data relative to the site.*

- *Subsurface exploration consisting of five (5) eight-inch diameter borings and two (2) seismic refraction survey lines to evaluate the nature and stratigraphy of the subsurface soil and to obtain representative samples for laboratory testing.*

- *Visual reconnaissance of the site and surrounding area to ascertain the presence of unstable or adverse geologic conditions.*

- *Laboratory testing of representative samples to evaluate the classification and engineering properties of the soil.*

- *Analysis of the data collected and the preparation of this report with geotechnical conclusions and recommendations.*

Evaluation of hazardous materials/waste was not within the scope of service provided.

PROJECT AND SITE DESCRIPTION

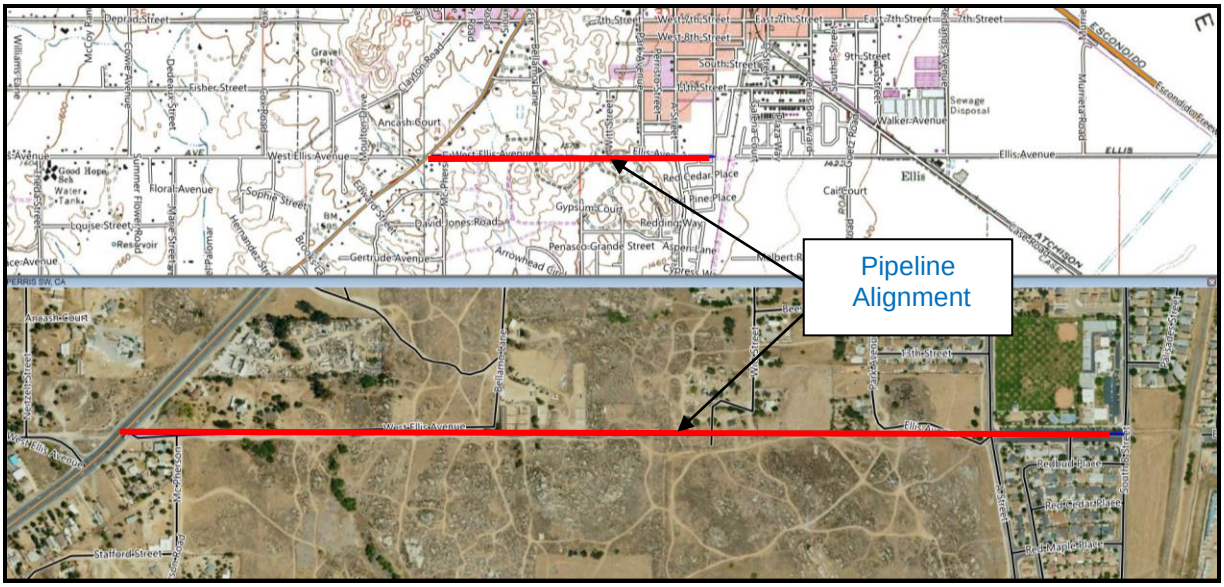
The project will consist of the design and construction of approximately 5,600 feet of 15-inch VCP sewer in Ellis Avenue from Highway 74 to B Street. Except for the east 700 feet, the proposed project alignment is unimproved and unpaved. The east 700 feet, between A Street and B Street, is paved with asphalt concrete.

The ground surface elevation along the project alignment varies significantly. The anticipated invert depth of the proposed sewer will range from approximately 10 to 40 feet below existing ground surface.

Approximately 1,350 feet of trenchless construction is proposed in the deeper portion of the alignment between Stations 25+00 and 38+50. Jack and bore installation with 24-inch steel casing is provided for the trenchless construction. The remainder of the project will be constructed using conventional excavation and backfill methods.

Figure 1 below shows the project location.

Figure 1: Site Location. USGS Topographic Map, Perris 7.5' Quadrangle and Aerial Photograph (2022)

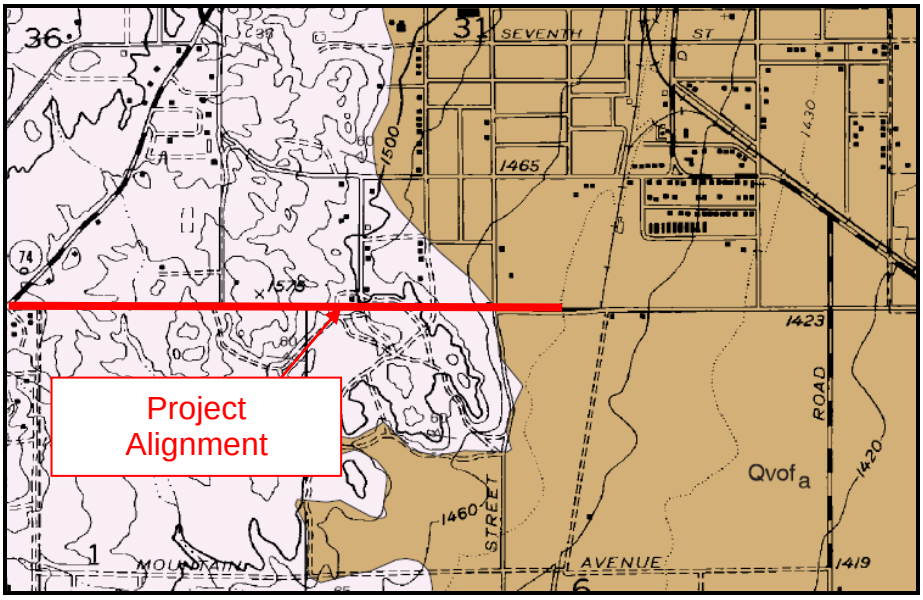


GEOLOGIC SETTING

According to the USGS Preliminary Geologic Map of the Perris 7.5' Quadrangle (Morton, 2003), most of project alignment is underlain by mapped surficial tonalite bedrock (map symbol Kvt). The easternmost portion of the alignment is mapped as underlain by older

alluvium (map symbol Qvof). Figure 2 below shows a portion of the referenced geologic map with the mapped geologic units in the vicinity of the project.

Figure 2: USGS Preliminary Geologic Map of the Perris 7.5' Quadrangle (Morton, 2003)



Kvt	**Tonalite** – Gray-weathering, relatively homogeneous, massive- to well-foliated, medium- to coarse-grained, hypautomorphic-granular biotite-hornblende tonalite: principal rock type of Val Verde pluton.
Qvof	**Very old alluvial-fan deposits (early Pleistocene)** – Mostly well-dissected, well-indurated, reddish-brown sand deposits. Commonly contains duripans and locally silcretes. Forms large area flanking Perris Valley and west side of San Jacinto River Vally. Typically flanks steep bedrock slopes.

SUBSURFACE CONDITIONS

Subsurface conditions encountered in the exploratory borings are summarized below. More detailed descriptions are shown on the boring logs in Appendix A.

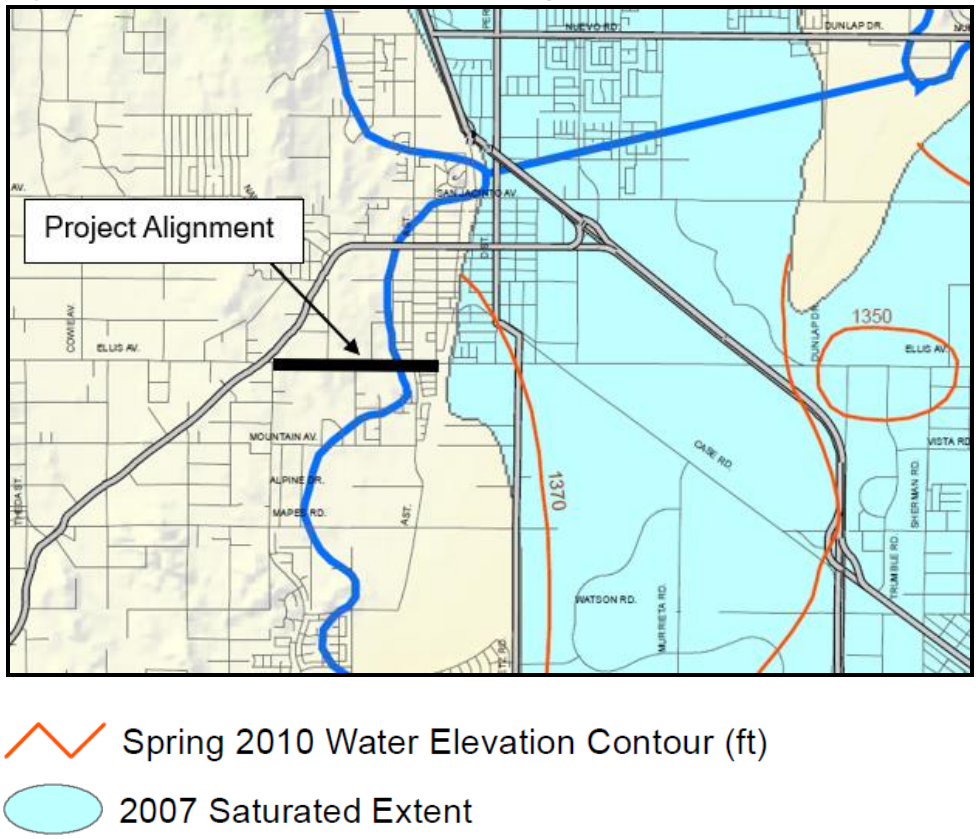
Soil Classification and Density: West of A Street, within the unimproved portion of Ellis Avenue, exploratory borings (B-01 through B-04) encountered granitic bedrock at depths of less than 1.0 foot to about 8.0 feet below ground surface. The mantle of soil above the bedrock consisted generally of loose to dense clayey sand (SC) and silty sand (SM). The granitic bedrock degrades as silty clayey sand (SC-SM), clayey sand (SC) and silty sand (SM) when excavated. Auger refusal in dense bedrock was encountered at a depths ranging from about 7 to 31 feet.

East of A Street, within the paved portion of Ellis Avenue, exploratory boring B-05 encountered alluvial soil consisting of stiff sandy clay (CL) and dense clayey sand (SC) to a depth of about 13.5 feet. The alluvial soil was underlain by dense granitic bedrock that degrades as silty sand (SM) when excavated.

Groundwater: No groundwater was encountered in the exploratory borings. The soil encountered was generally slightly moist to moist to the depths explored. The mottled soil encountered at a depth of about 6 feet in boring B-02 indicates that saturated soil conditions may existed previously at this depth.

Per the EMWD West San Jacinto Groundwater Basin Management Plan 2010 Annual Report (EMWD, 2011), the projct site lies outside of the limits of the mapped 2007 saturated extent of the groundwater basin. This corresponds to the presence of relatively shallow granitic bedrock in the area of the proposed pipeline, which is generally not considered water bearing. Areas of trapped groundwater or water in fissures or other features may be present along portions of the project alignment.

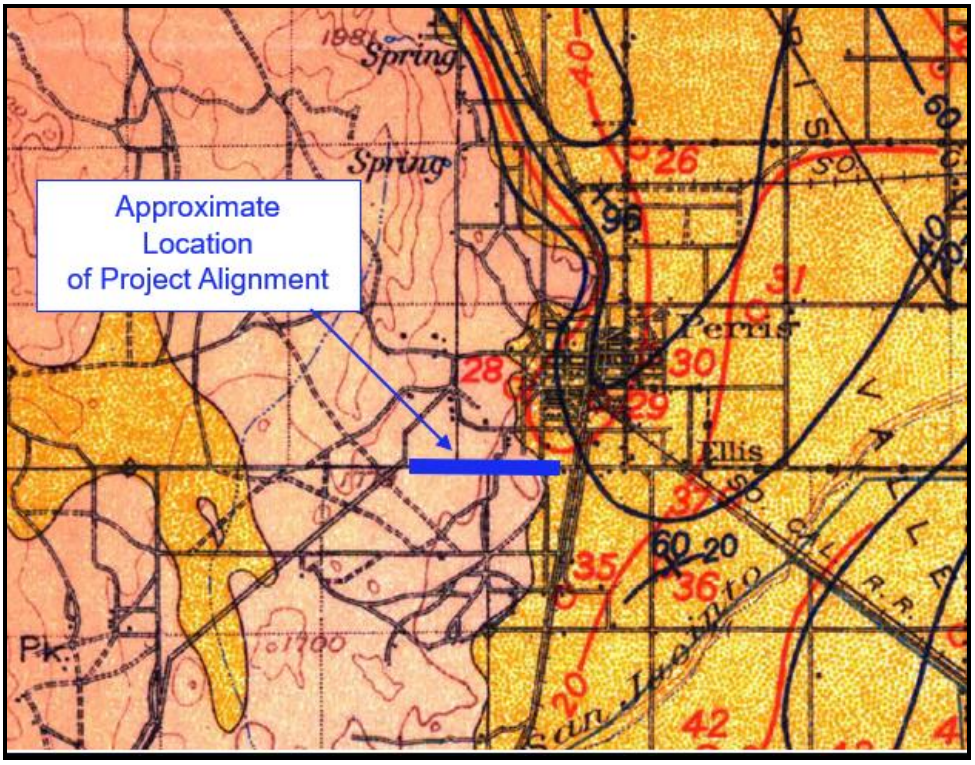
Figure 3: Groundwater Elevation Contour Map



According to the Western Municipal Water District and Watermaster support Services Cooperative Well Measuring Program Spring 2023 Report, State Well 04S03W33E001, located approximately 8,200 feet to the northeast of the project alignment, was monitored on March 8, 2023. At that time the depth to groundwater was 50.9 feet below the exiting ground surface. It is important to note that this well is located in the mapped saturated extent area of the groundwater basin.

A report entitled Ground Water in the Temecula and San Jacinto Basins, California (Waring, 1919) shows that most of the project alignment is underlain by igneous/ metamorphic rocks not considered water bearing. A 1915 groundwater depth contour of 40 feet is shown just to the east of the project alignment. This area is considered to be water-bearing.

Figure 4: Ground Water in the Temecula and San Jacinto Basins, California (Waring, 1919)



Excavation and Rippability: A seismic refraction survey was performed by Terra Geosciences to evaluate the subsurface excavation and rippability characteristics at two locations. Seismic line S-1 was located along the alignment from approximately Stations 27+60 to 29+10. Seismic line S-2 was located from approximately Stations 35+30 to 36+80. The approximate locations of the seismic refraction lines are shown on the attached site plan (Figure A-8).

The upper V1 layer at the seismic line locations yielded seismic velocities of 1,960 and 1,961 fps. The seismic refraction data indicates this material extends below ground

surface to depths of about 0 to 8 feet within the limts of seismic line S-1 and about 2 to 5 feet within the limits of seismic line S-2. This material correlates with the thin soil mantle encountered above bedrock in exploratory borings B-01 through B-04. This material should be readily excavated with conventional equipment.

The V2 layer yielded seismic velocities of 3,741 fps and 3,501 fps at seismic lines S-1 and S-2, respectively. It extends to depths ranging from about 11 to 28 feet below ground surface within the limits of seismic line S-1 and 17 to 27 feet within the limits of seismic line S-2. This material correlates with the weathered bedrock penetrated by the exploratory borings and is expected to be rippable with conventional excavation equipment. Difficult excavation should be expected locally and some breaking or blasting may be required.

The V3 layer yielded seismic velocities of 9,172 fps and 13980 fps at seismic lines S-1 and S-2, respectively. This material is present immediately below the V2 layer at depths of 11 to 28 feet at seismic line S-1 and 17 to 27 feet at seismic line S-2. Published correlation data from Caterpillar and Caltrans show that material with seismic velocity of this magnitude is non-rippable and blasting is normally required for excavation. Nearly all of the pipeline alignment within the limits of S-1 and S-2 will require boring or excavation within the V3 layer.

Corrosion: Analytical testing performed on representative soil samples from borings B-02 and B-04 indicates that sulfate concentrations are less than 0.10 percent. In accordance with ACI 201.2R, Table 6.1.4.1a, the soil can be classified as Class S0 with respect to sulfate exposure. ACI exposure classes for water-soluble sulfate in soil are shown in Table 1 below.

Table 1: ACI Exposure Classes for Water-Soluble Sulfate

Exposure Class	Water-soluble sulfate (SO_4^{2-}) in soil, % by mass
S0	$SO_4^{2-} < 0.10$
S1	$0.10 \leq SO_4^{2-} < 0.20$
S2	$0.20 \leq SO_4^{2-} < 2.00$
S3	$SO_4^{2-} > 0.20$

The tested chloride concentrations of 18 and 19 ppm generally are not at levels high enough to be of concern with respect to corrosion of ferrous metals or concrete reinforcing steel.

The soil is slightly alkaline with pH values of 7.8 and 8.7.

The tested minimum saturated resistivity values of 2,146 and 8,251 ohm-cm indicate the soil is moderately corrosive with respect to buried ferrous metal. Correlations between soil resistivity and ferrous metal corrosion are shown in the following Table 2.

Table 2: Correlation Between Soil Electrical Resistivity and Ferrous Metal Corrosion[1]

Soil Resistivity (ohm-cm)	Corrosivity Category
> 10,000	Mildly Corrosive
2,001 to 10,000	Moderately Corrosive
1,001 to 2,000	Corrosive
1 to 1,000	Severely Corrosive

[1]Romanoff, Melvin, Underground Corrosion, NBS Circular 579, Reprinted by NACE, 1989

IFE does not practice corrosion engineering. We recommend that a qualified corrosion engineer be consulted for additional guidance.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the field and laboratory exploration and testing, construction of the proposed West Ellis Sewer project is feasible from a geotechnical engineering standpoint. The primary issue is the presence of very hard granitic bedrock along portions of the alignment that will require blasting for open cut construction or specialized boring for trenchless construction.

All work should be performed in accordance with the specifications of Eastern Municipal Water District. The following sections present geotechnical recommendations for project design and construction.

Trenchless Construction: Trenchless construction for the proposed sewer pipe will require boring through very hard granitic bedrock. Groundwater was not encountered in the exploratory borings. The bedrock is reported to be non-water bearing. However, perched groundwater conditions within the planned excavation limits could occur seasonally during and after prolonged periods of precipitation. Prior to excavation of sending and receiving pits, the contractor should independently evaluate the depth of groundwater at the time of construction.

Excavation and Shoring: All trenches and other excavations should be configured and shored in accordance with Cal/OSHA requirements. Existing soil and weathered bedrock along the pipeline alignment that is readily excavated with conventional

excavation and trenching equipment should be classified as Type C, according to Cal/OSHA criteria. For Type C soil, unshored excavations should have a maximum slope of 1.5:1 (H:V) and should not exceed twenty feet in height.

Steeper slopes may be feasible for excavation into competent bedrock. Such determination should be made during excavation based on the conditions exposed. The contractor should have a "competent person" on-site for the purpose of assuring safety within and about all construction excavations.

Shoring, shields, or other protective systems should be used in accordance with all specifications, recommendations, and limitations provided by the manufacturer. Braced shoring should be designed using an at-rest earth pressure of 65 pounds per cubic foot. Cantilever shoring should be designed using an active earth pressure of 45 pounds per cubic foot. A registered professional engineer should design shoring or benching for excavations deeper than twenty feet.

Pipe trench should be excavated to the line and grade shown on the drawings. The pipe trench should provide at least 12 inches of clearance between the edge of the pipe and the wall of the trench. The sides of the trench should be parallel to the pipe and maintained a uniform distance from the pipe.

If excavation for the pipe extends below the design invert grade, the bottom of the excavation should be refilled with approved material. Where soft or otherwise unstable materials are encountered, the excavation should be deepened and stabilized with gravel or other approved bedding material. All excavations should be free of trash, debris, or other unsuitable material prior to the placement of backfill.

Pipe Bedding: The native soil along the project alignment is generally not suitable for use as pipe bedding. Pipe bedding material should comply with the pipe manufacturer's recommendations or EMWD Std. Dwg. SB-157, Pipe Zone Bedding for Sewer Pipe. A minimum bedding thickness of 6 inches should be placed to provide uniform and adequate longitudinal support under the pipe. The bedding material should not be compacted within 6 inches of the bottom of the pipe. Blocking should not be used to bring the pipe to grade. Bell holes at each joint should be provided to permit the joint to be assembled properly while maintaining uniform pipe support.

Backfill and Compaction: All excavation backfill and compaction should be in accordance with EMWD Std. Dwg. SB-158, Trench Backfill for Sewer Pipe, and the following recommendations.

Pipe Zone Backfill: Pipe zone backfill, extending from the top of pipe bedding to at least 12 inches over the top of pipe, should be free of organic matter and deleterious substances, contain no rocks larger than three (3) inches and no more than 15 percent rocks larger than two (2) inches. In general, the native alluvial soil and bedrock excavation spoils should be suitable for use as select backfill material.

Alternatively, imported pipe zone material can be used. Imported pipe zone backfill should consist of clean, cohesionless soil having a sand equivalent greater than 30 and fewer than 10% particles finer than the No. 200 Sieve. To provide protection from particle migration, imported pipe zone material should also meet the following criteria:

$$D_{15} > 0.15 \text{ and } D_{50} < 5 \text{ mm},$$

where D_{15} and D_{50} represent bedding material particle sizes corresponding to 15 and 50 percent passing by weight, respectively. Concrete sand conforming to the requirements of ASTM C 33 will meet the piping criteria for this project. If this criteria cannot be met, a filter fabric should be used.

Pipe zone material should be placed and compacted in a manner that will assure firm continuous encasement for the pipe. The minimum relative compaction within the pipe zone should be 90 percent unless otherwise specified.

Flooding or jetting of native pipe zone backfill is not recommended. Flooding or jetting and vibratory compaction may be carefully used with imported pipe zone material meeting the above requirements.

Trench Backfill: Trench backfill material over the pipe zone should be native or approved granular soil, free of organic and deleterious materials, rocks or lumps greater than 3 inches in greatest dimension and other unsuitable material. In general, the native soil is suitable for use as trench backfill. Trench backfill may be compacted at near optimum moisture content by mechanical means as necessary for the achievement of satisfactory compaction. Flooding or jetting is not recommended. Unless otherwise specified by the drawings, specifications or encroachment permits, the minimum acceptable degree of compaction should be 90 percent of the maximum dry density. This is with the exception of the upper 12 inches within roadway areas which should be compacted to a minimum of 95 percent relative compaction.

Backfill of Sending and Receiving Pits: Backfill material should be native or approved granular material which is free of organic and deleterious material, rocks or lumps greater than 3 inches in greatest dimension and other unsuitable material. Backfill may be compacted at near optimum moisture content by mechanical means as necessary

for the achievement of satisfactory compaction. Unless otherwise specified by the drawings, specifications or encroachment permits, the minimum acceptable degree of compaction should be 90 percent of the maximum dry density, with maximum 8-inch lifts.

Testing and Observation: During all grading and backfilling, tests and observations should be performed by a representative of IFE to verify that the exposed subsurface conditions are as expected and that grading is performed in accordance with the project specifications. Density testing should be performed in accordance with the current ASTM D1556 or ASTM D6938 test methods.

LIMITATIONS

This report was prepared for Eastern Municipal Water District (EMWD) for use in the design and construction of the proposed West Ellis Sewer project. This report may only be used by EMWD for this purpose. The use of this report by other parties or for other purposes is not authorized without written permission by Inland Foundation Engineering, Inc.

The recommendations of this report are considered to be preliminary. The final design parameters should be confirmed during site excavation and grading on the basis of actual conditions exposed. To this extent, this report is not considered to be complete until the completion of both the design process and site preparation.

The findings and recommendations of this report are based on interpolation of soil conditions between and beyond boring locations. Soil conditions may be present that are different than those indicated in this report.

The information in this report represents professional opinions that have been developed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, either expressed or implied, is made.

REFERENCES

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APPENDIX A – Site Exploration

APPENDIX A

SITE EXPLORATION

Five exploratory borings were drilled with a truck-mounted hollow-stem auger drill rig at the approximate locations shown on Figure A-8. The materials encountered during drilling were logged by a staff geologist. Boring logs are included with this report as Figures A-3 through A-7.

Representative soil samples were obtained within the borings by driving a thin-walled steel penetration sampler with successive 30-inch drops of a 140-pound hammer. The numbers of blows required to achieve each six inches of penetration were recorded on the boring logs. Two different samplers were used; a Standard Penetration Test (SPT) sampler and a modified California sampler with brass sample rings. Representative bulk soil samples were also obtained from the auger cuttings. Samples were placed in moisture sealed containers and transported to our laboratory for further testing and evaluation. Laboratory tests results are discussed and included in Appendix B.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487)

PRIMARY DIVISIONS			GROUP SYMBOLS		SECONDARY DIVISIONS
COARSE GRAINED SOILS – MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS – MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN) 5% FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS – MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN) 5% FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM		SILTY SANDS, SAND-SILT MIXTURES
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS – MORE THAN HALF OF MATERIALS IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS – LIQUID LIMIT IS LESS THAN 50		ML		INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS – LIQUID LIMIT IS GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
	HIGHLY ORGANIC SOILS		PT		PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS
TYPICAL FORMATIONAL MATERIALS	SANDSTONES		SS		
	SILTSTONES		SH		
	CLAYSTONES		CS		
	LIMESTONES		LS		
	SHALE		SL		

CONSISTENCY CRITERIA BASES ON FIELD TESTS

RELATIVE DENSITY – COARSE – GRAIN SOIL

RELATIVE DENSITY	SPT * (# BLOWS/FT)	RELATIVE DENSITY (%)
VERY LOOSE	<4	0-15
LOOSE	4-10	15-35
MEDIUM DENSE	10-30	35-65
DENSE	30-50	65-85
VERY DENSE	>50	85-100

CONSISTENCY – FINE-GRAIN SOIL

		TORVANE	POCKET ** PENETROMETER
CONSISTENCY	SPT* (# BLOWS/FT)	UNDRAINED SHEAR STRENGTH (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)
Very Soft	<2	<0.13	<0.25
Soft	2-4	0.13-0.25	0.25-0.5
Medium Stiff	4-8	0.25-0.5	0.5-1.0
Stiff	8-15	0.5-1.0	1.0-2.0
Very Stiff	15-30	1.0-2.0	2.0-4.0
Hard	>30	>2.0	>4.0

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 3/8 INCH I.D.) SPLIT BARREL SAMPLER (ASTM -1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ.FT. READ FROM POCKET PENETROMETER

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp but no visible water
WET	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbled or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

LOG OF BORING B-01

DRILLING RIG	**CME-75**	DATE DRILLED	**11/15/23**	HAMMER TYPE	**Auto-Trip**
DRILLING METHOD	**Rotary Auger**			HAMMER WEIGHT	**140-lb.**
LOGGED BY	**FWC**			HAMMER DROP	**30-inches**
GROUND ELEVATION	**+/- 1572 ft**			BORING DIAMETER	**8-inches**

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	U.S.C.S.	GRAPHIC LOG	BULK SAMPLE	DRIVE SAMPLE	SAMPLE TYPE	BLOW COUNTS /6"	MOISTURE (%)	DRY UNIT WT. (pcf)
	SC				AU			
					SS	40 50/3"	8	120
	SC-SM							
5								
					SS	50/2"		

CLAYEY SAND, fine to coarse, olive, slightly moist, loose.

GRANITE (TONALITE), highly to moderately weathered, olive (5Y 4/4), degrades as SILTY, CLAYEY SAND.

End of boring at 8 feet. Auger refusal. No groundwater encountered. Backfilled with native soil.

IFE Inland Foundation Engineering, Inc.

CLIENT	**Eastern Municipal Water District**
PROJECT NAME	**West Ellis Ave. Sewer Project**
PROJECT LOCATION	**Highway 74 to B Street** **Perris, CA**
PROJECT NUMBER	**E007-810**

FIGURE NO. A-3

LOG OF BORING B-02

DRILLING RIG	**CME-75**	DATE DRILLED	**11/15/23**	HAMMER TYPE	**Auto-Trip**
DRILLING METHOD	**Rotary Auger**			HAMMER WEIGHT	**140-lb.**
LOGGED BY	**FWC**			HAMMER DROP	**30-inches**
GROUND ELEVATION	**+/- 1544 ft**			BORING DIAMETER	**8-inches**

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	U.S.C.S.	GRAPHIC LOG	BULK SAMPLE	DRIVE SAMPLE	SAMPLE TYPE	BLOW COUNTS /6"	MOISTURE (%)	DRY UNIT WT. (pcf)
	SC				AU			
				☒	SS	36	22	105
					AU	50		
5								
				☒	SS	35	20	111
						50		
10								
				☒	SS	47	10	131
						55		
15								
	SC			⧗	SPT	39	8	
						50/5"		
20								
				⧗	SPT	39	10	
						50/4"		
25								
				☒	SS	50/5"	9	115
30								
					SPT	50/1"		

CLAYEY SAND, very fine to medium, olive (5Y 4/4), moist, dense.

GRANITE (TONALITE), severely to moderately weathered, light reddish-brown (5YR 6/4), degrades as CLAYEY SAND,

- mottled -

- olive (5Y 4/4) -

End of boring at 31.1 feet. Auger refusal. Mottling at 6 feet. No groundwater encountered. Backfilled with native soil.

Inland Foundation Engineering, Inc.

CLIENT	**Eastern Municipal Water District**
PROJECT NAME	**West Ellis Ave. Sewer Project**
PROJECT LOCATION	**Highway 74 to B Street**
	Perris, CA
PROJECT NUMBER	**E007-810**

FIGURE NO. A-4

IFE BORING - GINT STD US LAB.GDT - 12/21/23 11:39 - P:\E007\E007-810 ELLIS RD. SEWER PRELIM\GINT.GPJ

LOG OF BORING B-03

DRILLING RIG	**CME-75**	DATE DRILLED	**11/15/23**	HAMMER TYPE	**Auto-Trip**
DRILLING METHOD	**Rotary Auger**			HAMMER WEIGHT	**140-lb.**
LOGGED BY	**FWC**			HAMMER DROP	**30-inches**
GROUND ELEVATION	**+/- 1507 ft**			BORING DIAMETER	**8-inches**

DEPTH (ft)	U.S.C.S.	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	BULK SAMPLE	DRIVE SAMPLE	SAMPLE TYPE	BLOW COUNTS /6"	MOISTURE (%)	DRY UNIT WT. (pcf)
			This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.						
	SM		**SILTY SAND,** with trace gravel, fine to medium, brown, moist, loose.			AU			
			GRANITE (TONALITE), highly to moderately weathered, olive (5Y 4/4), degrades as SILTY SAND.		☒	SS	50/5"	6	111
	SM								
5									
					☒	SS	50/2"	5	
			End of boring at 7 feet. Auger refusal. No groundwater encountered. Backfilled with native soil.						

Inland Foundation Engineering, Inc.

CLIENT	**Eastern Municipal Water District**
PROJECT NAME	**West Ellis Ave. Sewer Project**
PROJECT LOCATION	**Highway 74 to B Street**
	Perris, CA
PROJECT NUMBER	**E007-810**

FIGURE NO. A-5

LOG OF BORING B-04

DRILLING RIG	CME-75	DATE DRILLED	11/15/23	HAMMER TYPE	Auto-Trip
DRILLING METHOD	Rotary Auger			HAMMER WEIGHT	140-lb.
LOGGED BY	FWC			HAMMER DROP	30-inches
GROUND ELEVATION	+/- 1484 ft			BORING DIAMETER	8-inches

DEPTH (ft)	U.S.C.S.	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	BULK SAMPLE	DRIVE SAMPLE	SAMPLE TYPE	BLOW COUNTS /6"	MOISTURE (%)	DRY UNIT WT. (pcf)
			This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.						
	SM		**SILTY SAND,** with trace clay, fine to medium, olive-gray (5Y 4/3), moist, medium dense, micaceous.			AU			
						SS	7 9	3	113
						AU			
5			**GRANITE (TONALITE),** highly to moderately weathered, olive-gray (5Y 4/2), degrades as SILTY SAND.			SS	35 50/5"	4	122
10	SM					SS	50/3"	2	
15			- dark greenish-gray (GLEY 4/1) -			SPT	50/2"	3	
			End of boring at 17 feet. Auger refusal. No groundwater encountered. Backfilled with native soil.						

Inland Foundation Engineering, Inc.

CLIENT	Eastern Municipal Water District
PROJECT NAME	West Ellis Ave. Sewer Project
PROJECT LOCATION	Highway 74 to B Street Perris, CA
PROJECT NUMBER	E007-810

FIGURE NO. A-6

LOG OF BORING B-05

DRILLING RIG	CME-75	DATE DRILLED	11/15/23	HAMMER TYPE	Auto-Trip
DRILLING METHOD	Rotary Auger			HAMMER WEIGHT	140-lb.
LOGGED BY	FWC			HAMMER DROP	30-inches
GROUND ELEVATION	+/- 1455 ft			BORING DIAMETER	8-inches

DEPTH (ft)	U.S.C.S.	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	BULK SAMPLE	DRIVE SAMPLE	SAMPLE TYPE	BLOW COUNTS /6"	MOISTURE (%)	DRY UNIT WT. (pcf)
			This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.						
			ASPHALT CONCRETE over AGGREGATE BASE, (3 inches over 3 inches)			AU			
	CL		**SANDY CLAY,** olive (5Y 4/3), moist, stiff.						
						SS	16 18	12	126
						AU			
5			**CLAYEY SAND,** fine to coarse, light olive-brown (2.5Y 5/3), moist, dense.						
	SC								
						SS	24 35	6	134
						AU			
10			**CLAYEY SAND,** very fine to fine, olive (5Y 4/4), moist, dense.						
	SC								
						SS	25 37	12	129
						AU			
15			**GRANITE (TONALITE),** highly to moderately weathered, gray (10YR 5/1), degrades as SILTY SAND.						
	SM					SS	50/5"	7	107
20									
						SS	50/2"	3	
			End of boring at 22.2 feet. No groundwater encountered. Backfilled with native soil.						

IFE Inland Foundation Engineering, Inc.

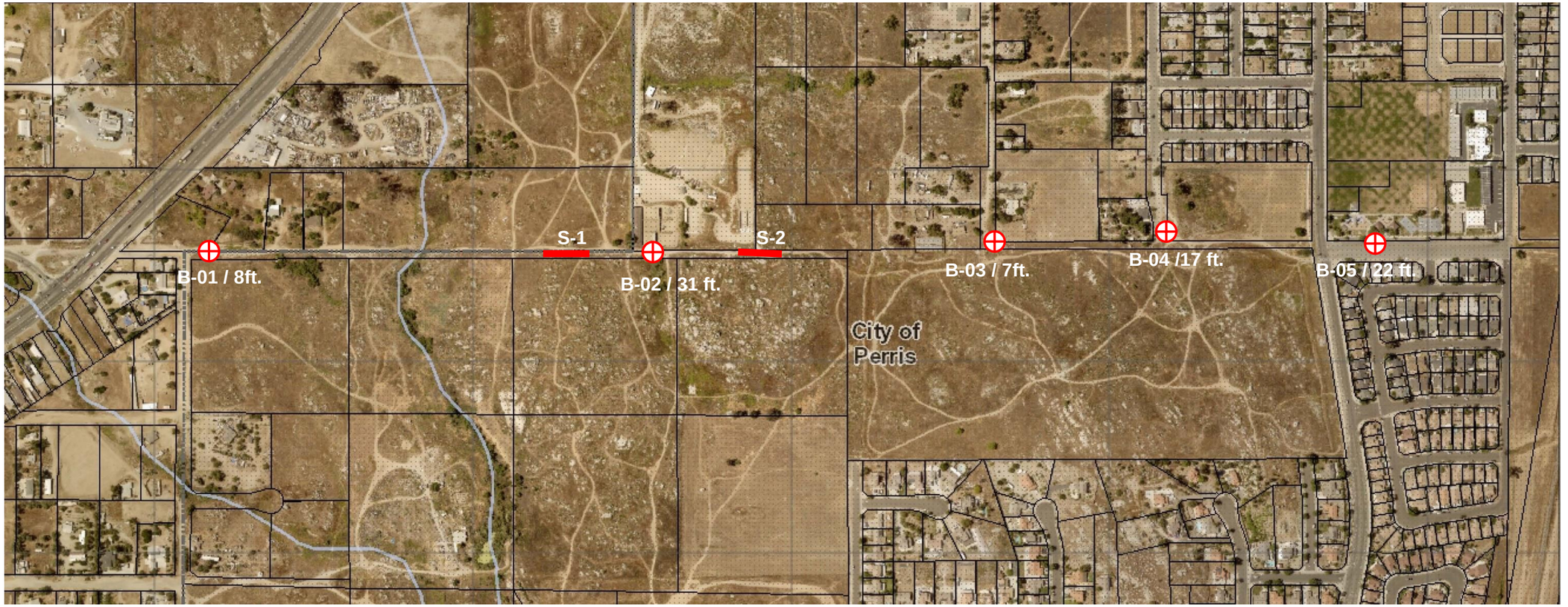
CLIENT	Eastern Municipal Water District
PROJECT NAME	West Ellis Ave. Sewer Project
PROJECT LOCATION	Highway 74 to B Street Perris, CA
PROJECT NUMBER	E007-810

FIGURE NO. A-7

SITE PLAN

West Ellis Avenue Sewer Line Project

Highway 74 to B Street, Perris, California



Base Map: Riverside County GIS

LEGEND

⊕ **Approximate Location of Exploratory Boring / Depth**

Approximate Location of Seismic Refraction Line

N

IFE Inland Foundation Engineering, Inc.
1310 S. Santa Fe Avenue, San Jacinto, CA 92583 | (951) 654-1555

Figure No. A-8	EMWD West Ellis Avenue Sewer Line Project Highway 74 to B Street Perris, California	
	Drawn By: ES	Project No. E007-810
	Not to Scale	Date: December 2023

APPENDIX B –
Laboratory Testing

APPENDIX B

LABORATORY TESTING

Representative soil samples obtained from the borings were selected for laboratory testing. Descriptions of the tests performed are provided below.

Unit Weight and Moisture Content: Ring samples were weighed and measured to evaluate their unit weight. A small portion of each sample was then tested for moisture content. The testing was performed per ASTM D2937 and D2216. The results of this testing are shown on the boring logs (Figures A-3 through A-7).

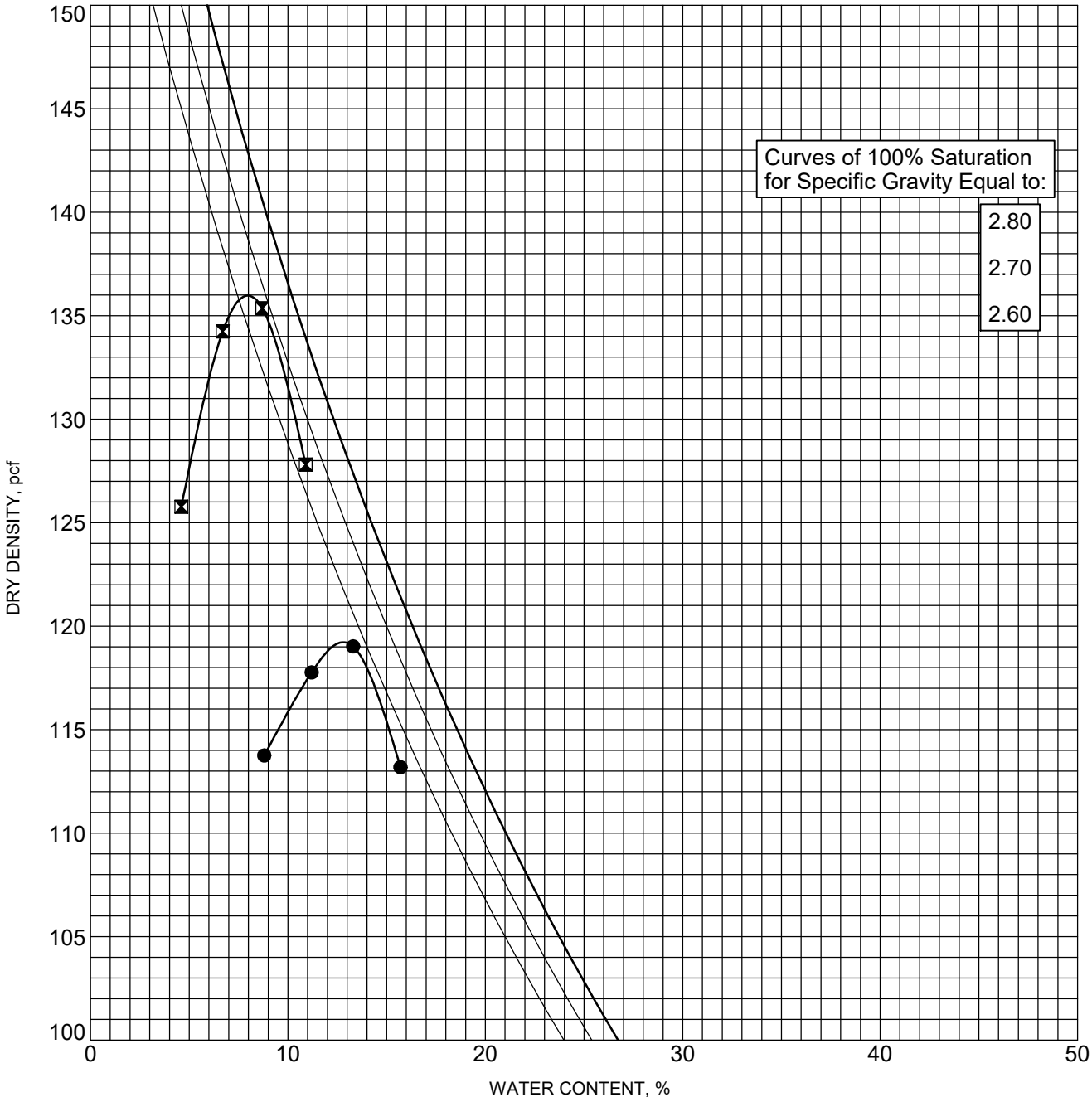
Maximum Density-Optimum Moisture: Two soil samples were selected for maximum density testing in accordance with ASTM D1557. The maximum density is compared to the in-situ density of the soil to evaluate its relative compaction. The results of this testing are shown on Figure B-2

Sieve Analysis: Seven soil samples were selected for sieve analysis testing in accordance with ASTM D6913. These tests provide information for classifying the soil in accordance with the Unified Classification System. The results of this testing are shown on Figure Nos. B-3 and B-4.

Plastic Index: Five samples were selected for plastic index testing in accordance with ASTM D4318. This test provides information regarding soil plasticity and is also used for classifying the soil in accordance with the Unified Classification System. The results are shown on Figure Nos. B-3 and B-4.

Direct Shear Strength: Two samples were selected and transported to AP Engineering and Testing in Pomona, California for direct shear strength testing in accordance with ASTM D3080. This testing measures the shear strength of the soil under various normal pressures and is used to develop parameters for foundation bearing capacity and lateral earth pressure. Test results are shown on Figure Nos. B-5 and B-6.

Analytical Testing: Two samples were selected and transported to AP Engineering and Testing in Pomona, California to evaluate the concentration of soluble sulfates and chlorides, pH level, and resistivity of and within the on-site soils. The test results are shown on Figure No. B-7.



	BOREHOLE	DEPTH	Description of Materials	Max DD	Optimum WC
●	**B-02**	**2.4**	**CLAYEY SAND (SC)**	**119.2 PCF**	**12.9 %**
⊠	**B-05**	**4.0**	**CLAYEY SAND (SC)**	**136.0 PCF**	**8.0 %**

MOISTURE-DENSITY CURVES (ASTM D1557)

INLAND FOUNDATION ENGINEERING, INC.

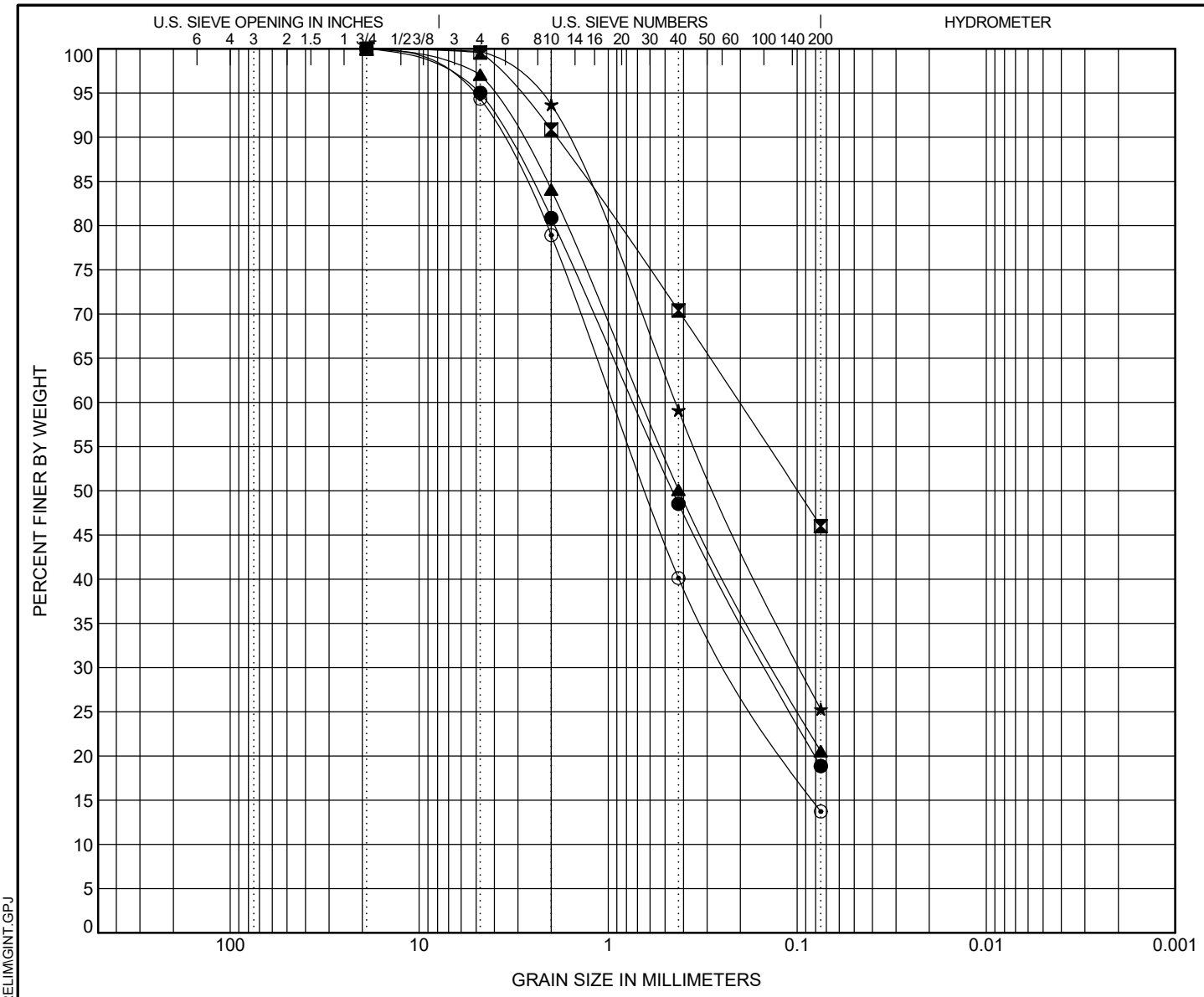
FIGURE NO. B-2

CLIENT Eastern Municipal Water District

PROJECT NAME West Ellis Ave. Sewer Project

PROJECT NUMBER E007-810

PROJECT LOCATION Highway 74 to B Street
Perris, CA



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	SAMPLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-01	0.6	SILTY, CLAYEY SAND (SC-SM)	26	20	6		
⊠	B-02	2.4	CLAYEY SAND (SC)	44	26	18		
▲	B-03	0.8	SILTY SAND (SM)	22	20	2		
★	B-04	0.0	SILTY SAND (SM)	NP	NP	NP		
⊙	B-04	4.0	SILTY SAND (SM)					

	BOREHOLE	DEPTH	D100	D90	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	B-01	0.6	19	3.496	0.456		5.0	76.2	18.9	
⊠	B-02	2.4	19	1.874	0.1		0.4	53.6	46.0	
▲	B-03	0.8	19	2.966	0.422		2.9	76.5	20.5	
★	B-04	0.0	19	1.696	0.266		0.3	74.4	25.3	
⊙	B-04	4.0	19	3.724	0.63		5.7	80.6	13.7	

GRADATION CURVES (ASTM D6913, ASTM D4318)

INLAND FOUNDATION ENGINEERING, INC.

FIGURE NO. B-3

CLIENT Eastern Municipal Water District

PROJECT NAME West Ellis Ave. Sewer Project

PROJECT NUMBER E007-810

PROJECT LOCATION Highway 74 to B Street
Perris, CA

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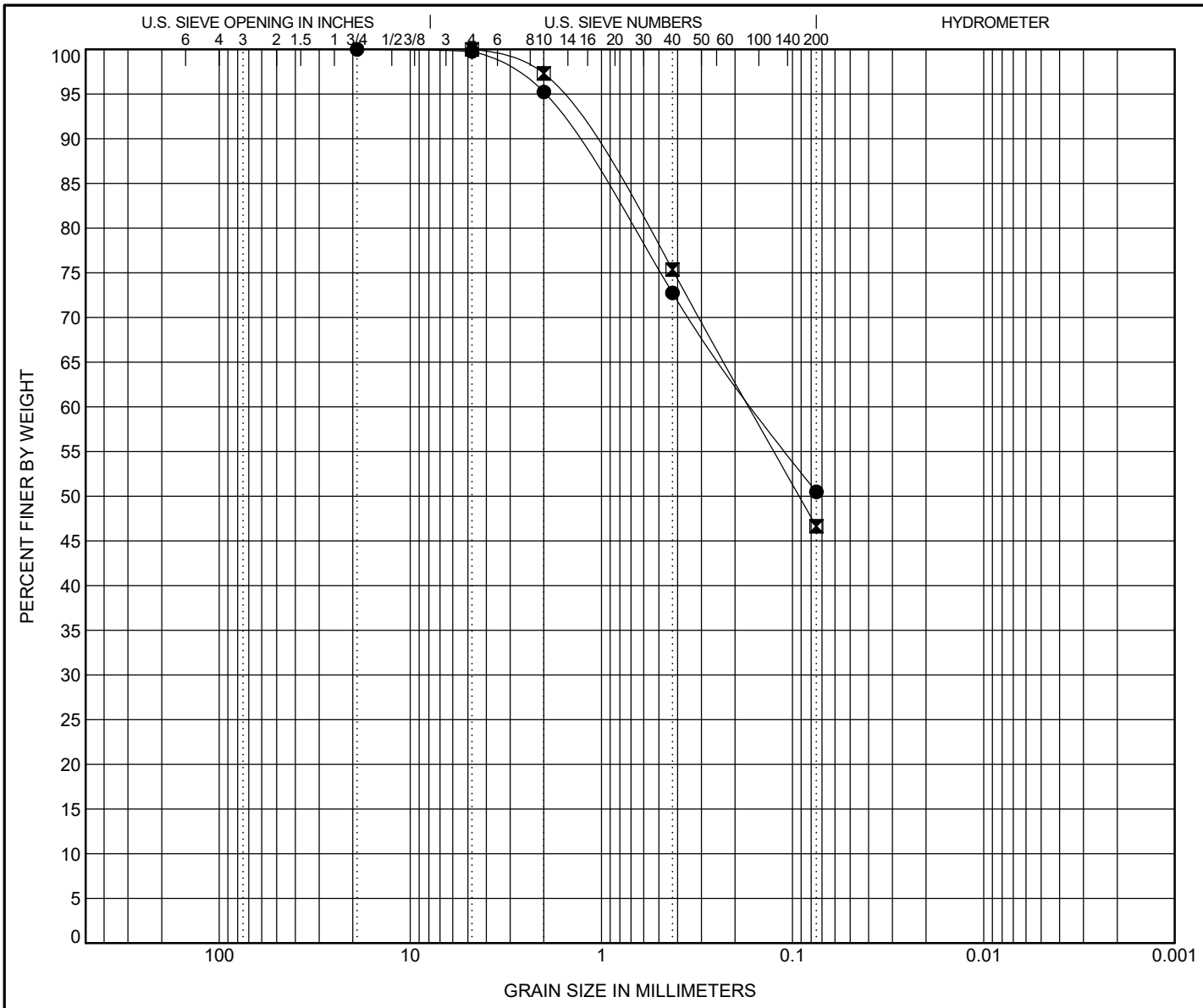


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

SAMPLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-05	0.5	SANDY LEAN CLAY (CL)	29	18	11		
⊠ B-05	9.0	CLAYEY SAND (SC)					

BOREHOLE	DEPTH	D100	D90	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-05	0.5	19	1.395			0.2	49.3	50.5	
⊠ B-05	9.0	4.75	1.194	0.092		0.0	53.4	46.6	

GRADATION CURVES (ASTM D6913, ASTM D4318)

INLAND FOUNDATION ENGINEERING, INC.

FIGURE NO. B-4

CLIENT Eastern Municipal Water District

PROJECT NAME West Ellis Ave. Sewer Project

PROJECT NUMBER E007-810

PROJECT LOCATION Highway 74 to B Street
Perris, CA

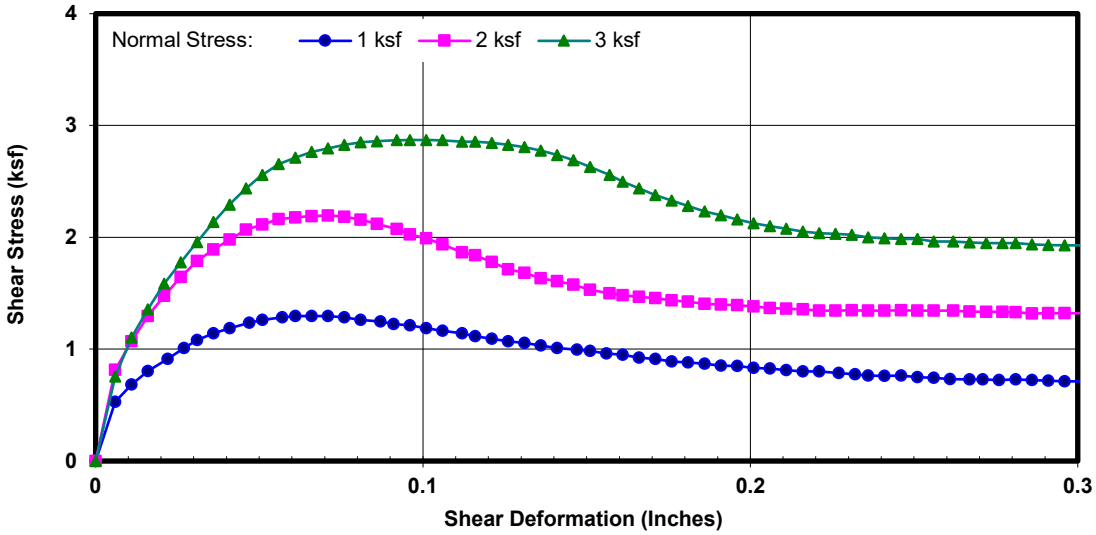
IFE SIEVE ANALYSIS - GINT STD US LAB.GDT - 12/20/23 14:52 - P:\E007\E007-810 ELLIS RD. SEWER PRELIM\GINT.GPJ

AP Engineering and Testing, Inc.
DBE|MBE|SBE
2607 Pomona Boulevard | Pomona, CA 91768
t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	EMWD - Ellis Ave. Sewer		**Tested By:**	ST	**Date:** 12/14/23
Project No.:	E007-810		**Computed By:**	NR	**Date:** 12/19/23
Boring No.:	B-2		**Checked by:**	AP	**Date:** 12/19/23
Sample No.:	-	**Depth (ft):** 6.5-7.25			
Sample Type:	Mod. Cal.				
Soil Description:	Sandy Clay				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
122.7	104.2	17.8	22.6	78	99	1	1.296	0.712
						2	2.194	1.320
						3	2.868	1.927



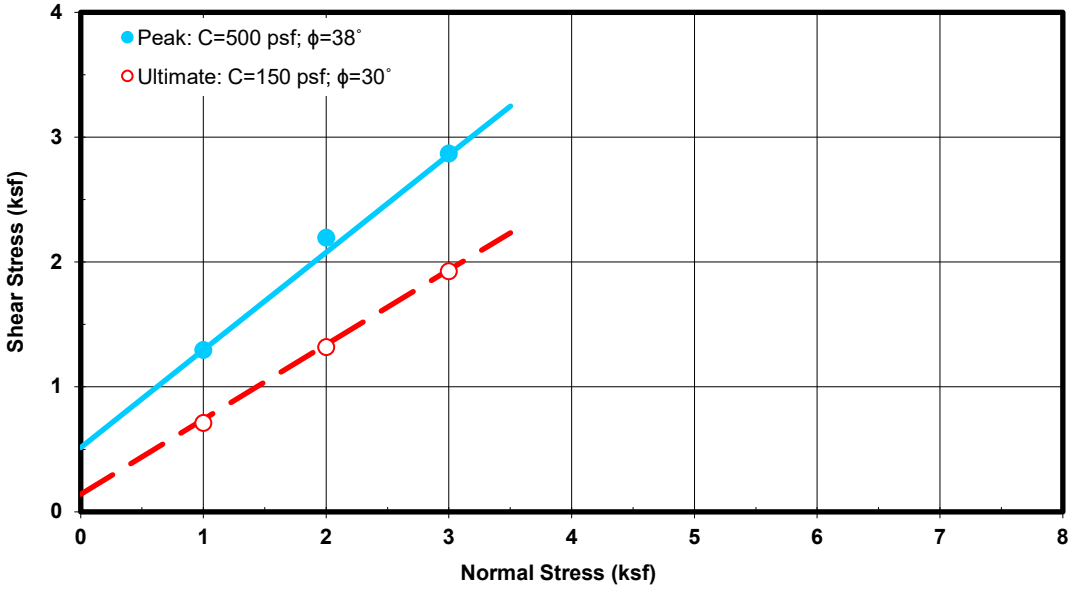


Figure No. B-5

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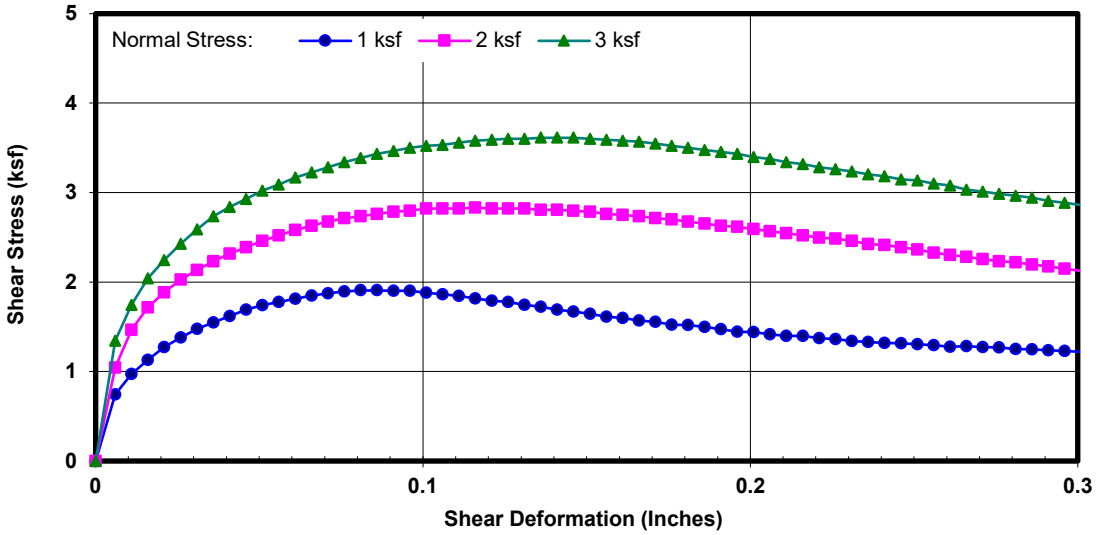
2607 Pomona Boulevard | Pomona, CA 91768
t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	EMWD - Ellis Ave. Sewer		**Tested By:**	ST	**Date:** 12/14/23
Project No.:	E007-810		**Computed By:**	NR	**Date:** 12/19/23
Boring No.:	B-5		**Checked by:**	AP	**Date:** 12/19/23
Sample No.:	-	**Depth (ft):** 7.5-8.5			
Sample Type:	Mod. Cal.				
Soil Description:	Lean Clay				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
140.5	127.1	10.5	12.1	87	100	1	1.908	1.220
						2	2.832	2.124
						3	3.614	2.861



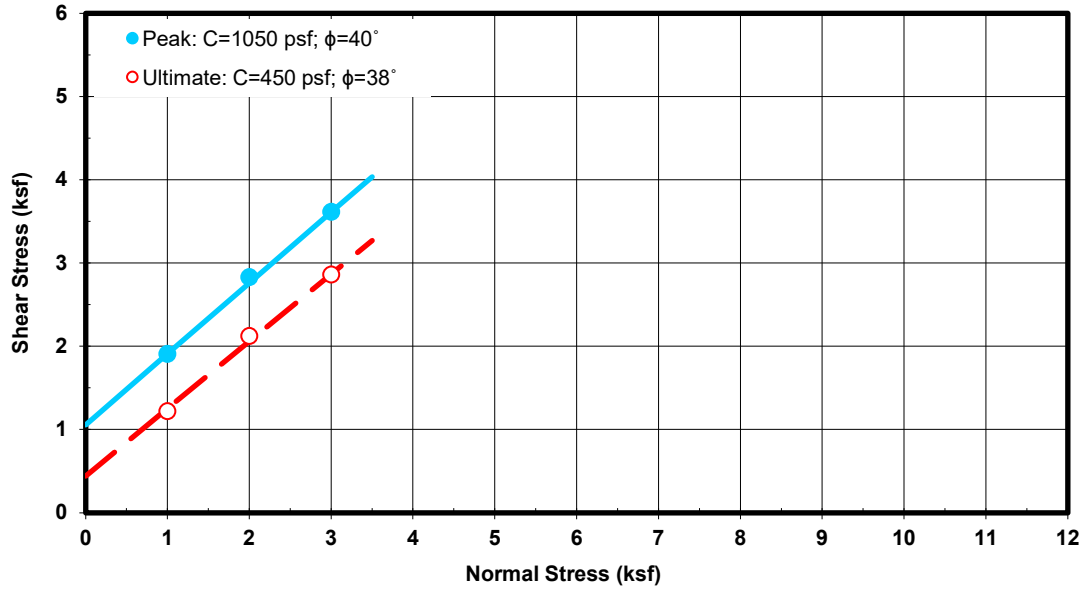


Figure No. B-6

AP Engineering and Testing, Inc.
DBE|MBE|SBE
2607 Pomona Boulevard | Pomona, CA 91768
t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

CORROSION TEST RESULTS

Client Name: Inland Foundation Engineering
Project Name: EMWD - Ellis Ave. Sewer
Project No.: E007-810

AP Job No.: 23-1225
Date: 12/13/23

Boring No.	Sample No.	Depth (feet)	Soil Description	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
B-2	-	2.4-31.1	Silty Sand w/gravel & trace clay	2,146	8.7	27	19
B-4	-	4-17	Silty Sand w/gravel	8,251	7.8	19	18

NOTES: Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested

Figure No, B-7

APPENDIX C –
Seismic Refraction Survey

TERRA GEOSCIENCES

SEISMIC REFRACTION SURVEY

EMWD WEST ELLIS AVENUE PIPELINE PROJECT

PERRIS, RIVERSIDE COUNTY,CALIFORNIA

Project No. 234005-1

November 20, 2023

Prepared for:

Inland Foundation Engineering, Inc.
1310 South Santa Fe Avenue
San Jacinto, CA 92583

Consulting Engineering Geology & Geophysics

P.O. Box 1090, Loma Linda, CA 92354 • 909 796-4667

Inland Foundation Engineering, Inc.
1310 South Santa Fe Avenue
San Jacinto, CA 92583

November 20, 2023
Project No. 234005-1

Attention: Mr. Allen Evans, P.E., G.E., Principal

Regarding: Seismic Refraction Survey
EMWD West Ellis Avenue Pipeline Project
Perris, Riverside County, California
IFE Project No. E007-810

EXECUTIVE SUMMARY

As requested, this firm has performed a geophysical survey using the seismic refraction method for the above-referenced site. The purpose of this investigation was to assess the general seismic velocity characteristics of the underlying earth materials and to evaluate whether high velocity granitic bedrock (non-rippable) may be present. Additionally, the structure and seismic velocity distribution of the subsurface earth materials was also assessed. This report will describe in further detail the procedures used and the results of our findings, along with presentation of representative seismic models for the survey traverses.

For this study, as selected by your office, two survey traverses (Seismic Lines S-1 and S-2) were performed along the proposed pipeline alignment. These traverses are located approximately 1,700 to 2,500± feet east of Highway 74 along an existing dirt road (Ellis Avenue). These traverses were located in the field by use of Google™ Earth imagery (2023) and GPS coordinates. The approximate locations of our seismic traverses are presented on the Seismic Line Location Map, Plate 1, which is a partially modified copy of the Riverside County GIS Map. The traverses are also shown on a captured Google™ Earth (2023) image and appears as the Google™ Earth Imagery Map, Plate 2, which provides a more detailed view of the local survey area.

This opportunity to be of service is sincerely appreciated. If you should have questions regarding this report or do not understand the limitations of this study or the data and results that are presented, please do not hesitate to contact our office.

Respectfully submitted,
TERRA GEOSCIENCES

Donn C. Schwartzkopf
Principal Geophysicist
PGP 1002

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INTRODUCTION

The subject survey area is located approximately 1,700 to 2,500± feet east of Highway 74, along Ellis Avenue, which is a relatively unmaintained and undulating dirt road, within the City of Perris, Riverside County, California. Topographically, the site is situated along gently low-lying rolling hills, with an abundance of scattered large rock outcrops.

Locally, as shown on Figure 1 below, surficial geologic mapping by Morton (2003) indicates the locally survey area to be underlain by a gray-weathering, relatively homogeneous, massive to well-foliated, medium- to coarse-grained, hypautomorphic-granular biotite-hornblende tonalite (map symbol Kvt). These rocks are locally referred to as the Val Verde Tonalite which formed during the emplacement of the Cretaceous age Peninsular Ranges Batholith and are associated with the Val Verde Pluton (Morton and Cox, 2014). The main structural fabric is generally dominant along a northwest-southeast orientation that parallels the regional structural grain of the batholith and dips moderate to steeply to the northeast.

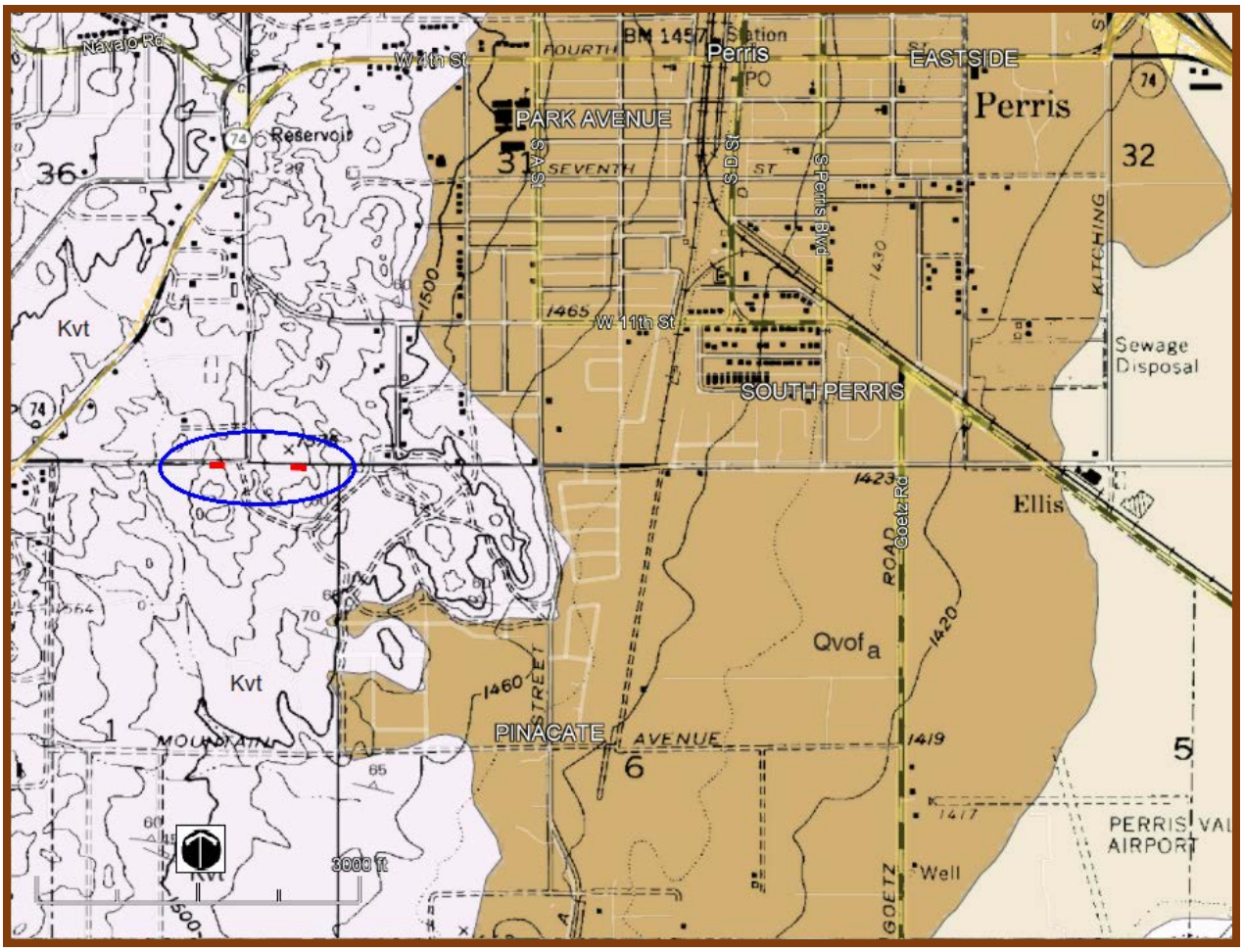


FIGURE 1- Geologic Map (Morton, 2003); seismic lines shown as red lines (circled in blue).

SEISMIC REFRACTION SURVEY

Methodology

The seismic refraction method consists of measuring (at known points along the surface of the ground) the travel times of compressional waves generated by an impulsive energy source and can be used to estimate the layering, structure, and seismic acoustic velocities of subsurface horizons. Seismic waves travel down and through the soils and rocks, and when the wave encounters a contact between two earth materials having different velocities, some of the wave's energy travels along the contact at the velocity of the lower layer. The fundamental assumption is that each successively deeper layer has a velocity greater than the layer immediately above it. As the wave travels along the contact, some of the wave's energy is refracted toward the surface where it is detected by a series of motion-sensitive transducers (geophones). The arrival time of the seismic wave at the geophone locations can be related to the relative seismic velocities of the subsurface layers in feet per second (fps), which can then be used to aid in interpreting both the depth and type of materials encountered.

Field Procedures

Two seismic refraction survey lines (Seismic Lines S-1 and S-2) have been performed along a dirt road dedicated as Ellis Avenue, as selected by you. The traverses were located in the field by use of Google™ Earth Imagery (2023) and GPS coordinates, and have been delineated on the Seismic Line Location Map and the Google™ Earth Imagery Map, as presented on Plates 1 and 2, respectively.

The survey traverses were each 150 feet in length, which consisted of a total of twenty-four 14-Hertz geophones, spaced at regular six-foot intervals, in order to detect both the direct and refracted waves. A 16-pound sledge-hammer was used as the energy source to produce the seismic waves. Multiple hammer impacts were utilized at each shot point in order to increase the signal to noise ratio, which enhanced the primary seismic “P”-waves.

The seismic wave arrivals were digitally recorded in SEG-2 format on a Geometrics Geode model signal enhancement refraction seismograph. Seven shot points were utilized along each spread using forward, reverse, and several intermediate locations in order to obtain high resolution survey data for velocity analysis and depth modeling purposes. The data was acquired using a sampling rate of 0.0625 milliseconds having a record length of 0.064 seconds. No acquisition filters were used during data collection. During acquisition, the seismograph displays the seismic wave arrivals on the computer screen which were used to analyze the arrival time of the primary seismic “P”-waves at each geophone station, in the form of a wiggle trace for quality control purposes in the field. If spurious “noise” was observed, the shot location was resampled during relatively quieter periods. Each geophone and seismic shot location were surveyed using a hand level and ruler for topographic correction, with “0” being the lowest point along each survey line.

Data Processing

The recorded seismic data was subsequently transferred to our office computer for processing and analysis purposes, using the computer programs **SIPwin** (**S**eismic Refraction **I**nterpretation **P**rogram for **Win**dows) developed by Rimrock Geophysics, Inc. (2004), **Refractor** developed by Geogiga Technology Corporation (2001-2023), and **Rayfract™** developed by Intelligent Resources, Inc. (1991-2023). These computer programs perform their individual analyses using exactly the same input data, which includes the first-arrival times of the "P"-waves and the survey line geometry.

- **SIPwin** is a ray-trace modeling program that evaluates the subsurface using layer assignments based on time-distance curves and is better suited for layered media, using the "Seismic Refraction Modeling by Computer" method (Scott, 1973). The first step in the modeling procedure is to compute layer velocities by least-squares techniques. Then the program uses the delay-time method to estimate depths to the top of layer-2. A forward modeling routine traces rays from the shot points to each geophone that received a first-arrival ray refracted along the top of layer-2. The travel time of each such ray is compared with the travel time recorded in the field by the seismic system. The program then adjusts the layer-2 depths so as to minimize discrepancies between the computed ray-trace travel times and the first arrival times picked from the seismic waveform record. The process of ray tracing and model adjustment is repeated a total of six times to improve the accuracy of depths to the top of layer-2. This first-arrival picks were then used to generate the Layer Velocity Models using the **SIPwin** computer program, which presents the subsurface velocities as individual layers and are presented within Appendix A for reference. In addition, the associated Time-Distance Plots, which show the individual data picks of the first "P-wave" arrival times, also appear in Appendix A.

- **Refractor** is seismic refraction software that also evaluates the subsurface using layer assignments utilizing interactive and interchangeable analytical methods that include the Delay-Time method, the Plus-Minus method, and the Generalized Reciprocal Method (GRM). These methods are used for defining irregular non-planar refractors and are briefly described below.

    - The Delay-Time method will measure the delay time depth to a refractor beneath each geophone rather than at shot points. Delay-time is the time spent by a wave to travel up or down through the layer (slant path) compared to the time the wave would spend if traveling along the projection of the slant path on the refractor.

    - The Plus-Minus time analysis method includes a Plus-time analysis for depth analysis and a Minus-time analysis for velocity determination. The basis of the Plus-Minus time analysis method lies in the traveltime reciprocity, i.e., the traveltime of a seismic wave from source to receiver is equal to the traveltime in the opposite direction if source and receiver are interchanged. It can be

used to calculate the depth and velocity variations of an undulating layer boundary for slope angles less than ~10°.

- The GRM method is a technique for delineating undulating refractors at any depth from in-line seismic refraction data consisting of forward and reverse travel-times and is capable of resolving dips of up to 20% and does not over-smooth or average the subsurface refracting layers. In addition, the technique provides an approach for recognizing and compensating for hidden layer conditions.

- **Rayfract™** is seismic refraction tomography software that model's subsurface refraction, transmission, and diffraction of acoustic waves which generally indicates the relative structure and velocity distribution of the subsurface using first break energy propagation modeling. An initial 1D gradient model is created using the DeltatV method (Gebrande and Miller, 1985) which gives a good initial fit between modeled and picked first breaks. The DeltatV method is a turning-ray inversion method which delivers continuous depth vs. velocity profiles for all profile stations. These profiles consist of horizontal inline offset, depth, and velocity triples. The method handles real-life geological conditions such as velocity gradients, linear increasing of velocity with depth, velocity inversions, pinched-out layers and outcrops, and faults and local velocity anomalies. This initial model is then refined automatically with a true 2D WET (Wavepath Eikonal Traveltime) tomographic inversion (Schuster and Quintus-Bosz, 1993).

WET tomography models multiple signal propagation paths contributing to one first break, whereas conventional ray tracing tomography is limited to the modeling of just one ray per first break. This computer program performs the analysis by using the same first-arrival P-wave times and survey line geometry that were generated during the initial layer velocity model analyses. The associated refraction tomographic models display the subsurface earth material velocity structure, which is represented by the velocity contours (isolines displayed in feet/second), supplemented with the color-coded velocity shading for visual reference, and are presented within Appendix B. The colors representing the velocity gradients have been standardized on both of the models for comparative purposes.

The combined use of these seismic refraction computer programs provided a more thorough and comprehensive analysis of the subsurface structure and velocity characteristics. Each computer program has a specific purpose based on the objective of the analysis being performed. **SIPwin** and **Refractor** were primarily used for detecting generalized subsurface velocity layers providing "weighted average velocities." The processed seismic data of these two programs were compared and averaged to provide a final composite layer velocity model which provided a more thorough representation of the subsurface (see Appendix A). **Rayfract™** provided tomographic velocity and structural imaging that is very conducive to detecting strong lateral velocity characteristics such as imaging corestones, dikes, and other subsurface structural characteristics (see Appendix B).

SUMMARY OF GEOPHYSICAL INTERPRETATION

It is important to consider that the seismic velocities obtained within bedrock materials are influenced by the nature and character of the localized major structural discontinuities (foliation, fracturing, relic bedding, etc.), creating anisotropic conditions. Anisotropy (direction-dependent properties of materials) can be caused by "micro-cracks," jointing, foliation, layered or inter-bedded rocks with unequal layer stiffness, small-scale lithologic changes, etc. (Barton, 2007). Velocity anisotropy complicates interpretation and it should be noted that the seismic velocities obtained during this survey may have been influenced by the nature and character of any localized structural discontinuities within the bedrock underlying the subject site.

Generally, it is expected that higher (truer) velocities will be obtained when the seismic waves propagate along direction (strike) of the dominant structure, with a damping effect when the seismic waves travel in a perpendicular direction. Such variable directions can result in velocity differentials of between 2% to 40% depending upon the degree of the structural fabric (i.e., weakly-moderately-strongly foliated, respectively).

The first computer analytical method described below that was used for data analysis is the traditional layer method (**SIPwin** and **Refractor**). Using this method, it should be understood that the data obtained represents an average of seismic velocities within any given layer. For example, high seismic velocity boulders, dikes, or other local lithologic inconsistencies, may be isolated within a low velocity matrix, thus yielding an average medium velocity for that layer. Therefore, in any given layer, a range of velocities could be anticipated, which can also result in a wide range of excavation characteristics.

In general, the site where locally surveyed, was noted to be characterized by three major subsurface layers (Layers V1, V2, and V3) with respect to seismic velocities. The following velocity layer summaries have been prepared with respect to the **SIPwin** and **Refractor** analysis, with the representative Layer Velocity Models being presented within Appendix A, along with the respective Time-Distance Plots for reference.

- ***Velocity Layer V1***: This uppermost velocity layer (V1) is most likely comprised of colluvium, topsoil, and/or completely-weathered and fractured bedrock materials. This layer has an average weighted velocity of 1,960 and 1,961 fps, which is typical for these types of unconsolidated surficial earth materials.

- ***Velocity Layer V2***: The second layer (V2) yielded a seismic velocity range of 3,501 to 3,741 fps, which is generally typical for highly-weathered granitic bedrock materials. This velocity range may indicate the presence of homogeneous weathered bedrock with a relatively wide spaced joint/fracture system and/or the possibility of buried relatively-fresher boulders within a very highly-weathered bedrock matrix.

- ***Velocity Layer V3:*** The third layer (V3) indicates the presence of slightly-weathered bedrock, having seismic velocities of 9,172 to 13,980 fps, becoming fresh at depth. These higher velocities signify the decreasing effect of weathering as a function of depth and could indicate the presence of abundant widely-scattered buried fresh large crystalline boulders in highly- to moderately-weathered matrix, or possibly a slightly-weathered crystalline bedrock matrix, that has a wide-spaced fracture system.

Table 1 below summarizes the results of the survey lines with respect to the "weighted average" seismic velocities for each layer, as discussed above.

TABLE 1- VELOCITY SUMMARY OF SEISMIC SURVEY LINES

Seismic Line	V1 Layer (fps)	V2 Layer (fps)	V3 Layer (fps)
S-1	**1,960**	**3,741**	**9,172**
S-2	**1,961**	**3,501**	**13,980**

Using **Rayfract™**, tomographic refraction models were also prepared for comparative purposes. The tomographic method better illustrates the general structure and velocity distribution of the subsurface, using velocity contour isolines, as presented within Appendix B. The refraction tomographic models show the entire subsurface depth that was imaged based on the ray sampling coverage of the subsurface seismic waves that were acquired during the processing. Although no discrete velocity layers or boundaries are created such as in the layer models, these models generally resemble the corresponding overall average layer velocities as presented within Appendix A.

In general, the seismic velocity of the bedrock gradually increases with depth, with observable lateral velocity differentials suggesting the local presence of weathering differentials, buried corestones, and/or local dike structures.

GENERALIZED RIPPABILITY CHARACTERISTICS OF BEDROCK

The rippability performance chart prepared by Caterpillar, Inc. (2022) has been provided as Figure 2 below only for reference, based on a D9R/D9T dozer. This chart has been prepared for conventional bulldozer equipment and cannot be directly correlated with trenching equipment such as most-likely to be used for the subject pipeline project. Currently, there are no published performance charts available that compare rippability potentials versus seismic velocity for excavator-type equipment.

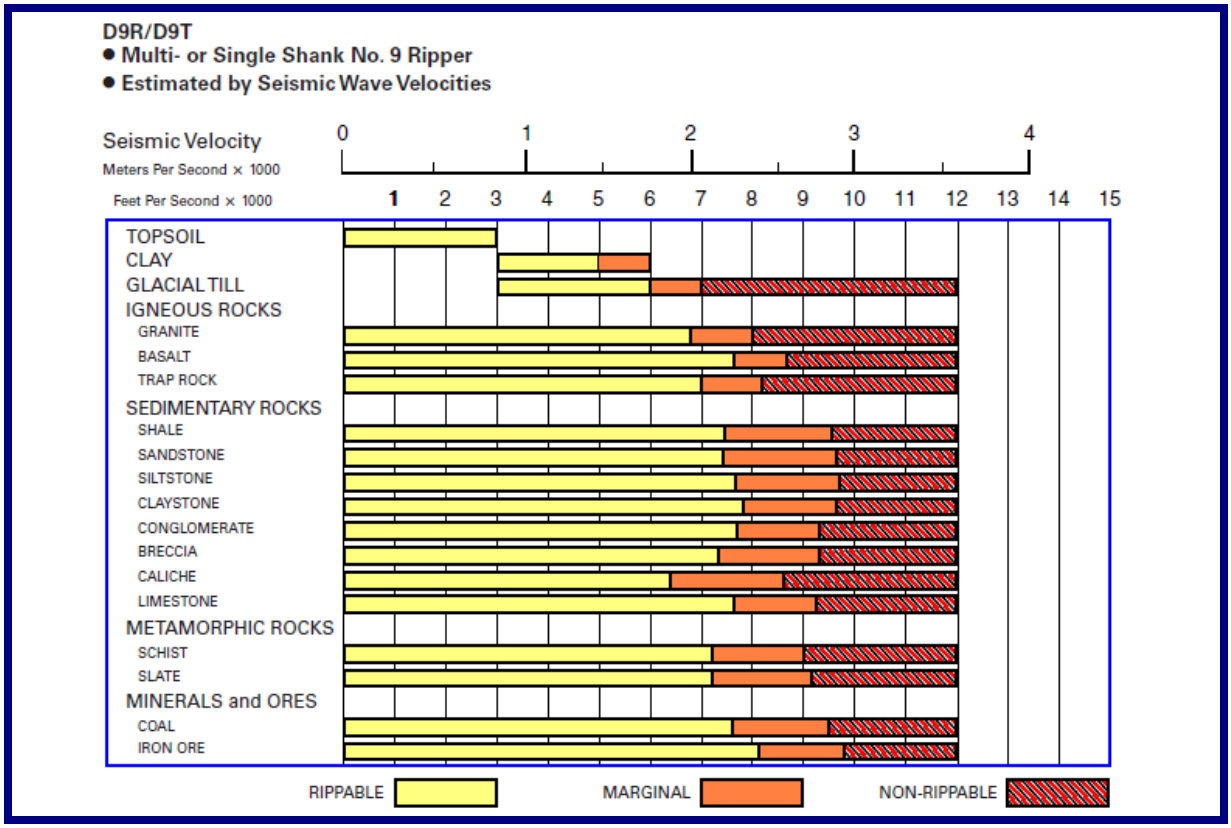


FIGURE 2- Caterpillar D9R Ripper Performance Chart (2022).

Trenching operations, of which this project will most likely employ, utilize large excavator-type equipment. These excavators typically encounter very difficult to non-productable conditions within granitic bedrock materials where seismic velocities are generally greater than **4,000±** fps, with less production where smaller backhoe-type equipment is used.

GEOLOGIC & EARTHWORK CONSIDERATIONS

To evaluate whether a particular bedrock material can be ripped or excavated, this geophysical survey should be used in conjunction with the geologic and/or geotechnical report and/or information gathered for the subject project which may describe the physical properties of the bedrock. The physical characteristics of bedrock materials that favor ripping generally include the presence of fractures, faults, and other structural discontinuities, weathering effects, brittleness or crystalline structure, stratification or lamination, large grain size, moisture permeated clay, and low compressive strength. If the bedrock is foliated and/or fractured at depth, this structure could aid in excavation production. Unfavorable bedrock conditions can include such characteristics as massive and homogeneous formations, non-crystalline structure, absence of planes of weakness, fine-grained materials, and formations of clay origin where moisture makes the material plastic. Use of these physical bedrock conditions along with the subsurface

velocity characteristics as presented within this report should aid in properly evaluating the type of equipment that will be necessary and the production levels that can be anticipated for this project.

Although primarily prepared for conventional bulldozer equipment utilized in surficial grading operations, a summary of excavation considerations is included within Appendix C in order to provide you and your grading contractor with a better understanding of the complexities of excavation in bedrock materials, so that proper planning and excavation techniques can be employed. Some techniques and/or principles may be applicable to your site-specific project.

SUMMARY OF FINDINGS AND CONCLUSIONS

The raw field data was of good quality with very minor amounts of ambient "noise" that was introduced during our survey, most likely from distant vehicular traffic. Every effort was made to obtain seismic records with the least amount of background noise, but could not be completely eliminated. Analysis of the data and picking of the primary "P"-wave arrivals was performed with very little difficulty, with minor interpolation of some data points being necessary.

Based on the results of our comparative seismic analyses of the computer programs **SIPwin**, **Refractor**, and **Rayfract™**, the seismic refraction survey line models appear to generally coincide with one another, with some minor variances due to the methods that these programs process, integrate, and display the input data. The anticipated excavation potentials of the velocity layers encountered locally during our survey are as follows:

- ***Velocity Layer V1***:

  The upper V1 layer (average weighted velocity of 1,960 and 1,961 fps) is believed to consist of topsoil, colluvium, and/or highly-weathered and fractured bedrock materials. No excavation difficulties are expected within this surficial velocity layer, however, there may be isolated floaters (i.e., boulders, corestones, dikes, etc.) that may be encountered locally (such as surficially exposed across the local area), which could produce somewhat difficult conditions.

- ***Velocity Layer V2***:

  The second V2 layer (average weighted velocity of 3,501 to 3,741 fps) is believed to consist of highly-weathered granitic bedrock. This velocity layer is estimated to be within the rippable range using excavator-type equipment, where velocities of generally less than 4,000± fps are encountered. Isolated floaters (i.e., boulders, corestones, etc.) should be expected to be present within this layer and could produce somewhat difficult conditions locally. This velocity layer may require some breaking and/or light blasting to obtain desired grade.

- ***Velocity Layer V3***:

  The third V3 layer is believed to consist of slightly-weathered bedrock, becoming fresher with depth. Extremely hard excavation difficulties within this deeper velocity layer (average weighted velocity range of 9,172 to 13,980 fps) should be anticipated if encountered during grading. This layer may consist of relatively fresher homogeneous bedrock, or may contain higher velocity scattered corestones, dikes, and other lithologic variables, within a relatively lower velocity bedrock matrix. Continuous blasting/breaking will most likely be required within this velocity layer to achieve desired grade.

The ray sampling coverage of the subsurface seismic waves that were acquired during the processing of the tomographic models using **Rayfract™**, appeared to be of good quality which was verified by having a Root Mean Square Error (RMS) of 1.2 and 1.8 (see lower right-hand corner of each model). The RMS error (misfit between picked and modeled first break times) is automatically calculated during the processing routine, with a value of less than 5.0% being preferred.

As previously discussed, since the proposed project (i.e., utility trench) will most likely be using conventional trenching equipment, there are no currently published rippability performance charts available that compare rippability potentials versus seismic velocity for excavator-type equipment. The rippability comparison charts such as prepared by Caterpillar (2022) are tailored for conventional bulldozer equipment and cannot be directly correlated. However, we understand from many excavation contractors that trenching operations (using large excavators) within bedrock materials which have seismic velocities generally greater than **4,000±**-feet per second, typically encounter very difficult to non-productable conditions, depending upon the type and size of equipment being used.

Based on the tomographic modeling and typical excavation characteristics observed within granitic bedrock of the southern California region, anticipation of gradual increasing hardness with depth should be anticipated during grading. Some lateral velocity variations should be expected to be encountered across the site generally due to the presence of buried corestones and/or dikes.

CLOSURE

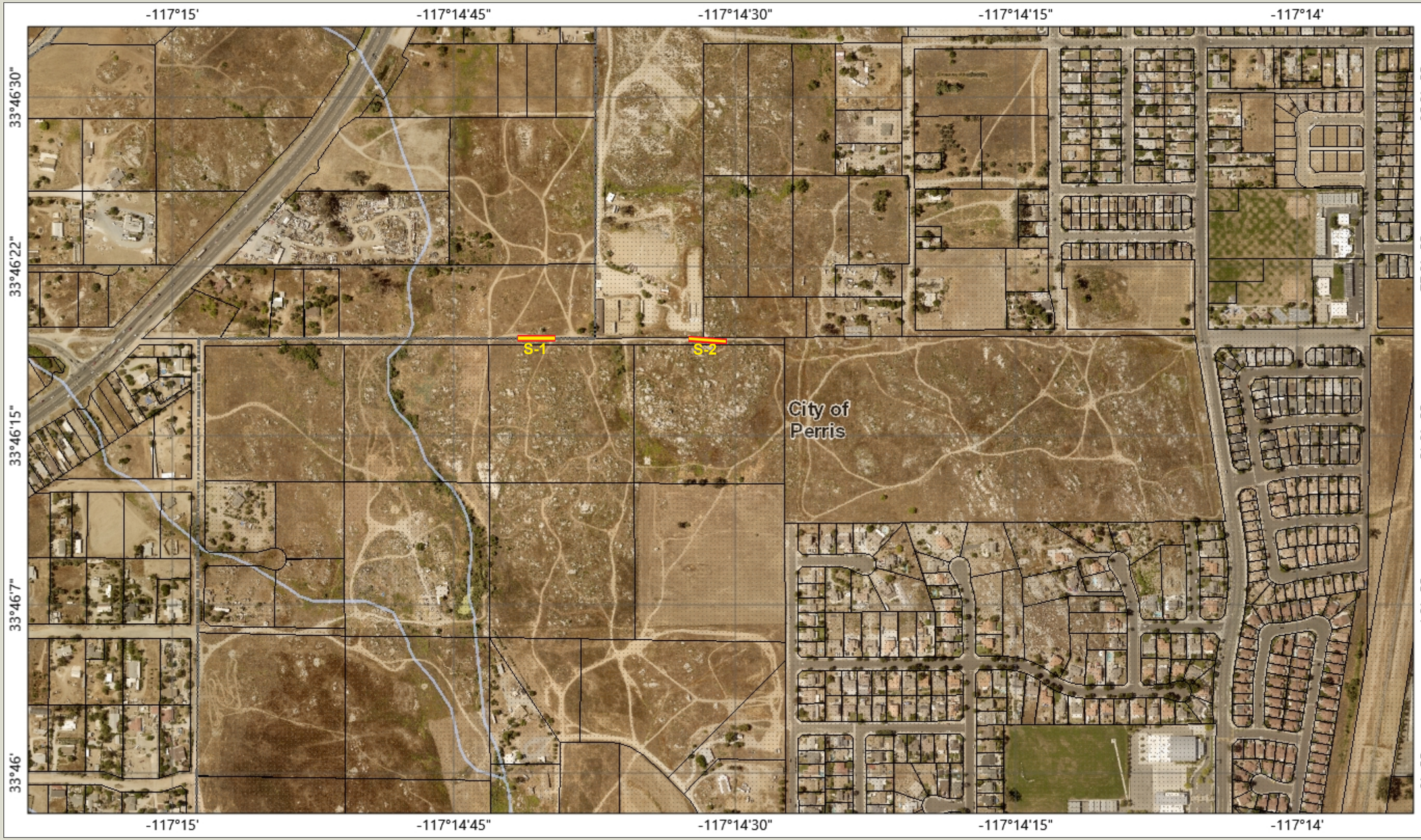
The field geophysical survey was performed on November 16, 2023 by the undersigned using "state of the art" geophysical equipment and techniques along the selected traverse locations. The seismic data was further evaluated using recently developed computerized tomographic inversion techniques to provide a more thorough analysis and understanding of the subsurface velocity and structural conditions. It should be noted that our data presented within this report was obtained along two specific traverses therefore other areas in the local vicinity may contain different potential corestones, velocity layers, and depths not encountered during our field survey.

Additional survey traverses may be necessary to further evaluate the excavation characteristics across other portions of the study area where cut grading will be proposed, if warranted. Estimates of layer velocity boundaries as presented in this report are generally considered to be within 10± percent of the total depth of the contact.

It is important to understand that the fundamental limitation for seismic refraction surveys is known as nonuniqueness, wherein a specific seismic refraction data set does not provide sufficient information to determine a single "true" earth model. Therefore, the interpretation of any seismic data set uses "best-fit" approximations along with the geologic models that appear to be most reasonable for the local area being surveyed. Client should also understand that when using the theoretical geophysical principles and techniques discussed in this report, sources of error are possible in both the data obtained and in the interpretation and that the results of this survey may not represent actual subsurface conditions. These are all factors beyond **Terra Geosciences** control and no guarantees as to the results of this survey can be made. We make no warranty, either expressed or implied.

In summary, the results of this seismic refraction survey are to be considered as an aid to assessing the rippability and excavation potentials of the bedrock locally. This information should be carefully reviewed by the grading contractor and representative "test" excavations with the proposed type of excavation equipment for the proposed construction should be considered, so that they may be correlated with the data presented within this report. It should be noted that the decision for blasting of bedrock materials for facilitating the excavation process is sometimes made based upon economic production reasons and not solely on the rippability (velocity/hardness) characteristics of the bedrock.

SEISMIC LINE LOCATION MAP



Legend

- Parcels
- Blueline Streams
- City Areas

S-2 LOCATION OF SEISMIC TRAVERSE

0 540 1,079 Feet

PROJECT NO. 234005-1

PLATE 1

GOOGLE™ EARTH IMAGERY MAP

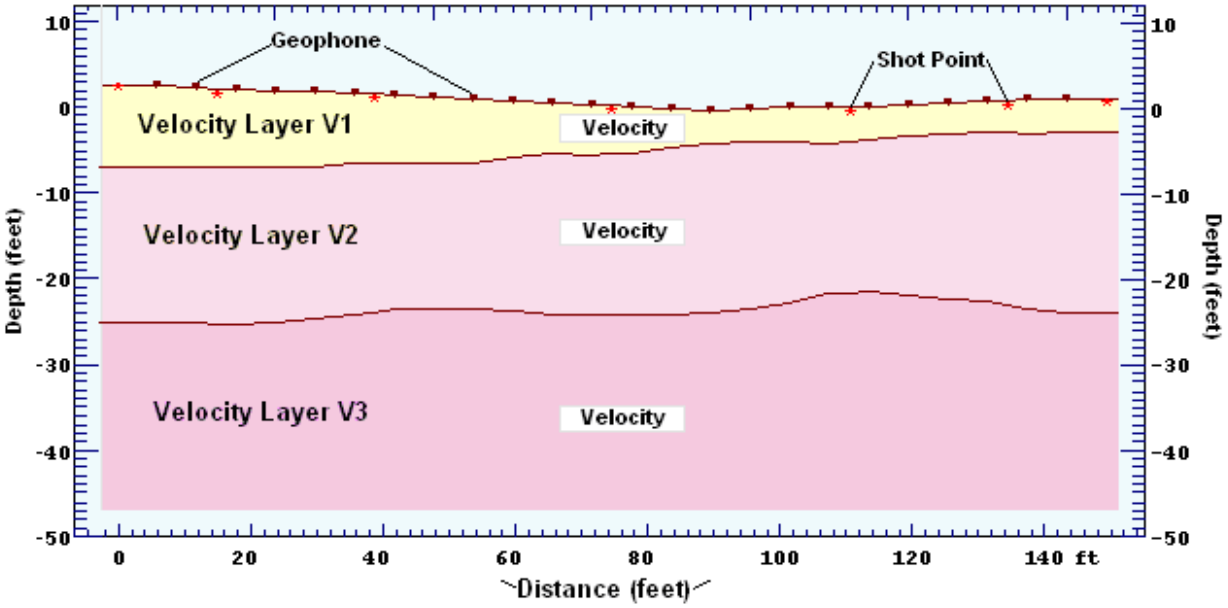
BASE MAP; Google™ Earth imagery (2023), Seismic Lines S-1 and S-2 shown as yellow lines.

APPENDIX A

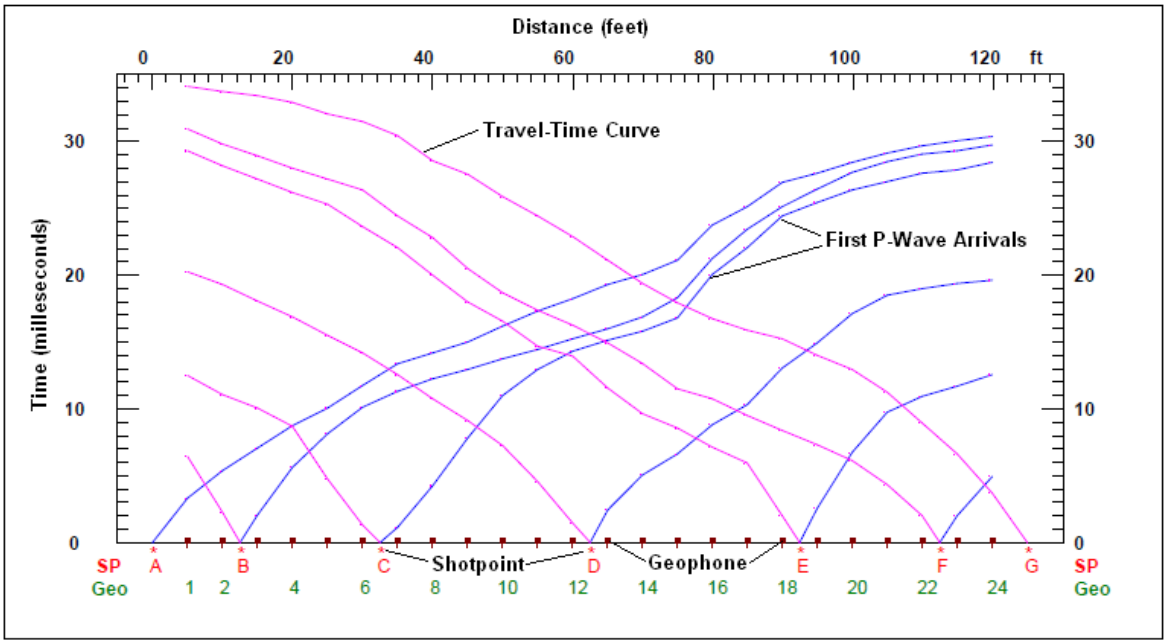
LAYER VELOCITY MODELS

LAYER VELOCITY MODEL LEGEND

LAYER VELOCITY MODEL



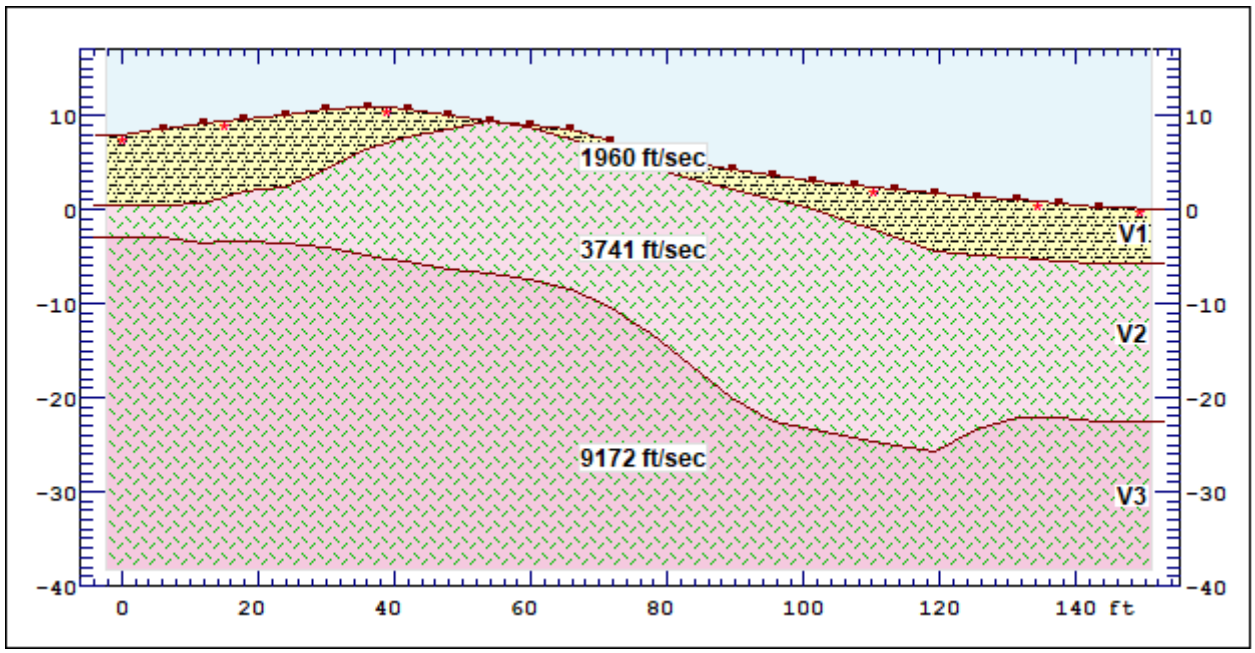
TIME-DISTANCE PLOT



SEISMIC LINE S-1

< West - East >

LAYER VELOCITY MODEL



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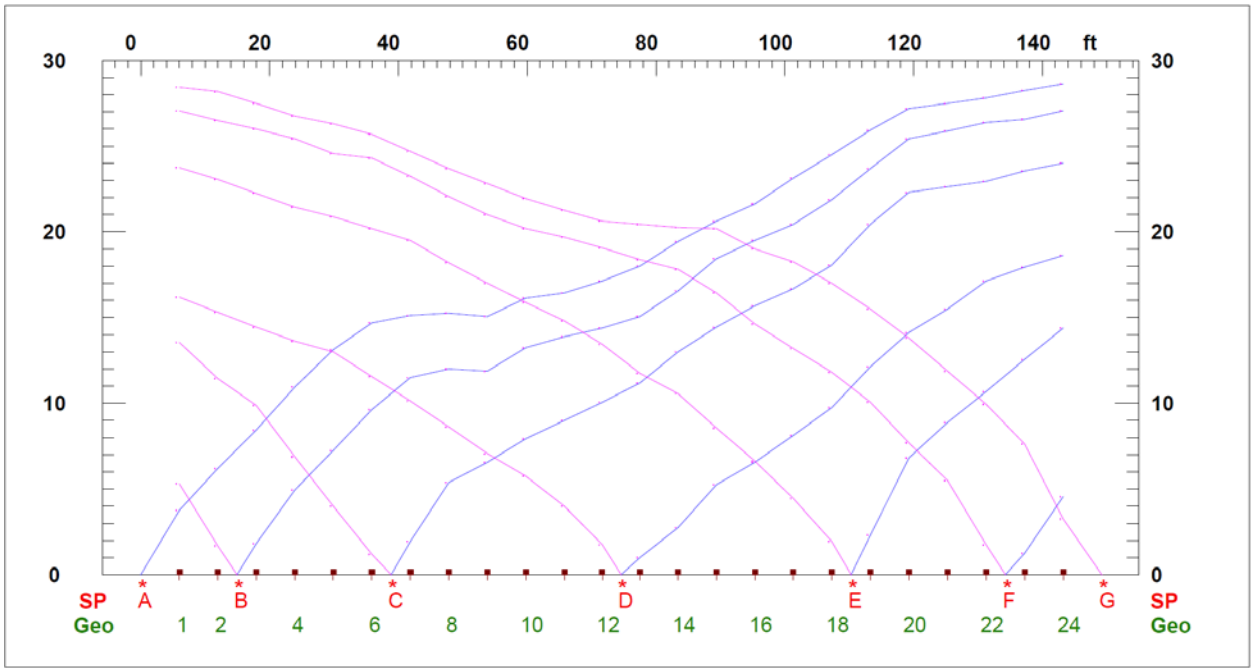
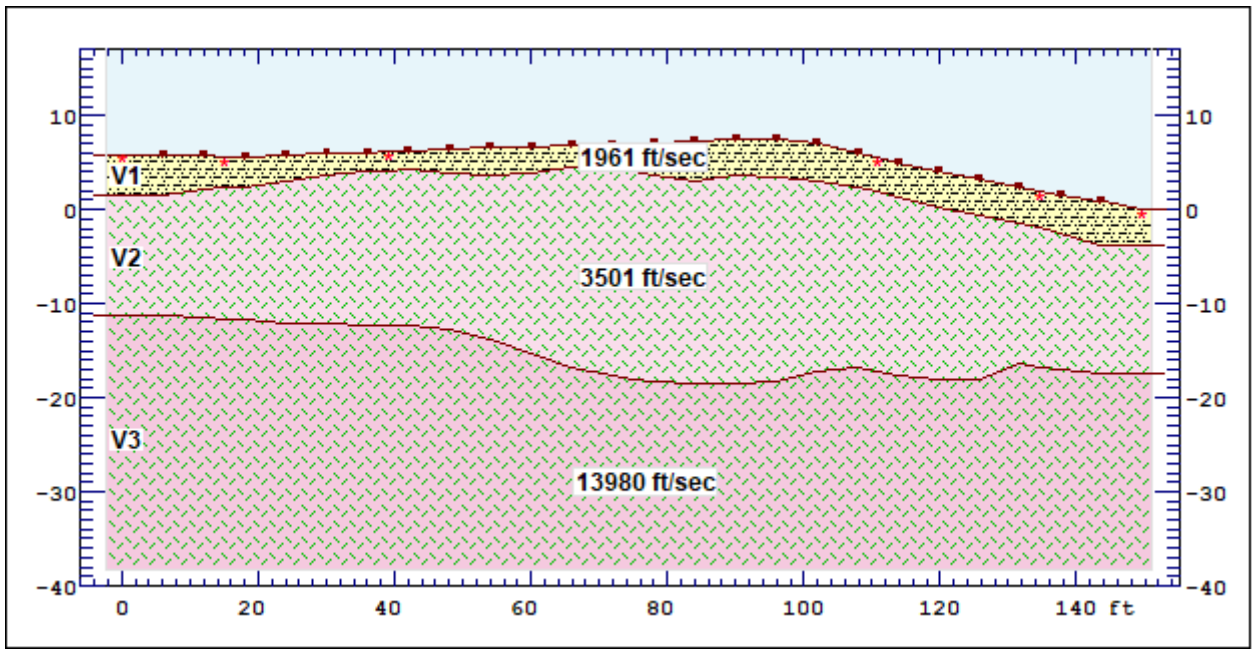


SEISMIC LINE S-2

South 87° East >

LAYER VELOCITY MODEL



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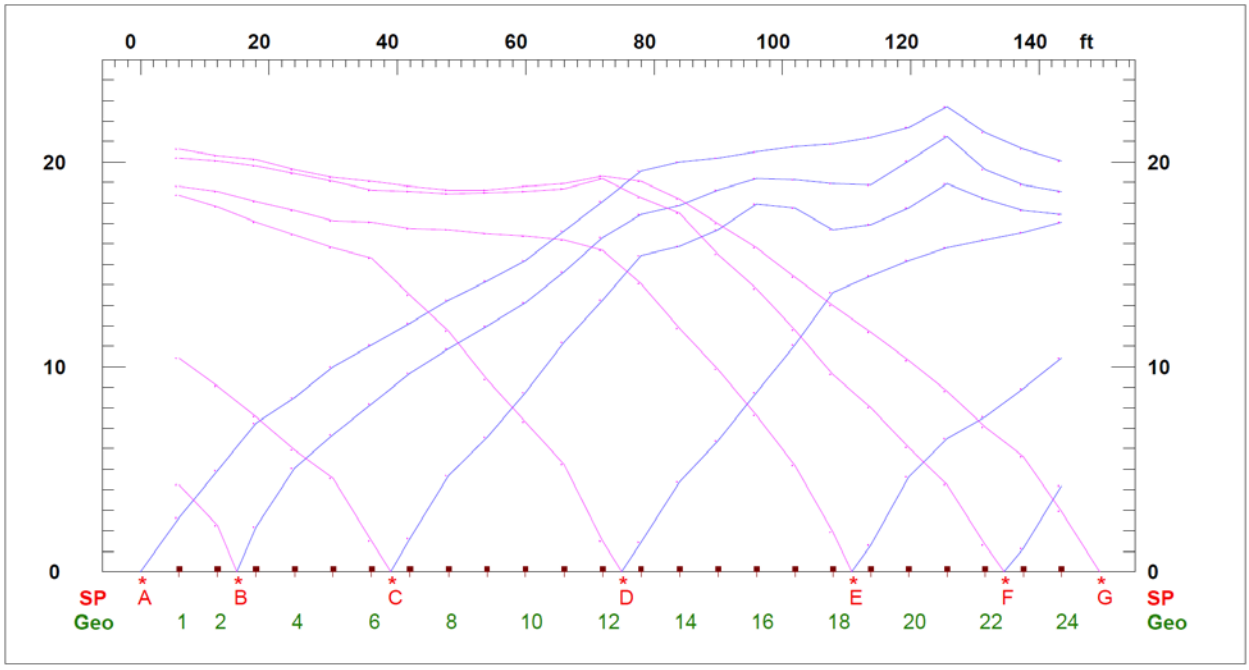


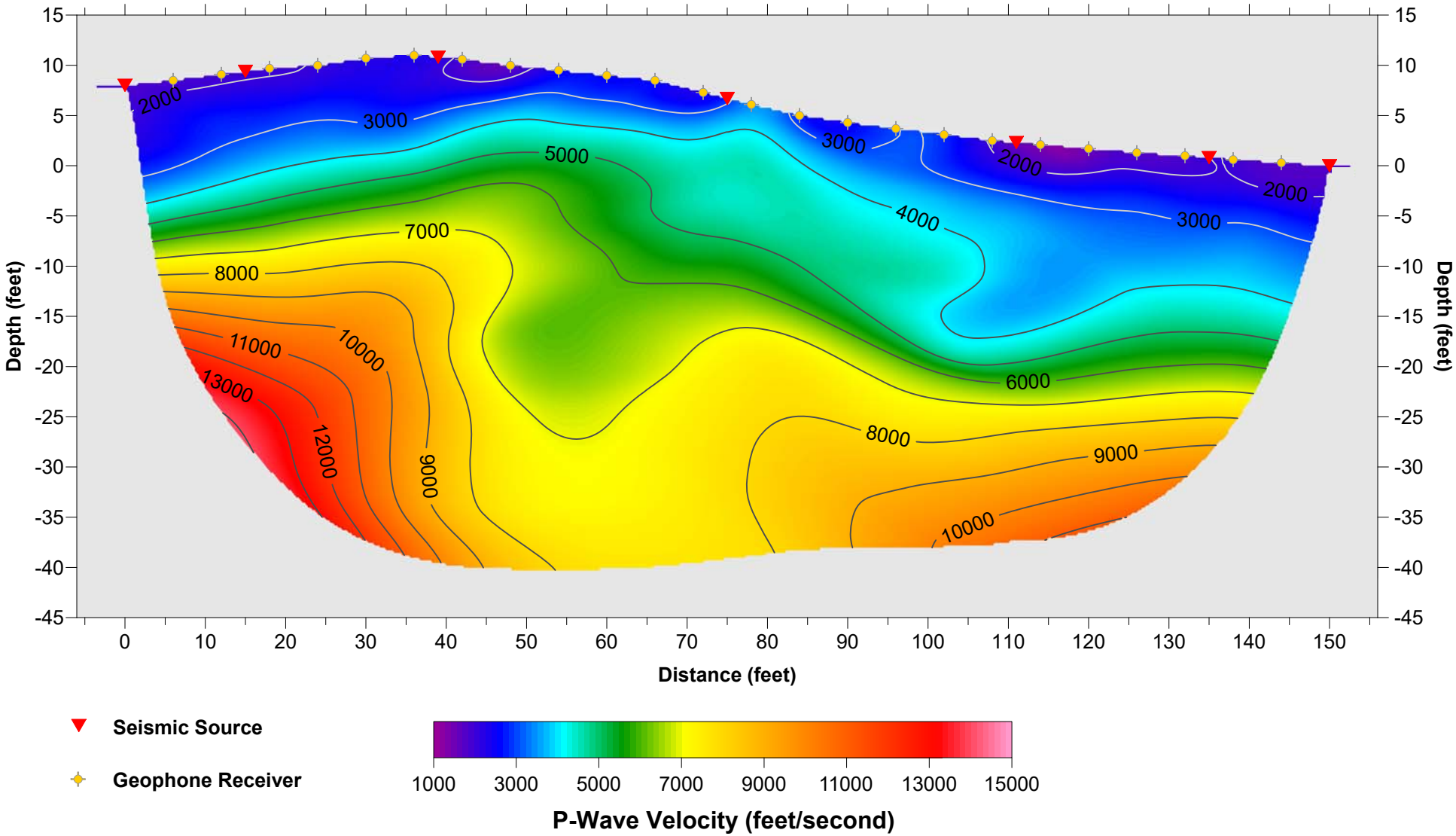
APPENDIX B

REFRACTION TOMOGRAPHIC MODELS

SEISMIC LINE S-1

< West - East >

REFRACTION TOMOGRAPHIC MODEL



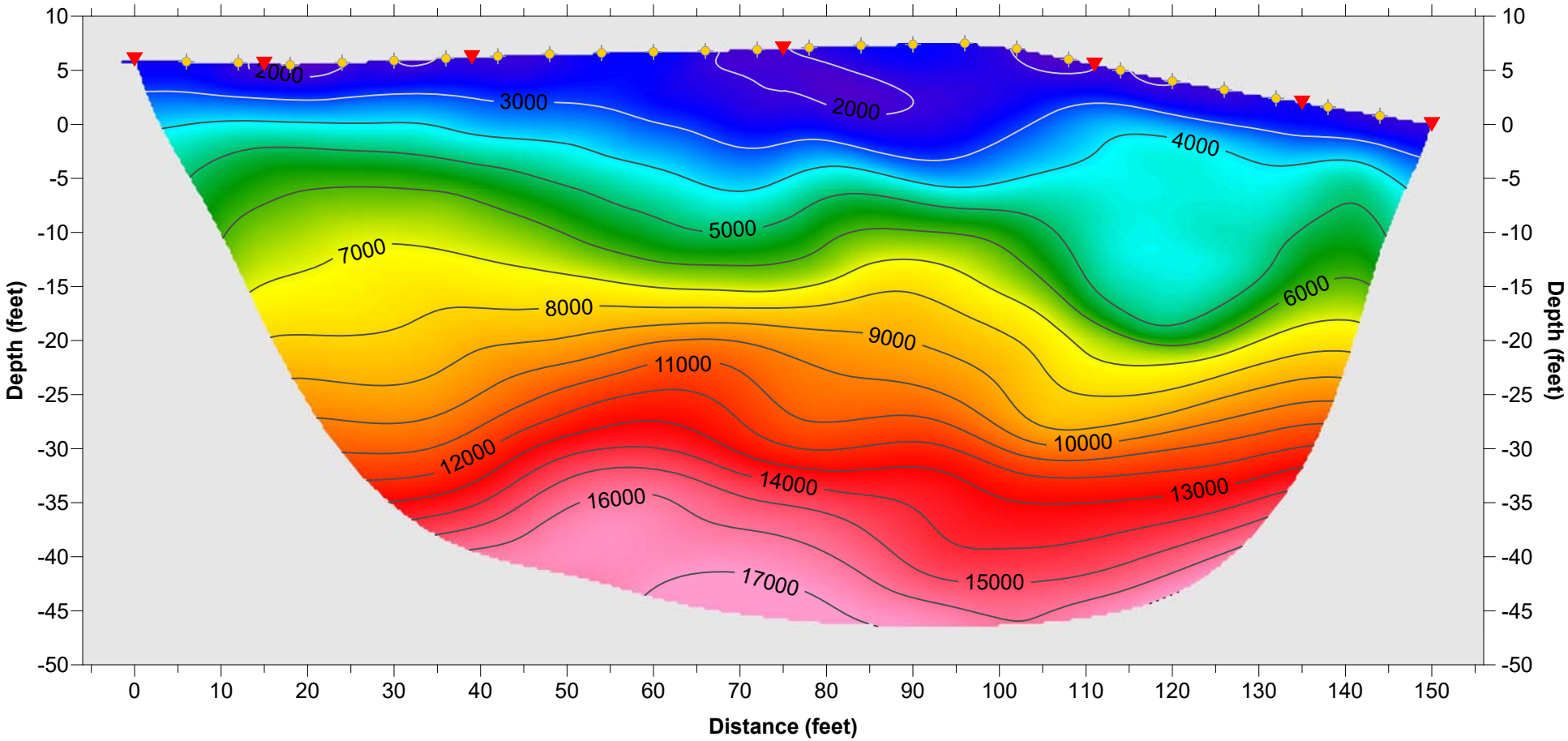
SCALE: Vertical Exaggeration 1.25X

RMS error 1.2%; Rayfract Version 4.05

SEISMIC LINE S-2

South 87° East →

REFRACTION TOMOGRAPHIC MODEL



SCALE: Vertical Exaggeration 1.25X

RMS error 1.8%; Rayfract Version 4.05

APPENDIX C

EXCAVATION CONSIDERATIONS

EXCAVATION CONSIDERATIONS

These excavation considerations have been included to provide the client with a brief overall summary of the general complexity of hard bedrock excavation. It is considered the client's responsibility to ensure that the grading contractor they select is both properly licensed and qualified, with experience in hard-bedrock ripping processes. To evaluate whether a particular bedrock material can be ripped, this geophysical survey should be used in conjunction with the geologic or geotechnical report prepared for the project which describes the physical properties of the bedrock. The physical characteristics of bedrock materials that favor ripping generally include the presence of fractures, faults and other structural discontinuities, weathering effects, brittleness or crystalline structure, stratification of lamination, large grain size, moisture permeated clay, and low compressive strength. Unfavorable conditions can include such characteristics as massive and homogeneous formations, non-crystalline structure, absence of planes of weakness, fine-grained materials, and formations of clay origin where moisture makes the material plastic.

When assessing the potential rippability of the underlying bedrock of a given site, the above geologic characteristics along with the estimated seismic velocities can then be used to evaluate what type of equipment may be appropriate for the proposed grading. When selecting the proper ripping equipment there are three primary factors to consider, which are:

- ***Down Pressure available at the tip, which determines the ripper penetration that can be attained and maintained,***
- ***Tractor flywheel horsepower, which determines whether the tractor can advance the tip, and,***
- ***Tractor gross-weight, which determines whether the tractor will have sufficient traction to use the horsepower.***

In addition to selecting the appropriate tractor, selection of the proper ripper design is also important. There are basically three designs, being radial, parallelogram, and adjustable parallelogram, of which the contractor should be aware of when selecting the appropriate design to be used for the project. The penetration depth will depend upon the down-pressure and penetration angle, as well as the length of the shank tips (short, intermediate, and long).

Also, important in the excavation process is the ripping technique used as well as the skill of the individual tractor operator. These techniques include the use of one or more ripping teeth, up- and down-hill ripping, and the direction of ripping with respect to the geologic structure of the bedrock locally. The use of two tractors (one to push the first tractor-ripper) can extend the range of materials that can be ripped. The second tractor can also be used to supply additional down-pressure on the ripper. Consideration of light blasting can also facilitate the ripper penetration and reduce the cost of moving highly consolidated rock formations.

All of the combined factors above should be considered by both the client and the grading contractor, to ensure that the proper selection of equipment and ripping techniques are used for the proposed grading.

APPENDIX D

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REFERENCES

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APPENDIX F

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

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Eastern Municipal Water District Extension of Sewer to Highway 74 Project

Paleontological Resources Assessment

prepared for

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February 2024

RINCON CONSULTANTS, INC. SINCE 1994

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Executive Summary

Purpose and Scope

Woodard and Curran retained Rincon Consultants, Inc. (Rincon) on behalf of the Eastern Municipal Water District (EMWD) to conduct a desktop Paleontological Resources Assessment (PRA) for the EMWD Extension of Sewer to Highway 74 Project (project) in Riverside County, California. This assessment includes a literature review, paleontological records search, paleontological sensitivity assessment, and reporting consistent with the professional standards of the Society of Vertebrate Paleontology (SVP; 2010).

Results of Investigation

The project site is underlain by two geologic units, Quaternary very old alluvial fan sediments and the Val Verde tonalite (Morton and Miller 2006). Sediments similar to Quaternary very old alluvial fan deposits have produced scientifically significant paleontological resources throughout Riverside County (Jefferson 2010; Paleobiology Database 2024; University of California Museum of Paleontology 2024); therefore, this geologic unit has high paleontological sensitivity. Val Verde tonalite is an intrusive igneous rock, meaning it cannot preserve paleontological resources. Thus, Val Verde tonalite has no paleontological sensitivity. A records search of the Western Science Center determined there are no known fossil localities within the project site (Stoneburg 2023).

Impacts and Recommendations

The project site is underlain by one geologic unit, Quaternary very old alluvial fan deposits, with high paleontological sensitivity (Morton and Miller 2006). Ground-disturbing construction activities that affect previously undisturbed portions of this geologic unit could result in significant impacts to paleontological resources under CEQA.

Open-cut trenching in areas mapped as Quaternary very old alluvial fan deposits has the potential to significantly impact paleontological resources. Trenchless sewer installation would not occur in paleontologically sensitive areas. Sewer upsizing would have potentially significant impacts on paleontological resources if the new sewer is installed in parallel with the existing sewer and the area is mapped as Quaternary very old alluvial fan deposits. If the sewer is installed via replace-in-place methods, then the activity is not anticipated to have a significant impact on paleontological resources regardless of the geologic unit.

Mitigation Measure PAL-1 is recommended to reduce potential impacts to paleontological resources to a level of less-than-significant under CEQA. This mitigation measure involves paleontological monitoring for ground-disturbing activities within previously undisturbed sediments associated with the construction of the water resource recovery facility.

1 Introduction

Woodard and Curran retained Rincon Consultants, Inc. (Rincon) on behalf of the Eastern Municipal Water District (EMWD) to conduct a desktop Paleontological Resources Assessment (PRA) for the EMWD Extension of Sewer to Highway 74 Project (project) in Riverside County, California. This assessment includes a literature review, paleontological records search, paleontological sensitivity assessment, and reporting consistent with the professional standards of the Society of Vertebrate Paleontology (SVP; 2010).

Paleontological resources (i.e., fossils) are the remains or traces of prehistoric life. Fossils are typically preserved in layered sedimentary rocks, and the distribution of fossils across the landscape is controlled by the distribution and exposure of the fossiliferous sedimentary rock units at and near the surface. Construction-related impacts that typically affect or have the potential to affect paleontological resources include mass excavation operations, drilling/borehole excavations, trenching/tunneling, and grading. Ground-disturbing construction activities associated with the proposed project would mainly consist of trenching and excavation. This PRA provides a list of the formations within the project site that may be impacted by project construction activities.

1.1 Project Location

The project site is located in the City of Perris and unincorporated Riverside County (Figure 1) primarily along Highway 74 between W 4th Street and W Ellis Avenue, along W Ellis Avenue between Highway 74 and S B Street, and along S G Street between Commercial Street and E 2nd Street (Figure 2 and Figure 3). The project site also includes the southeast segment of Navajo Road off of Highway 74. Surrounding land use includes a high school and a public park at the eastern end of the project site along W Ellis Avenue, undeveloped lands along the rest of W Ellis Avenue, and commercial and residential lots along Highway 74 and S G Street. Possible staging areas for construction equipment include a lot on the west side of Highway 74 (Assessor's Parcel Number [APN] 326-240-079), a lot on W 11th Street within the undeveloped land between Highway 74 and W Ellis Avenue (APN 313-180-013), and a lot on the west side of S G Street (APN 310-123-006).

Figure 1 Regional Location

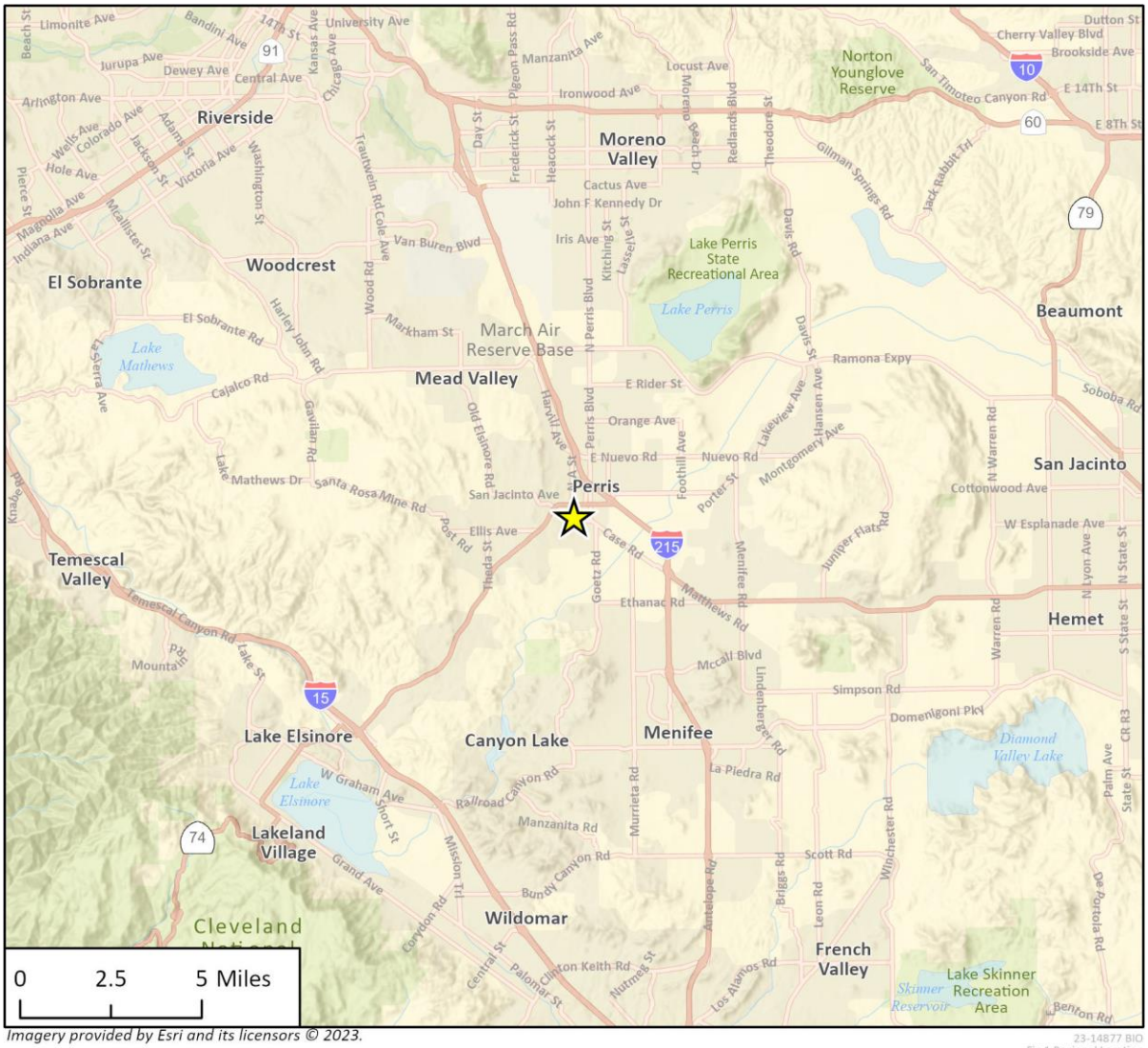

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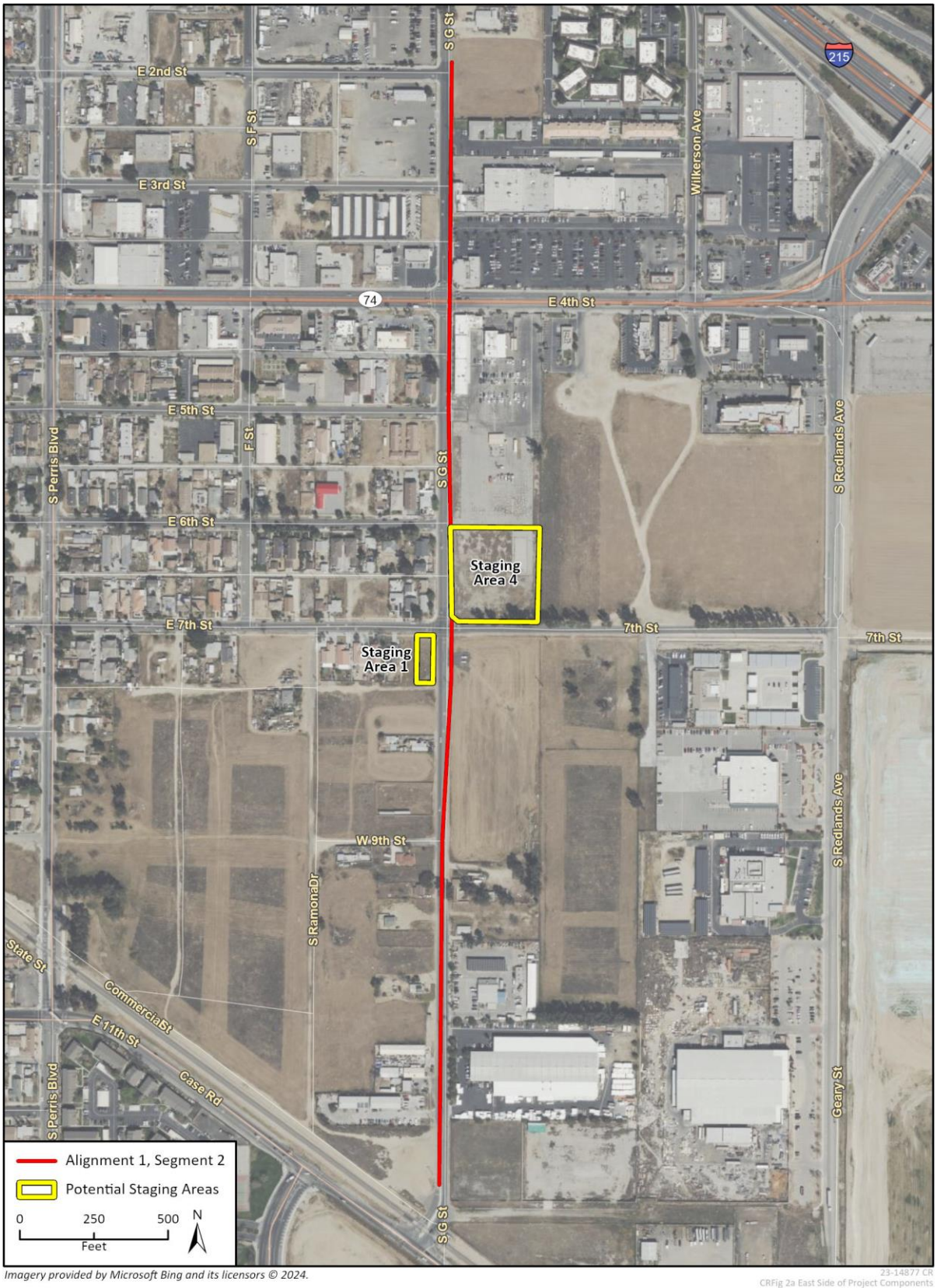
Fig 1 Regional Location

Figure 2 Project Components



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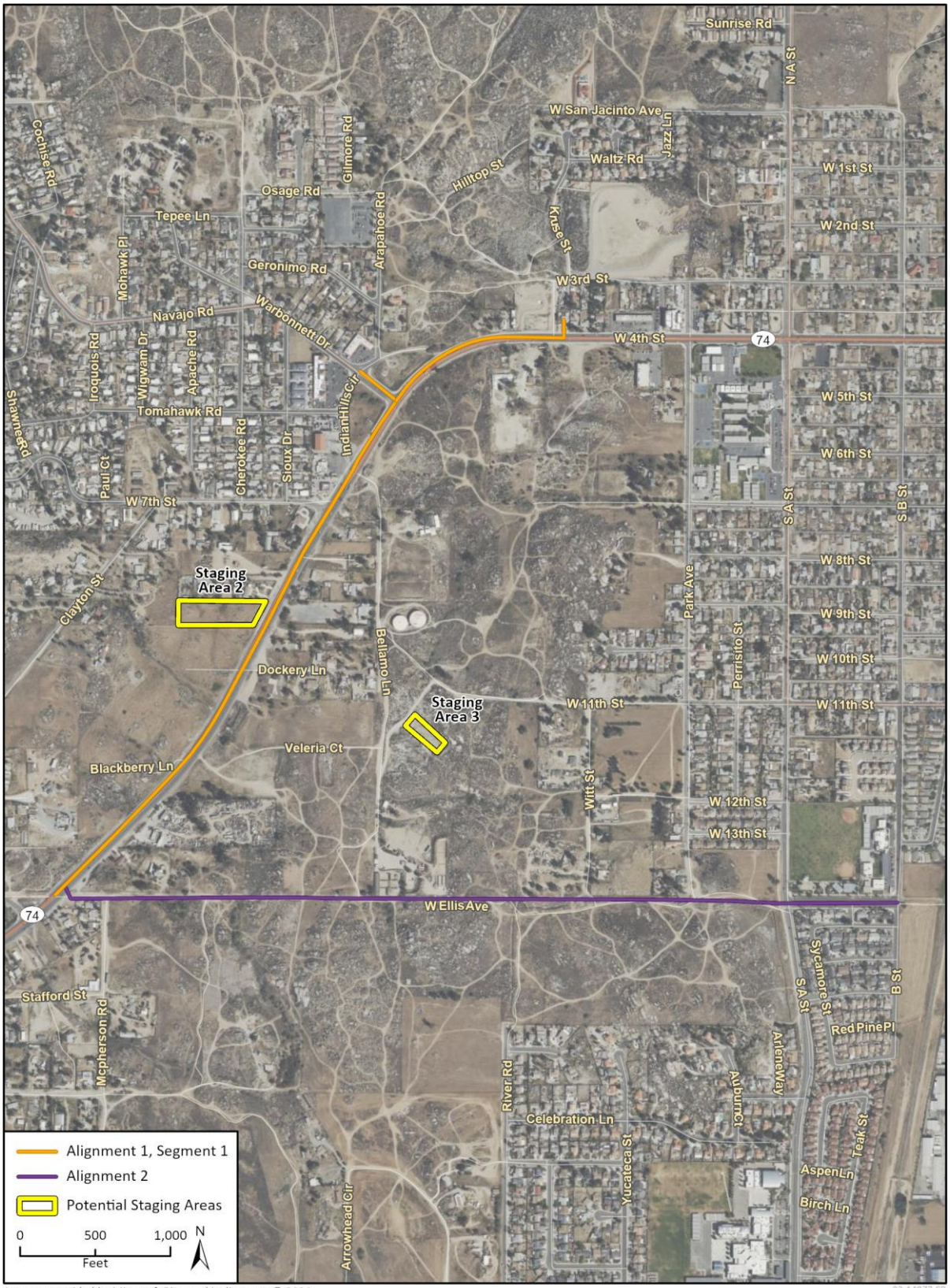
CRFig 2a East Side of Project Components

Figure 3 Project Components



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23-14877 CR
CRFig 2b West Side of Project Components

1.2 Project Description

Alignment 1

Segment 1

Project construction along Segment 1 would include installation of 5,110 linear feet of new 15-inch vitrified clay pipe (VCP) sewer on Highway 74 from West Ellis Avenue north through Navajo Road, or alternately from Highway 74 to where it turns into 4th Avenue and then north to Kruse Street where it would connect with EMWD's existing sewer system. Should the option of extending north through Navajo Road be selected, the alignment will end at a gravity sewer stubout on Navajo. Should the option of continuing along Highway 74 to Kruse Street be selected, it would also reroute approximately 350 linear feet of existing sewer to a new 18-inch VCP sewer along Kruse Street. This segment of Alignment 1 would fall entirely within the existing public ROW. Open cut construction methods would be used for this segment of the alignment.

Segment 2

Project construction along Segment 2 would include upsizing 3,825 linear feet of existing sewer line along Johnson Avenue/G Street from north of Case Road to 2nd Street from 12-inch to 18-inch VCP sewer line. This segment would be constructed using open trench methods. It has not yet been determined whether this segment would construct the upsized pipe in parallel with the existing sewer or if it would replace in place the existing sewer line. Should replace in place be used, a sewer bypass would be used during construction to avoid interruption in sewer service.

Manhole Installation

Construction of Alignment 1, including Segment 1 and Segment 2, would require the construction of approximately 26 new manholes using precast concrete. This would include evaluation of and upgrades to approximately 26 sewer lateral connections, and 11 influent sewer mains, and 11 existing manholes on G Street will be removed.

Alignment 2

Project construction along Alignment 2 would include installation of 5,660 linear of new 15-inch VCP gravity sewer on West Ellis Avenue from Highway 74 in the west to B Street in the east. This portion of West Ellis Avenue is currently unpaved, and the Project would be located within a public ROW that may not have been dedicated. Approximately 530 linear feet of this alignment would run through APN 330-020-009, requiring an easement. It is possible that there is a Southern California Edison easement that could be used for the alignment and would be determined during further stages of project design. Although much of Alignment 2 would be constructed using open trench methods, approximately 1,250 linear feet may use trenchless construction to avoid deep over excavation in the vicinity of Bellamo Lane and West Ellis Avenue.

Pipeline Construction

The proposed alignments would use either open-trench (Alignment 1) or a combination of open-trench and trenchless construction methods (Alignment 2). For Alignment 1, the trench width would be 4 to 6 feet, while the depth would range from 6 to 28 feet depending on the segment. The pipeline alignments would be designed to avoid conflict with existing utilities. For Alignment 2, the

trench width would be 4 to 6 feet, while the depth would range from 10 to 25 feet. Trenchless methods would be used for a portion of Alignment 2 where the depth for an open trench would be between 25- to 35-feet. Trenchless pipeline installation methods would involve the excavation of entry and exit pits, the depth of which is currently unknown, followed by horizontal drilling for the new alignment.

Segment 2 of Alignment 1 would involve upsizing existing sewer lines. There are currently two options for this process, the first of which would be installing the new sewer line parallel to the existing line. The second option would be installing the new sewer line along the same alignment as the existing sewer (i.e., replace-in-place).

After construction is complete, pipeline construction areas would be restored to pre-construction conditions. Replacement of pavement would follow Riverside County standards. If Alignment 2 is selected, installation of new pavement in West Ellis Avenue would be completed in accordance with Riverside County standards.

Staging Areas

Four staging areas (Staging Areas 1-4) would be used during project construction to store materials and equipment (see Figure 2 and Figure 3). Staging Area 1 includes a graded parcel located on the southwest side of the South G Street and East 7th Street intersection (Assessor's Parcel Number [APN] 310-123-006). Staging Area 2 includes a parcel presently used for agricultural purposes on the west side of Highway 74 approximately 700 feet southwest of 7th Street (APN 326-240-079). Staging Area 3 is comprised of a graded parcel located approximately 345 feet northeast of the 11th Street and Bellamo Lane intersection (APN 313-180-013). Staging Area 4 includes a graded and partially paved parcel on the northeast side of the South G Street and East 7th Street intersection (APN 310-090-014).

2 Regulations

2.1 State Regulations

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states a project would "normally" have a significant effect on the environment if project effects exceed an identified threshold of significance (CEQA Guidelines Section 15064.7[a]). Appendix G of the CEQA Guidelines (the Environmental Checklist Form) provides suggested thresholds of significance for evaluating a project's environmental impacts, including impacts to paleontological resources. In Section VII(f), the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the SVP (2010) has defined a "significant paleontological resource" in the context of environmental review as follows:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information.

Paleontological resources are typically older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for mitigating impacts to paleontological resources, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

California Public Resources Code Section 5097.5 states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here "public lands" means those owned by, or under the jurisdiction of, the State or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

2.2 Regional and Local Regulations

County of Riverside

Paleontological resources are addressed under the Multipurpose Open Space Element of the Riverside County General Plan (County of Riverside 2015), policies OS 19.6 through OS 19.9, which are as follows:

- **OS 19.6.** Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, a paleontological resource impact mitigation program (PRMMP) shall be filed with the County Geologist prior to site grading. The PRMMP shall specify the steps to be taken to mitigate impacts to paleontological resources.
- **OS 19.7.** Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified, and a paleontologist shall be retained by the Project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.
- **OS 19.8.** Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on-site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department.
- **OS 19.9.** Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the city of Hemet. (This requirement was originally referred to as the SABER Policy – Safeguard Artifacts Being Excavated in Riverside County).

City of Perris

The City of Perris General Plan 2030 includes a Conservation Element section in addition to a Sustainable Community Amendment City Council Adoption that was approved in 2008 (City of Perris 2008). The purpose of the General Plan is to guide local government decisions on growth, capital investment, and physical development for the City. The Sustainable Community Amendment includes a section of “Goals, Policies, and Implementation Measures” in regard to paleontological resources. Goal IV describes the protection of historical and archaeological resources and the following implementation measures:

- **IV.A.1.** Comply with state and federal regulations and ensure preservation of significant historical, archaeological and paleontological resources.

3 Paleontological Resources Assessment Guidelines

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state and local laws and regulations. This PRA satisfies Public Resources Code Section 5097.5 requirements and follows guidelines and significance criteria specified by the SVP (2010).

3.1 Paleontological Sensitivity

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Because fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. These activities may constitute significant impacts under CEQA or adverse effects under federal environmental protection laws and may require mitigation. Sensitivity is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

The discovery of a vertebrate fossil locality is of greater significance than that of an invertebrate fossil locality, especially if it contains a microvertebrate assemblage. The recognition of new vertebrate fossil locations could provide important information on the geographical range of the taxa, their radiometric age, evolutionary characteristics, depositional environment, and other important scientific research questions. Vertebrate fossils are almost always significant because they occur more rarely than invertebrates or plants. Thus, geologic units having the potential to contain vertebrate fossils are considered the most sensitive.

3.2 Resource Assessment Criteria

In its Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, the SVP outlines guidelines for categorizing paleontological sensitivity of geologic units within a project site. The SVP describes sedimentary rock units as having a high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrates or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. Significant paleontological resources are fossils or assemblages of fossils that are unique, unusual, rare, or uncommon diagnostically, stratigraphically, taxonomically, or regionally (SVP 2010). The paleontological sensitivity of the project site has been evaluated according to the following SVP (2010) categories:

- **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include, but are not limited to, sedimentary formations and some volcanic formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent and sedimentary rock units temporally or lithologically suitable for the preservation of

fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than recent, including deposits associated with nests or middens, and areas that may contain new vertebrate deposits, traces, or trackways are also classified as significant. Full-time monitoring is typically recommended during any project-related ground disturbance in geologic units with high sensitivity.

- **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well-documented and understood taphonomic processes (those affecting an organism following death, burial, and removal from the ground), phylogenetic species (evolutionary relationships among organisms), and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potential for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations.
- **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potential of the rock units are required before programs of impact mitigation for such areas may be developed.
- **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

4 Methods

Rincon reviewed published geologic maps to identify the geologic units present at and below the surface within the project site (Morton and Miller 2006). Rincon reviewed the online paleontological collections database of the University of California Museum of Paleontology (2024) and Paleobiology Database (2024) and consulted primary literature to identify known fossil localities in Riverside County and surrounding regions from similar geologic units to those identified within the project site. Rincon requested a records search of the Western Science Center on August 21, 2023, to identify any fossil localities known from within the project site or nearby fossil localities known from the same geologic units as those underlying the project site. The project site is completely developed and contains no bedrock exposures; therefore, a field survey was not warranted.

Paleontological sensitivity ratings of the geological formations were assigned based on the findings of the records search and literature review and based on the potential effects to nonrenewable paleontological resources from project construction following SVP (2010) guidelines.

5 Description of Resources

5.1 Geologic Setting

The project site is situated in the Peninsular Ranges, one of the eleven major geomorphic provinces in California (California Geological Survey 2002). In general, the Peninsular Ranges consist of northwest-southeast trending mountain ranges and faults (Norris and Webb 1976). These mountains are generally comprised of Mesozoic to Cenozoic plutonic and extrusive igneous and Cretaceous marine sedimentary rocks. The Peninsular Ranges province also contains sedimentary basins such as the Los Angeles Basin which have accumulated thick sequences of Cenozoic marine and terrestrial sedimentary rocks. Specifically, the project site is located in the Perris Valley, which is part of the Perris Block, a geophysical block with low topographic relief that is bounded to the west by the Elsinore Fault Zone and to the east by the San Jacinto Fault Zone (Morton and Miller 2006).

Locally, the project site is within the *Perris, California* and *Steele Peak, California* United States Geological Survey 7.5-minute quadrangles.

5.2 Geology of the Project Site

The geology of the region around the project site was mapped by Morton and Miller (2006) who identified two geologic units underlying the site: Quaternary very old alluvial fan deposits and Val Verde tonalite (Figure 4).

Quaternary Very Old Alluvial Fan Deposits

Quaternary very old alluvial fan deposits underlie G Street and the eastern part of the alignment along Ellis Avenue (Figure 4). Quaternary very old alluvial fan deposits consist of moderately to well-consolidated, silt, sand, and gravel that are middle to early Pleistocene in age (Morton and Miller 2006). Pleistocene-aged alluvial sediments have produced numerous scientifically significant paleontological resources in western Riverside County, including taxa such as mammoth (*Mammuthus*), mastodon (*Mammut*), ground sloth (*Paramylodon*, *Nothrotheriops*), saber-toothed cat (*Smilodon*), other mammals, reptiles, birds, and fish (Jefferson 2010; Paleobiology Database 2024; University of California Museum of Paleontology 2024). Given the fossil-producing history of similar sediments in the region, Quaternary very old alluvial fan deposits have high paleontological sensitivity.

Val Verde Tonalite

Val Verde tonalite underlies the portions of the project site along Highway 74, Navajo Road, and most of Ellis Avenue (Figure 4). Val Verde tonalite is a gray, foliated, medium- to coarse-grained igneous rock (Morton and Miller 2006). Val Verde tonalite is part of the Cretaceous-aged Val Verde Pluton that forms most of the hills between the Perris Valley and Elsinore Valley. Intrusive igneous rocks, like Val Verde tonalite, form by the cooling of molten rock below Earth's surface. Therefore, they cannot preserve paleontological resources, and have no paleontological sensitivity.

Figure 4 Geologic Map and Paleontological Sensitivity of Project Site

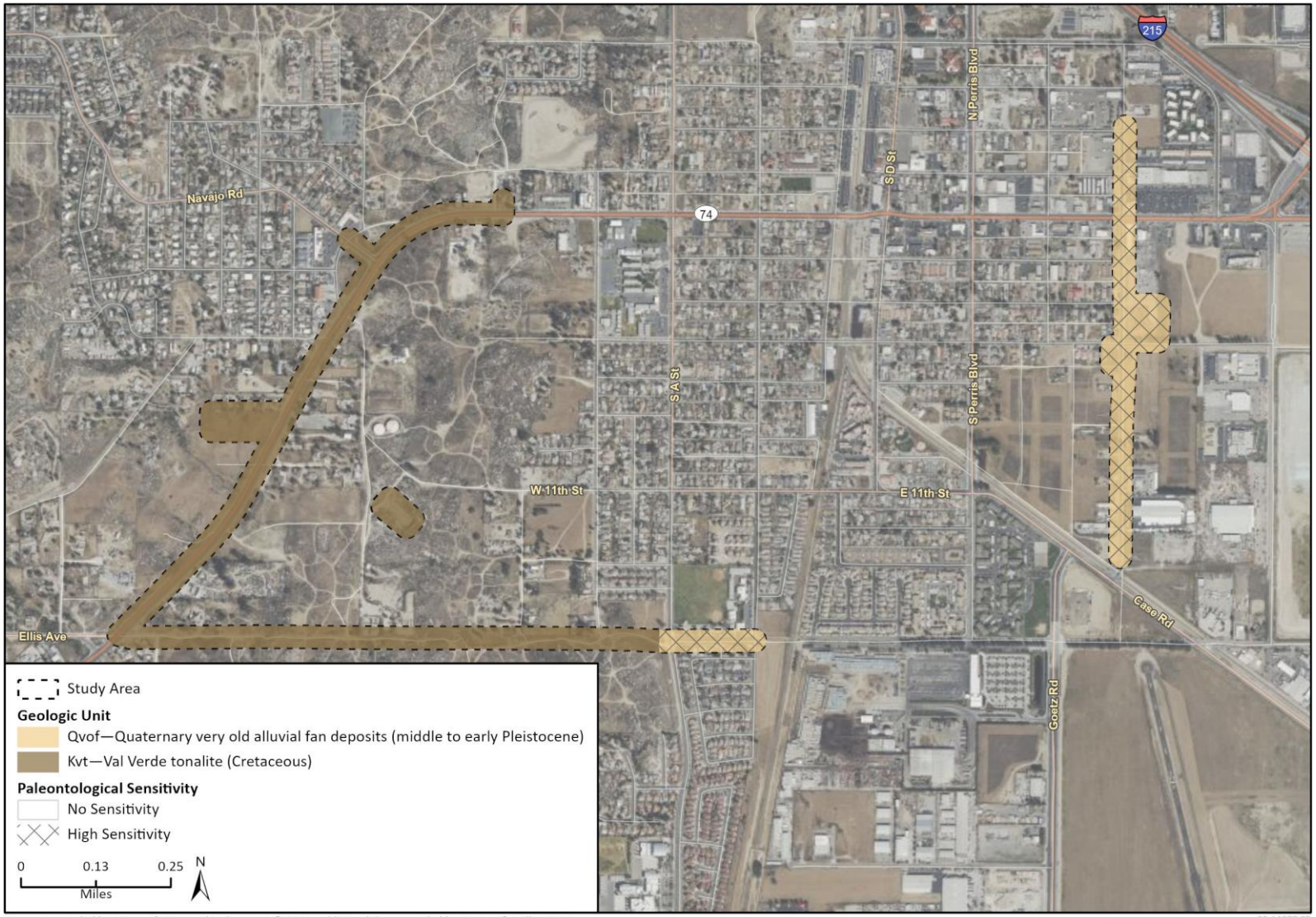

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Fig X Geologic Map and Paleontological Sensitivity of Project Site

5.3 Paleontology of the Project Site

A formal fossil locality search of the Western Science Center identified no fossil localities within a one-mile radius of the project site (Stoneburg 2023). However, Stoneburg (2023) did note that alluvial sediments in the region can preserve paleontological resources.

6 Evaluation, Impacts, and Recommendations

6.1 Paleontological Sensitivity Evaluation

The project site is underlain by two geologic units, Quaternary very old alluvial fan deposits and Val Verde tonalite (Figure 4). As indicated in Section 5, *Description of Resources*, Quaternary very old alluvial fan deposits have high paleontological sensitivity and Val Verde tonalite has no paleontological sensitivity.

6.2 Impacts

Significant impacts to paleontological resources include the destruction, damage, or loss of scientifically important paleontological resources or associated stratigraphic data. Ground-disturbing activities in undisturbed sediments or geologic units with high paleontological sensitivity (i.e., Quaternary very old alluvial fan deposits) have the potential to significantly impact paleontological resources under CEQA. The potential impact to paleontological resources of each alignment, segment, and construction activity are summarized in Table 1.

Table 1 Potential Impacts to Paleontological Resources

Construction Location and Activity	Geologic Unit(s)	Impacts and Recommendations
Alignment 1, Segment 1	Val Verde tonalite	Not Significant; No Mitigation Required
Alignment 1, Segment 2 (parallel installation alternative)	Quaternary very old alluvial fan deposits	Potentially Significant; Mitigation Required
Alignment 1, Segment 2 (replace-in-place installation alternative)	Quaternary very old alluvial fan deposits	Not Significant; No Mitigation Required
Alignment 2 (open-cut trenching segments)	Quaternary very old alluvial fan deposits & Val Verde tonalite	Potentially Significant; Mitigation Required
Alignment 2 (trenchless segment)	Val Verde tonalite	Not Significant; No Mitigation Required

New sewer lines will be constructed via open-cut trenching and trenchless installation methods. Open-cut trenching will require excavating a 4- to 6-foot-wide trench that will range from 6 to 28 feet deep depending on the location. Trenchless installation methods would require excavation of entry and exit pits, the depth of which is currently unknown, followed by horizontal drilling. Excavations for both open-cut trench and trenchless sewer installation could have a significant impact on paleontological resources if they are conducted in areas mapped as high-sensitivity Quaternary alluvial fan deposits (Figure 4). This project also involves upsizing existing sewer lines, which could be accomplished by installing the new sewer line parallel to the existing line or by replace-in-place methods in which the new sewer line is installed along the same alignment as the existing sewer. If the new sewer line is installed in parallel, then the impacts would be the same as open-cut trenching installation. If replace-in-place is used, then the activity is not anticipated to

impact paleontological resources regardless of location, because the excavations would be conducted within previously disturbed sediments, which are not paleontologically sensitive.

Segment 1 of Alignment 1 is completely underlain by Val Verde tonalite, so its construction is not anticipated to impact paleontological resources (Figure 4). Segment 2 of Alignment 1 would involve upsizing the existing sewer along G Street. If the new sewer line is constructed in parallel to the existing sewer, then impacts to paleontological resources would be potentially significant, but if replace-in-place methods are used, then significant impacts to paleontological resources are not anticipated. Alignment 2 is primarily underlain by Val Verde tonalite, including the only segment of pipeline that would require trenchless installation. The eastern end of Alignment 2 is underlain by Quaternary very old alluvial fan deposits. Open-cut trench installation in the area mapped as Quaternary very old alluvial fan deposits could have significant impacts on paleontological resources.

6.3 Recommendations

The following mitigation measure would address potentially significant impacts to paleontological resources under CEQA, during project-related ground-disturbing activities. This measure would only apply to ground-disturbing activities associated with Alignment 1, Segment 2 (if the parallel installation method is chosen) and Alignment 2 (Table 1). Implementation of Mitigation Measure PAL-1 would effectively mitigate the project's potentially significant impacts to these resources under CEQA through the recovery, identification, and curation of previously unrecovered fossils.

PAL-1 Paleontological Resources Monitoring and Mitigation

Qualified Professional Paleontologist. Prior to excavation, the project applicant shall retain a Qualified Professional Paleontologist, as defined by the Society of Vertebrate Paleontology (SVP 2010). The Qualified Professional Paleontologist shall direct all mitigation measures related to paleontological resources.

Paleontological Worker Environmental Awareness Program. Prior to the start of construction, the Qualified Professional Paleontologist or their designee shall conduct a paleontological Worker Environmental Awareness Program (WEAP) training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction personnel.

Paleontological Monitoring. Full-time paleontological monitoring shall be conducted during excavations within previously undisturbed sediments mapped as Quaternary very old alluvial fan deposits. Paleontological monitoring shall be conducted by a paleontological monitor with experience with collection and salvage of paleontological resources and who meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. The Qualified Professional Paleontologist may recommend that monitoring be reduced in frequency or ceased entirely based on geologic observations. Such decisions shall be subject to review and approval by EMWD. In the event of a fossil discovery by the paleontological monitor or construction personnel, all construction activity within 50 feet of the find shall cease, and the Qualified Professional Paleontologist shall evaluate the find. If the fossil(s) is (are) not scientifically significant, then construction activity may resume. If it is determined that the fossil(s) is (are) scientifically significant, the following shall be completed:

- **Fossil Salvage.** The paleontological monitor shall salvage (i.e., excavate and recover) the fossil to protect it from damage/destruction. Typically, fossils can be safely salvaged quickly by a single paleontological monitor with minimal disruption to construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. Bulk matrix sampling may be necessary to recover small invertebrates or microvertebrates from within paleontologically sensitive deposits. After the fossil(s) is (are) salvaged, construction activity may resume.
- **Fossil Preparation and Curation**. Fossils shall be identified to the lowest (i.e., most-specific) possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Qualified Professional Paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground-disturbing activities (or laboratory preparation and curation of fossils, if necessary), the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts. The report shall include a summary of the field and laboratory methods employed; an overview of project geology; and, if fossils were discovered, an analysis of the fossils, including physical description, taxonomic identification, and scientific significance. The report shall be submitted to EMWD, if fossil curation occurred, the designated scientific institution.

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