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Initial Study and Mitigated Negative Declaration

Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project

Prepared for:
County of San Mateo
Department of Public Works
555 County Center
Redwood City, California 94063

Contact:
Mark Chow, PE, Principal Civil Engineer
Utilities – Flood Control – Watershed Protection

July 2024

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INTRODUCTION

1. Project Title:

Fair Oaks Sewer Maintenance District
Sanitary Sewer Trunk Line Replacement Project – Phase 1

2. Lead Agency Name and Address:

County of San Mateo
Department of Public Works
555 County Center
Redwood City, CA 94063

3. Contact Person and Phone Number:

Mark Chow, P.E.
Principal Civil Engineer, Utilities-Flood Control-Watershed Protection
(650) 363-4100

4. Project Location:

The Project affects existing pipe segments associated with the North Fair Oaks Trunk Sewer (NFOTS) system, located between 1513 Veterans Boulevard and 1712 East Bayshore Road in the City of Redwood City (City), San Mateo County, California. The existing pipe segments are along Union Pacific Railroad (UPRR) tracks, under Highway 101 (Section 1); between Highway 101 and a PG&E Redwood Substation (10 Seaport Boulevard; Section 2); and across Seaport Boulevard and East Bayshore Road (Section 3). Figure 1, *Project Location and Regional Location*, shows the regional vicinity and outlines the Project site.

5. Assessor's Parcel Number and Size of Parcel:

The Project is not associated with an Assessor's Parcel Number (APN). The Project would affect public rights-of-way, totaling approximately 1 acre.

6. Project Sponsor's Name and Address:

County of San Mateo, Department of Public Works
555 County Center, 5th Floor
Redwood City, CA 94063

7. Name of Person Undertaking the Project or Receiving the Project Approval (if different from Project Sponsor):

County of San Mateo, Department of Public Works

8. General Plan Designation:

The Project site does not have a general plan designation.

9. Zoning:

The Project site does not have a zoning designation.

10. Project Setting and Surrounding Land Uses:

The Project involves replacing antiquated reinforced concrete pipe segments of the NFOTS system within the Fair Oaks Sewer Maintenance District (FOSMD), which is administered by the County of San Mateo, Department of Public Works. The FOSMD provides wastewater collection services to an approximately 5-square-mile area south of the City and serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, Towns of Atherton and Woodside, and portions of the City.

The NFOTS pipes were installed in the mid-1900s and are nearing their useful life. The system is immediately upstream from the City's Interceptor Metering Station, which is located under a County-owned surface lot at 1513 Veterans Boulevard and is the point where wastewater from the NFOTS system discharges into the City's sanitary sewer system and is conveyed to the Silicon Valley Clean Water Treatment Plant, located at 1400 Radio Road in the City, approximately 3.8 miles northwest of the Project site.

As shown in Figure 2, *Existing Trunk Sewer,* the Project site is an irregularly shaped area of less than 1 acre and is in an urban area with highway and railroad infrastructure, above and belowground utility systems, a substation, and surrounding industrial and commercial developments. The Project site includes 1,404 linear feet of six trunk sewer pipeline segments of the existing NFOTS system, associated with Manholes 3613, 3614, 3610, 3609, 3628, 3629, and 3632. Table 1: *Pipe Segment and Manhole Identification* identifies the down and up manholes for each of the six pipe segments. The pipeline segments have been separated into three sections, as discussed below.

Table 1: Pipe Segment and Manhole Identification

Section	NFOTS Segment No.	Manholes Down	Manholes Up
1	1	3613	3614
	2	3614	3610
	3	3610	3609
2	4	3609	3628
	5	3628	3629
3	6	3629	3632

The subject segment of the NFOTS sewer trunk is 7 to 9 feet below mean sea level and consists of non-standard, 33-inch diameter reinforced concrete pipes. At an average slope of 0.05 percent, and at 75 percent full capacity, this segment of the NFOTS system has a flow rate of 7.0 million gallons per day (MGD).

- **Section 1.** Section 1 comprises the western end of the Project site. As shown in Figure 3, *Section 1 Photographs*, Section 1 includes the County-owned parking lot and US 101 underpass associated with the Woodside Road and Seaport Boulevard interchange, within the California Department of Transportation (Caltrans) right-of-way. The overpass is supported by north and south abutments and piers; contains the single-track UPRR easement that runs through the center of the underpass, between two piers; and contains a number of underground utilities within the southern half of the underpass, between the UPRR track and southern pier, including the subject NFOTS sewer pipeline, and water, telecommunication, fiber optics, and electric. The City proposes a new Class I Bikeway, as a part of the City's US 101/SR 84 (Woodside Road) Interchange Improvement Project. Construction of the US 101/SR 84 Interchange Improvement Project is anticipated to be implemented between January 2027 and December 2029.

  Manholes 3613, 3614, 3610, and 3609 and NFOTS Segments 1, 2, and 3 are in Section 1. Manholes 3613, 3614, and 3610 are located between the surface lot and western edge of US 101 highway within a landscaped area. Manhole 3609 is on the east side of the US 101 underpass. NFOTS Segment 3, between Manholes 3610 and 3609, is less than 10 feet from the UPRR track and within 4 feet of the water line. The distance between NFOTS Segment 3 and the water line do not comply with current California Department of Public Health Design Standards, which require sewer and potable water lines to be separated by a minimum of 10 horizontal feet.

- **Section 2.** Section 2 is on the east side of the US 101 underpass; it includes the area between Manhole 3609 and Manhole 3629 and is within a Caltrans right-of-way between the US 101/Seaport Boulevard on-ramp and PG&E Substation. Section 2 also contains Manhole 3628. As shown in Figure 4, *Section 2 Photographs,* a retaining wall supports a portion of the on-ramp. The area between the PG&E property line, delineated by chain-link fencing and retaining wall, is narrow, approximately 20 feet wide.

- **Section 3.** Section 3 is in the eastern portion of the Project site. It includes NFOTS Segment 6, between Manhole 3629 to Manhole 3632, which is located on East Bayshore Road. Segment 6 crosses the US 101/Seaport Boulevard northbound on-ramp, Seaport Boulevard, and East Bayshore Road. The Project would affect the area north of the existing Section 2 trunk sewer alignment to the entrance of the US 101/Seaport Boulevard northbound on-ramp. The Project would also affect the area eastward to Manhole 3631 on East Bayshore Road, located approximately 20 feet north of Manhole 3632. The western portion of Section 3 is within the Caltrans right-of-way; the eastern end is within the City's right-of-way (Seaport Boulevard and East Bayshore Road and Manholes 3631 and 3632).

  Section 3 is surrounded by the PG&E Substation, US 101, and commercial and industrial uses to the north and west. As shown in Figure 5, *Section 3 Photographs,* NFOTS Segment 6, between Manholes 3629 and 3632, is within a network of transmission powerlines and related structures associated with the PG&E Substation. A high-pressure natural gas pipeline is also located under East Bayshore Road.

11. Description of the Project:

The Project involves replacing a segment of the NFOTS outfall trunk sewer between Manhole 3614 and Manhole 3632 with an industry-standard, 36-inch diameter polyvinyl chloride (PVC) pipeline. The Project would increase the diameter of the existing NFOTS pipeline from 33 inches to 36 inches. The new NFOTS line would be 1,410.8 feet long, installed on a uniform slope of 0.05 percent, and have a design flow of 11.4 MGD at 75 percent full between pipe segments, as compared to 7.0 MGD for the existing 33-inch pipe.

Two sections of the NFOTS sewer trunk segment cannot be replaced in-place, as discussed below; therefore, the alignment of the NFOTS pipeline would be slightly altered, as shown in Figure 6, *Project Location and Realignment*.

- **Section 1.** Due to regulatory and constructability constraints related to Segment 3's close proximity to the existing water line and the UPRR track within Section 1, Segment 3 would be relocated south of the existing alignment. Replacement of Segment 3 at its existing location would not comply with the California Department of Public Health Design Standards; additionally, construction of the pipeline near the UPRR track could interfere with ongoing UPRR operations and cause potential soil settlement that could affect the integrity of the track. Therefore, NFOTS Segment 3 would be relocated southward to below the City's future Class I Bikeway, which is 32 feet south of the existing pipeline. The existing pipeline along the track would be abandoned in place. The relocated Segment 3 would be sufficiently separated from the water line and UPRR track, and would provide necessary space to position the new pipeline at the desired slope.

  Existing Manhole 3610 on the west side of the underpass would be abandoned, and a new Manhole 3610A would be installed over the existing Segment 2. The portion of Segment 2 between the existing Manhole 3610 and new Manhole 3610A would also be abandoned. Existing Manhole 3609 on the east side of the underpass would remain and new Manhole 3609A would be constructed to provide access to the realigned Segment 3. The pipe segment from existing Manhole 3609 to new Manhole 3609A would be replaced with the new line segment by open trench construction.

  To comply with Caltrans encroachment permit requirements, the newly realigned Segment 3 would be installed within a 48-inch diameter steel casing. The casing would be installed using the microtunneling technique and the new 36-inch PVC pipe segment would be pushed into place within the casing. A jack pit would be installed east of new Manhole 3610A, just west of the US 101/Woodside Road overpass. A receiving pit would be installed west of new Manhole 3609A. Construction staging would be set up outside the two ends of the realigned Segment 3 to accommodate equipment and extracted soils.

  The existing pipe segment between existing Manholes 3610 and 3609 would remain in service during construction of the realignment. Once the improvements under Section 1 are complete, the existing pipe segments and manholes not within the realignment would be abandoned. The abandoned pipe segments would be cement-slurry filled and left in place. Section 1 also includes housekeeping activities, including but not limited to the removal of Manhole 2028, located between existing Manhole 3609 and new Manhole 3609A. No improvements would be made to Manhole 3613, though the County may consider rehabilitation with an in situ liner in the future. Improvements proposed on the west side of Highway 101 around Manhole 3614

and new Manhole 3610A would affect three eucalyptus trees and one canary palm tree, including their root systems, and will require their removal.

- **Section 2.** The improvements within Section 2 would involve removing 586 feet of existing pipeline and replacing it in-place with the new pipeline via open trench construction. Existing Manholes 3628 and 3629 within Section 2 would be replaced to meet current County standards.

  In order to maintain operation of the NFOTS system during construction of Section 2, existing sewage would be pumped to a bypass line around the construction areas. Waste would be pumped by two submersible pumps placed in new Manhole 3629A (installed as part of Section 3) into 6-inch high-density polyethylene pipes located aboveground, along the perimeter of Section 2. The pipes would discharge directly into existing Manhole 3609. Once the improvements for Sections 1 and 2 are completed and both reconstructed sections are operable, the bypass system would be removed. Construction staging would occur at the two ends of Section 2.

- **Section 3.** Section 3 would require the realignment of Segment 6. The replacement pipeline cannot be within the existing alignment due to the existing aboveground power transmission lines and structures. Also, there is limited underground space with other existing subterranean infrastructure in place for the installation of a straight pipe segment from existing Manhole 3629 to either Manholes 3631 or 3632, and there is limited space for construction staging and the installation of a tunnel drive pit portal in this area. Therefore, Segment 6 would need to be relocated northward.

  Approximately 104 feet of new pipeline would be extended north of existing Manhole 3629 to new Manhole 3629A within the Caltrans right-of-way, between the US 101/Seaport Boulevard northbound on-ramp and PG&E Substation. The new pipe segment between Manholes 3629 and 3629A would be constructed by open trench, cut-and-cover.

  A new 48-inch steel casing with the 36-inch carrier pipeline would be installed from new Manhole 3629A to existing Manhole 3631 on East Bayshore Road, which is 19 feet north of Manhole 3632. Microtunnel construction would be used to install the segment between new Manhole 3629A to the western edge of East Bayshore Road. As shown in Figure 7, *Section 3 Improvements,* a dual direction jack pit portal would be installed in the landscaped median between the US 101/Seaport Boulevard on-ramp and Seaport Boulevard. Two receiving pits would be installed, one at new Manhole 3629A and the other in the southbound lane of East Bayshore Road. Approximately 90 feet of new pipeline would be installed between the jack pit portal in the median and new Manhole 3629A. The pipeline would also be extended 240 feet eastward from the pit portal to the receiving pit at East Bayshore Road. From this receiving pit, open trench, cut-and-cover construction would be used to install the pipe segment to Manhole 3631. New replacement pipeline would also be installed between Manholes 3631 and 3632 by open trench, cut-and-cover. Existing Manhole 3631 would be replaced with a new manhole, compliant with County standards.

  Construction staging would occur in the Caltrans right-of-way, north of new Manhole 3629A, as well as within an approximately 150-foot area of each of the three travel lanes on East Bayshore Road. Initially, the southbound lane would be closed for operation of the receiving pit; when microtunneling activities are complete for Segment 6, a new pipe segment would be installed under this lane, and the lane would be restored. The middle lane would then be closed for installation of the pipe segment under this lane. Once that is installed and the middle

lane repaired, the northbound lane would be closed and used as a construction work area to install the last pipe segment to Manhole 3631, replace the existing Manhole 3631, and install the replacement pipe segment between Manholes 3631 and 3632. Two travel lanes would be open and maintained on East Bayshore Road at all times. As shown in Figure 7, construction would require the installation of K-rails and barricades to secure the construction work areas along the US 101 on-ramp at Seaport Boulevard and southbound Seaport Boulevard. Additional traffic control measures would be installed, including signage, barricades, and traffic cones, to notify drivers before they enter the construction zones and of the temporary lane and roadway shoulder closures.

Once the realigned Segment 6 is operational, the existing pipeline would be cement-slurry filled, abandoned, and left in place. The driving and receiving pits would be sealed and backfilled to grade, and all temporary barriers and traffic controls would be removed.

Project Construction. Construction of the Project would commence the beginning of April 2025 and last for six months. Construction of Section 3 would occur first so that new Manhole 3629A would be available for use as a bypass pumping wet well, which is required for the open trench construction under Section 2. Construction of Section 3 would be completed in four months, including three months of microtunneling, shaft construction, and backfill, and the last month for improvements proposed within East Bayshore Road.

Sections 1 and 2 would be constructed simultaneously and would commence generally after microtunneling activities are completed under Section 3 and/or when the realigned Section 3 is in full operation. The microtunneling construction equipment from Section 3 would be relocated to Section 1. Construction of Sections 1 and 2 would take approximately three months. Section 1 would require a slightly longer construction period than Section 2, as microtunneling production rates are estimated at 20 feet per day, as compared to 80 feet per day for open trench pipe installation under Section 2.

The Project would require the demolition of approximately 200 tons of concrete pipes and manholes; it does not include the segments proposed to be abandoned in place. New paving would be limited to 1,000 square feet of existing pavement restoration within East Bayshore Road, and construction would include importing and exporting 200 cubic yards of soil. Project implementation would not require any grading.

Project Design Features. The following project design features (PDF) would be implemented to comply with existing regulations and laws.

PDF AQ-1 The County Department of Public Works will ensure the contractor implements the following basic construction control measures for the Project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- Soil piles shall be covered with plastic sheeting and weighted with sandbags when not in active use.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 miles per hour.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Unpaved roads providing access to sites located 100 feet or farther from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
- A publicly visible sign shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's General Air Pollution Complaints phone number shall also be visible to ensure compliance with applicable regulations.

PDF BIO-1 In compliance with the Migratory Bird Treaty Act and California Fish and Game Code, if Project-related activities are initiated during bird nesting season (February 1 to September 15) per each construction section, the County and/or its construction contractor shall retain a qualified biologist to conduct a preconstruction nesting bird clearance survey no more than three days prior to the start of any vegetation removal or ground-disturbing activities. The qualified biologist shall survey all trees and vegetation within 300 feet of the construction area. If no active bird nests are detected during the clearance survey, Project construction activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a "no-disturbance" buffer shall be established around the active nest (300 feet for raptors and 50 feet for passerines). The size of the no-disturbance buffer shall be increased or decreased based on the judgment of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests identified to determine if Project-related activities occurring outside the no-disturbance buffer disturb the birds and if the buffer needs to be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, Project activities within the no-disturbance buffer may occur following an additional survey by the qualified biologist to search for any new bird nests in the restricted area. If Project activities within a section have ceased for more than 7 days during the bird nesting season, a preconstruction nesting bird clearance for the relevant section will be reinitiated to ensure no new nests are active.

PDF CUL-1 In the event that any subsurface cultural resources are encountered during earth-moving activities, excavations within 50 feet should be halted until an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology can evaluate the findings and make recommendations. Prehistoric materials can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, or quartzite toolmaking debris; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash, and charcoal, shellfish remains, and cultural materials); and stone milling equipment (e.g., mortars, pestles, handstones). Historical materials might include wood, stone, or concrete footings, walls, and other

structural remains; debris-filled wells or privies; and deposits of wood, metal, glass, ceramics, and other refuse. The archaeologist may evaluate the find in accordance with federal, state, and local guidelines, including those set forth in the California Public Resources Code Section 21083.2, to assess the significance of the find and identify avoidance or other measures as appropriate.

PDF CUL-2 If human remains are found, excavations shall stop within 50 feet of the find, and State of California Health and Safety Code Sections 7050.5-7055 will be followed. The contractor shall notify the County immediately. The County will notify the San Mateo County coroner. If the coroner determines the remains are human and archaeological, in compliance with Section 5097.98 of the California Public Resources Code, the coroner shall notify the Native American Heritage Commission, who will identify the legal most likely descendant (MLD). If avoidance is not feasible, then the qualified archaeologist, in consultation with the MLD, shall prepare and execute a plan of treatment with the advice and consent of the County. Treatment is anticipated to include respectful excavation of the remains and repatriation and reburial.

PDF GEO-1 The Project will comply with recommendations and standards as contained in the Geotechnical Evaluation prepared for the Project, which includes compliance with Excavation Rules and Regulations as developed by the Occupational Safety and Health Administration, UPRR/BNSF Guidelines for Temporary Shoring, and disposal of groundwater in accordance with guidelines of the San Francisco Bay RWQCB. The Project will comply with any subsequent geotechnical reports and recommendations from a certified geologist.

PDF HAZ-1 The County and its construction contractor shall prepare a Spill Prevention, Control and Countermeasure Plan that will address the handling of sewage during the drainage of existing sewage pipelines to be capped and abandoned; handling of nuisance sewage flows when making connections to existing county sewers and facilities; handling of sewage during a temporary handling and diversion of flow system failure; and handling sewage or flush water inside temporary piping. The Spill Prevention, Control and Countermeasure Plan must also identify best management practices and protective measures, including barricades to protect the pipelines to prevent potential damage to the bypass system and for the overall assurance that the Project will comply with adopted regulations under the San Francisco Bay RWQCB, California Department of Public Health, and County of San Mateo to limit spills and exposure of untreated wastewater to humans and the environment.

PDF WQ-1 The County and its construction contractor shall comply with National Pollutant Discharge Elimination System Permit No. CAS612008 (Order No. R2-2022-0018), also known as the San Francisco Bay Municipal Regional Stormwater Permit. The County and its contractor will implement best management practices, such as those described in the California Stormwater Quality Association Municipal Stormwater BMP Handbook and Construction Stormwater BMP Handbook), to control debris and waste materials during all construction activities.

In paved areas, the County and its construction contractor must manage concrete slurry and wastewater, asphalt, pavement cutting, and other street and road maintenance materials and wastewater to avoid discharge to storm drains from the work sites. The County and its construction contractor must receive appropriate approval to confirm that wastewater generated can be discharged to the sanitary sewer system and pretreatment standards are met.

The County and its construction contractor will sweep and/or vacuum to remove debris, concrete, or sediment residues from work sites upon completion of work. They shall require cleanup of all construction debris, spills, and leaks using dry methods (e.g., absorbent materials, rags, pads, and vacuuming), as described in the Bay Area Stormwater Management Agencies Association Blueprint for a Clean Bay or the CASQA Municipal Stormwater BMP Handbook.

Other Applicable Standards. Project construction may have the potential to release pollution into the air and waterways. To minimize potential Project effects on air quality, the Project would be subject to rules and regulations enforced by the Bay Area Air Quality Management District, including the following:

- **Standard 1-301 (Public Nuisance).** This rule prohibits the discharge "from any source whatsoever in such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

- **Standard 6-6-301 (Prohibition of Trackout onto Paved Roadways).** This rule states that, "The owner owner/operator of any Large Bulk Material Site, Large Construction Site, or Large Disturbed Surface Site shall not cause or allow trackout at any active exit from such site onto an adjacent paved public roadway or shoulder of a paved public roadway that exceeds cumulative 25 linear feet and creates fugitive dust visible emissions without cleaning up such trackout within 4 hours of when the owner/operator identifies such excessive trackout; and shall not cause or allow more than 1 quart of trackout to remain on the adjacent paved public roadway or the paved shoulder of the paved public roadway at the end of any workday."

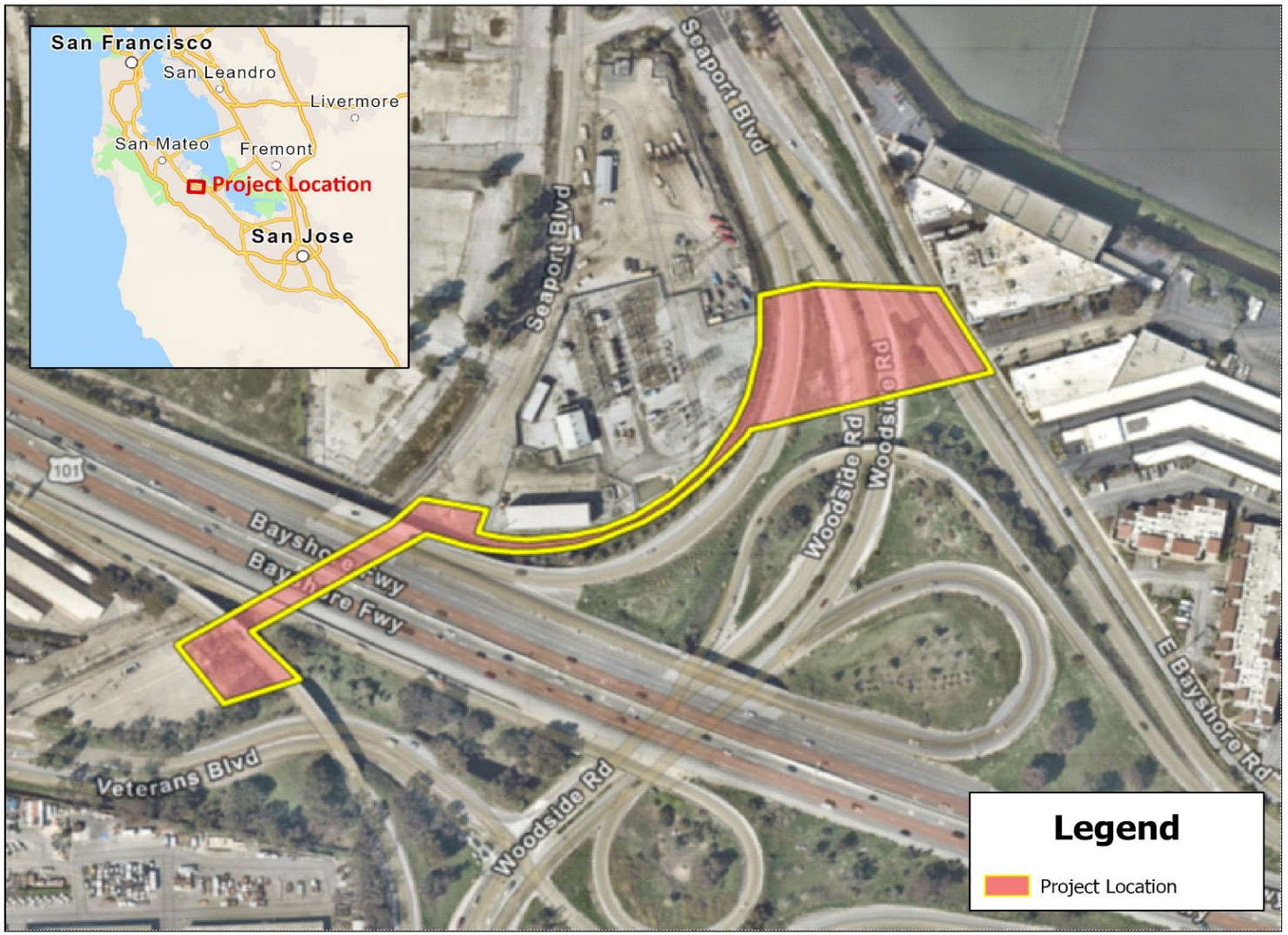
- **Standard 6-6-302 (Prohibition of Visible Emissions During Cleanup of a Trackout).** This rule states that, "The owner/operator of any Large Bulk Material Site, Large Construction Site, or Large Disturbed Surface Site shall not cause or allow a fugitive dust visible emission during cleanup of any trackout that exceeds 20 percent opacity as determined by EPA [Environmental Protection Agency] Method 203B (or as dark in shade as that designated as Number 1 on the Ringelmann Chart), for a period or aggregate periods of more than 3 minutes in any 60-minute period.

12. Other Public Agencies Whose Approval is Required:

- Caltrans
- Redwood City
- Bay Area Air Quality Management District

13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? 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.?:

The County initiated consultation with California Native American tribes in April 2024, pursuant to Public Resources Code Section 21080.3.1. The County received two responses, as further discussed in Section 18, Tribal Cultural Resources, below. None of the tribal contacts provided information indicating the presence of tribal cultural resources, or a heightened sensitivity for buried tribal cultural resources, within the Project site. None of the tribes invited to consult requested additional consultation regarding the Project. Accordingly, the County concluded the tribal consultation process.



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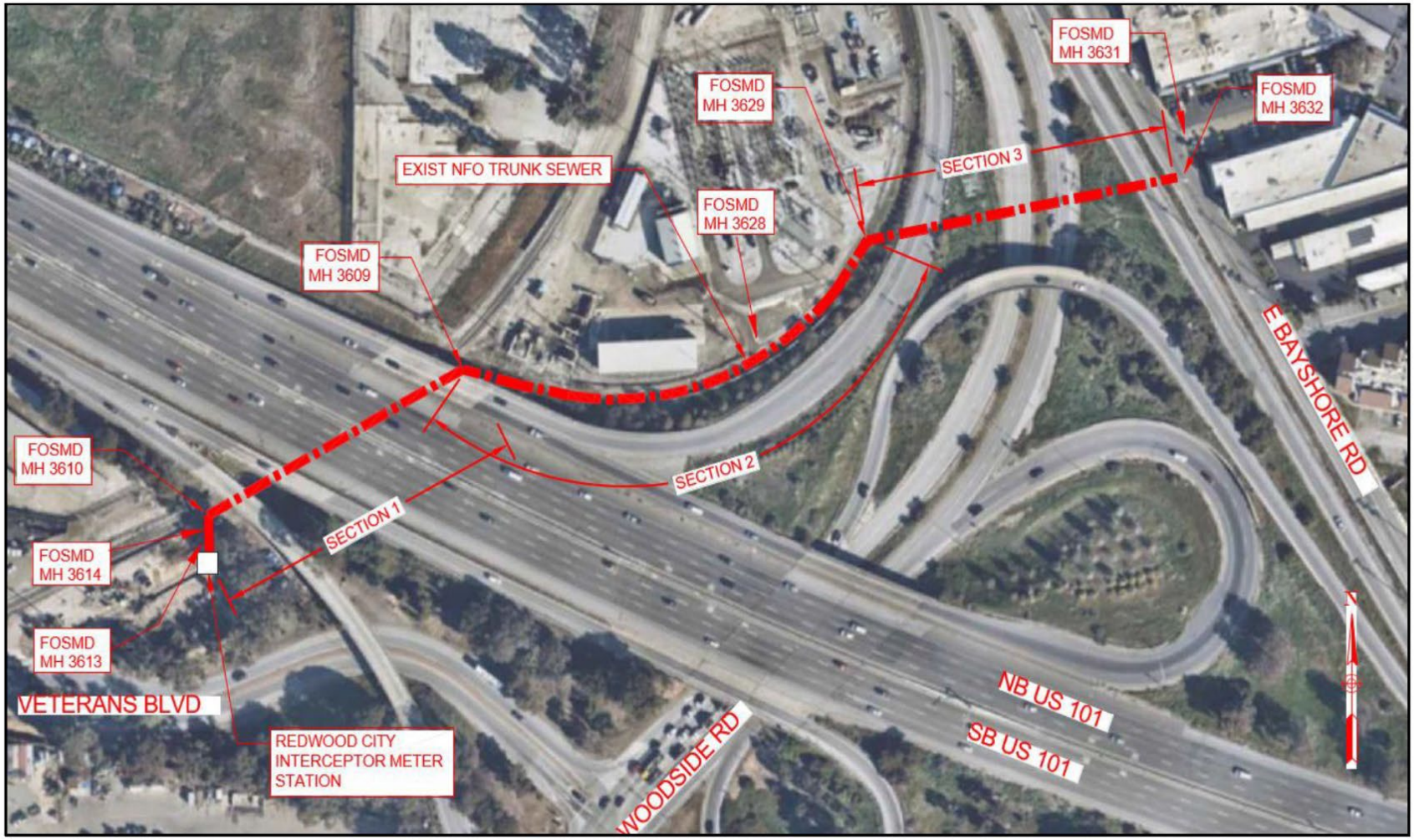
Source: ESRI

Project Location and Regional Location

Figure 1



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Source: Michael Baker International. 2024.

Existing Trunk Sewer

Figure 2

Facing east on the north side of the UPRR track. The County lot and US 101/Woodside Road offramp are in the background.

Facing northeast from the County lot. View of the US 101/Woodside Road offramp in the center and US 101 underpass in the background.

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Source: Michael Baker International, 2024.

Section 1 Photographs

Figure 3

Facing southwest near the entrance of the PG&E Substation. View of US 101 underpass and UPRR track.

Facing west from Manhole 3628. Note the retaining wall supporting the US 101/Seaport Boulevard onramp on the left and the PG&E Substation fence line on the right.

Facing southwest with view of Manhole 3629.

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Source: Michael Baker International. 2024.

Section 2 Photographs

Figure 4

Facing northeasterly from the US 101/Woodside Road northbound offramp. View of Segment 6 and powerline facilities

Facing southwest from Seaport Boulevard. View of the landscaped median separating Seaport Boulevard and the US 101/ Seaport Boulevard onramp, where the proposed microtunnel portal under Section 3 would be set up

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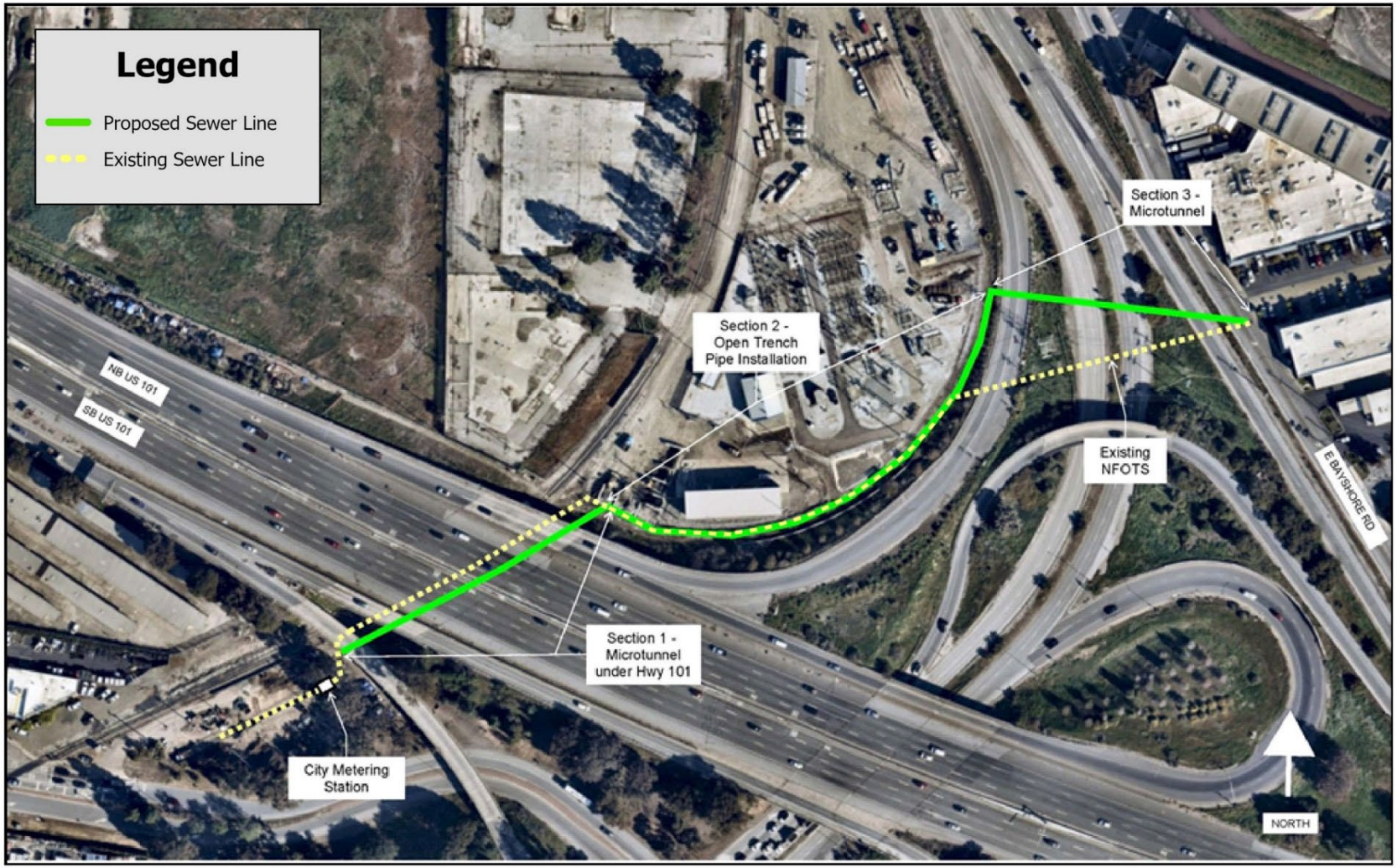
Source: Michael Baker International. 2024.

Section 3 Photographs

Figure 5



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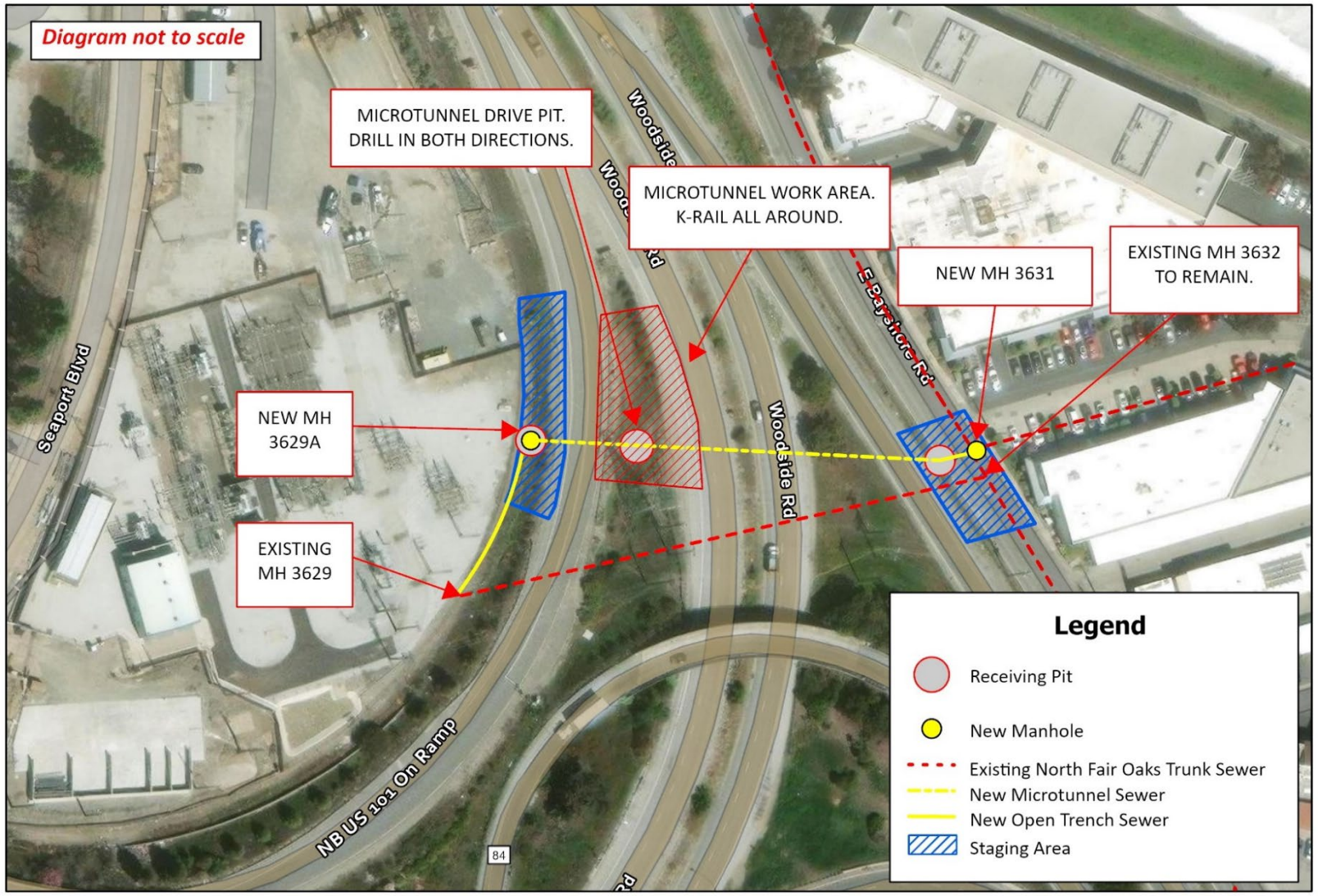
Source: Michael Baker International

Project Location and Realignment

Figure 6



Section 3 Improvements

Figure 7

EVALUATION OF ENVIRONMENTAL IMPACTS

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

	Aesthetics		Energy		Public Services
	Agricultural and Forest Resources	X	Hazards and Hazardous Materials		Recreation
	Air Quality		Hydrology/Water Quality		Transportation
	Biological Resources		Land Use/Planning		Tribal Cultural Resources
	Climate Change		Mineral Resources		Utilities/Service Systems
	Cultural Resources		Noise		Wildfire
	Geology/Soils		Population/Housing	X	Mandatory Findings of Significance

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on- site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.

4. "Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in item 5, below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other California Environmental Quality Act (CEQA) process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

a. Earlier Analysis Used. Identify and state where they are available for review.

b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c. Mitigation Measures. For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources. Sources used or individuals contacted should be cited in the discussion.

1. AESTHETICS.
Except as provided in Public Resources Code Section 21099, would the project:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
1.a.	Have a substantial adverse effect on a scenic vista, views from existing residential areas, public lands, water bodies, or roads?				**X**

Discussion: Scenic views or vistas are defined as panoramic public views of various natural features, including the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views may be from park lands, private and publicly owned sites, and public rights-of-way. Per the City's General Plan EIR Aesthetics Chapter, scenic vistas are primarily available from the southern and western portions of the City, including views from Edgewood County Park, Easter Cross, Cañada College, and Easter Bowl. The Project is located in the northeastern portion of the City and not within any of the identified areas with scenic views or vistas. The Project site is disturbed with urban uses and surrounded by transportation facilities, utility systems, including an electrical substation, and industrial and commercial developments. Furthermore, the Project would replace an existing sewer line that is subterranean. Construction of the Project would be temporary (six months) and the improvements would not change any existing views of the Project site. Thus, there would be no impact on scenic vistas or views.

Source: City of Redwood City, General Plan EIR, Aesthetics Chapter, page 4.1-23, 2010, accessed May 6, 2024, https://www.redwoodcity.org/home/showpublisheddocument/5007/635782669602830000.

1.b.	Substantially damage or destroy scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				**X**

Discussion: The Project site is not located in a state scenic highway and there are no designated state scenic highways near the Project site. The closest officially designated state scenic highway is a segment of Interstate 280, approximately 4 miles southwest of the Project site in the Town of Woodside. Due to the distance, no impact would occur to resources within a state scenic highway.

Source: California Department of Transportation, California Scenic Highways, accessed May 6, 2024, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa.

1.c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings, such as significant change in topography or ground surface relief features, and/or development on a ridgeline? (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**
Discussion: The Project is located in an urbanized area. The Project site is not associated with an APN and does not have a zoning designation. It is located in the City and Caltrans rights-of-way. Furthermore, the Project involves the replacement of subterranean sewer pipe segments and does not consist of the construction of any buildings or features that would be subject to any scenic quality regulations. There are no other applicable regulations governing the scenic quality of the Project. Thus, no impact would occur. **Source:** City of Redwood City, Community GIS, Version 5, accessed April 25, 2024, https://webgis.redwoodcity.org/community/; Project Plans.				
1.d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?			**X**	
Discussion: The Project does not propose any new sources of light. The Project is not located adjacent to any light-sensitive uses. Any lighting for construction would be temporary in nature and would be designed to limit upward light reflect and sky glows. Construction would be completed during the City's standard construction hours, from 7 a.m. to 8 p.m., Monday through Friday. Thus, the Project would not create a new source of substantial light or glare and impacts would be less than significant. **Source:** Project Plans; City of Redwood City, Municipal Code Section 24.32 – Time Limitations, accessed April 25, 2024.				

1.e.	Be adjacent to a designated Scenic Highway or within a State or County Scenic Corridor?				**X**
Discussion: As discussed in Section 1.b, the closest officially designated state scenic highway is a segment of Interstate 280, approximately 4 miles southwest of the Project site in the Town of Woodside. The closest County Scenic Corridor is a section of King's Mountain Road north of the Town of Woodside, approximately 5 miles southwest of the Project site. Thus, there would be no impact to State Scenic Highway or County Scenic Corridor. **Source:** County of San Mateo, General Plan, Scenic Corridors, 2010, accessed April 25, 2024, https://www.smcgov.org/media/73106/download?inline=.					
1.f.	If within a Design Review District, conflict with applicable General Plan or Zoning Ordinance provisions?				**X**
Discussion: The Project involves the replacement of subterranean sewer pipe segments and is not located in a Design Review District as identified by the County of San Mateo or the City. Thus, there would be no impact. **Source:** County of San Mateo, Planning and Building Map Viewer, accessed April 25, 2024, https://gis.smcgov.org/apps/publicviewer/; City of Redwood City, General Plan, Historic Resources Chapter, 2010, accessed May 21, 2024, https://www.redwoodcity.org/home/showpublisheddocument/28346/638484502355170000.					
1.g.	Visually intrude into an area having natural scenic qualities?				**X**
Discussion: The Project site is located in a disturbed area with urban uses. It is surrounded by transportation facilities, utility systems, including an electrical substation, and industrial and commercial developments. The Project site is not in an area having natural scenic qualities as identified by the Redwood City General Plan or the County of San Mateo General Plan. Thus, there would be no impact on natural scenic qualities. **Source:** City of Redwood City, General Plan EIR, Aesthetics Chapter, page 4.1-23, 2010, accessed May 6, 2024, https://www.redwoodcity.org/home/showpublisheddocument/5007/635782669602830000; County of San Mateo, General Plan, Visual Quality Chapter, 1986, accessed May 21, 2024.					

2. AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
2.a.	For lands outside the Coastal Zone, 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**

Discussion: There are no agricultural uses present on the Project site or in the adjoining areas. The Project site is disturbed with urban uses and surrounded by transportation facilities, utility systems, including an electrical substation, and industrial and commercial developments. The Project site consists of the right-of-way for Highway 101 and a parking lot, unvegetated areas adjacent to the northbound on-ramp from Seaport Boulevard, and landscaped road dividers west of Bayshore Drive.

Neither the Project site nor the surrounding area is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on the "Important Farmland in California" map prepared by the California Natural Resources Agency pursuant to the Farmland Mapping and Monitoring Program. Therefore, the proposed Project would not convert farmland to a non-agricultural use, and no impact would occur.

Source: California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, California Important Farmland Finder, accessed April 25, 2024, https://maps.conservation.ca.gov/DLRP/CIFF.

2.b.	Conflict with existing zoning for agricultural use, an existing Open Space Easement, or a Williamson Act contract?				**X**
Discussion: The Project site is not associated with an APN and does not have zoning. It is in existing City and Caltrans rights-of-way and not zoned for agricultural uses or open space. Per the California Williamson Act Enrollment Finder, the Project site is not subject to a Williamson Act contract. Thus, there would be no impact. **Source:** California Department of Conservation, Division of Land Resource Protection, California Williamson Act Enrollment Finder, accessed April 18, 2024. https://maps.conservation.ca.gov/dlrp/WilliamsonAct/					
2.c.	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 forestland to non-forest use?				**X**
Discussion: The Project site is disturbed with and surrounded by urban uses. No portion of the Project site or surrounding area is identified as farmland or used for agricultural purposes, and no portion of the campus or surrounding area is designated as forestland. Therefore, the Project would not change the existing environment in a way that would result in the conversion of farmland to non-agricultural use or forestland to non-forest use, and no impact would occur. **Source:** Project Plans; City of Redwood City, Community GIS, Version 5, accessed April 25, 2024, https://webgis.redwoodcity.org/community.					
2.d.	For lands within the Coastal Zone, convert or divide lands identified as Class I or Class II Agriculture Soils and Class III Soils rated good or very good for artichokes or Brussels sprouts?				**X**
Discussion: The Project is not located within the Coastal Zone, per the California Coastal Commission map of local coastal program areas. There are no local coastal program areas in the City where the Project is located. Thus, there would be no impact on Class I and Class II Agriculture Soils or Class III Soils. **Source:** California Coastal Commission, Local Coastal Program Areas, accessed May 1, 2024, https://www.coastal.ca.gov/maps/lcp/.					

2.e.	Result in damage to soil capability or loss of agricultural land?				**X**
Discussion: The Project site is disturbed and surrounded by urban uses. It does not include any agricultural land or land that would be used for agricultural purposes. The site is located in existing rights-of-way. The Project will not result in damage to soil capability or loss of agricultural land. No impact would occur. **Source:** Project Plans; City of Redwood City, Community GIS, Version 5, accessed April 25, 2024, https://webgis.redwoodcity.org/community.					
2.f.	Conflict with existing zoning for, or cause rezoning of, forestland (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))?				**X**
Discussion: The Project site is not associated with an APN and does not have an identified zoning category. No portion of the Project site is zoned for forestland, timberland, or Timberland Production as defined in Public Resources Code Section 12220(g) and Government Code Section 4526. Therefore, the Project would not conflict with existing zoning for or cause a rezoning of forestland or timberland. No impact would occur. **Source:** County of San Mateo, Planning and Building Map Viewer, accessed April 25, 2024, https://gis.smcgov.org/Html5Viewer/Index.html?configBase=https://gis.smcgov.org/Geocortex/Essentials/REST/sites/PubPlanViewer_13/viewers/HTML52110/virtualdirectory/Resources/Config/Default; Redwood City Community GIS, Version 5, accessed April 25, 2024, https://webgis.redwoodcity.org/community.					

3.	**AIR QUALITY.** Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
		Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
3.a.	Conflict with or obstruct implementation of the applicable air quality plan?				**X**

Discussion: The applicable air quality plan in the San Francisco Bay Area Air Basin (Basin) is the Bay Area Air Quality Management District's (BAAQMD) 2017 Clean Air Plan. The 2017 Clean Air Plan outlines how the Bay Area will attain air quality standards, reduce population exposure and protect public health, and reduce emissions.

A project would be consistent with the 2017 Clean Air Plan if it would not exceed the growth assumptions in the plan. The primary method of determining consistency with the 2017 Clean Air Plan growth assumptions is consistency with the General Plan land use designations and zoning designations for the Project site. It should be noted that the 2017 Clean Air Plan does not make a specific assumption for developments but relies on assumptions on growth in population, travel, and business based on socioeconomic forecasts. The Project involves the replacement of an existing sewer pipeline and therefore would not result in new types or the expansion of existing services or operations. As such, given the nature of the Project, it would not result in direct or indirect population growth and would not affect Countywide plans for population growth at the Project site. Additionally, the Project would not require regular maintenance activities, and so would not increase employment. Therefore, the Project would not exceed the growth assumptions of the 2017 Clean Air Plan.

Furthermore, as described below in Sections 3.b and 3.c, construction and operational air quality emissions generated by the Project would not exceed the BAAQMD's emissions thresholds. These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. Because the Project would not exceed these thresholds, the Project would not be considered by the BAAQMD to be a substantial emitter of criteria air pollutants and would not contribute to any non-attainment status in the Basin. Therefore, the Project would comply with the 2017 Clean Air Plan, and no impact would occur.

Source: Bay Area Air Quality Management District 2017 Clean Air Plan. CEQA Guidelines Appendix F.

3.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**	

Discussion:

Construction

Construction activities associated with the Project include sewer pipeline construction, paving, and trenching and excavation activities. Project construction would be completed over a six-month period, beginning in April 2025. In accordance with the BAAQMD Guidelines, the Project's daily construction emissions for reactive organic gas (ROG), nitrous oxide, coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) were projected using the California Emissions Estimator Model (CalEEMod). Exhaust emission factors for typical diesel-powered heavy equipment are based on CalEEMod version 2022.1 program defaults. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site. The Project would involve demolition of approximately 200 tons of concrete pipes and manholes and an import and export of approximately 200 cubic yards of soil materials.

Table 2: *Short-Term Construction Emissions* presents the anticipated daily short-term construction emissions. Appendix A, *Air Quality/Greenhouse Gas/Energy Data*, provides the CalEEMod outputs and results. The CalEEMod modeling assumes implementation of the BAAQMD Basic Best Management Practices, which requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site, and fugitive dust emissions to be controlled by regular watering or other dust prevention measures. As shown in Table 2, the criteria pollutants emissions generated during Project construction would not exceed the BAAQMD significance thresholds. Therefore, Project impacts related to construction emissions would be less than significant.

Table 2: Short-Term Construction Emissions

Construction Emissions[2]	Pollutant (pounds/day)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**1.48**	**13.6**	**0.89**	**0.65**
BAAQMD Thresholds[3]	*54*	*54*	*82*	*54*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***

Notes: ROG = reactive organic gas; NO_x = nitrous oxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

1. Emissions were calculated using CalEEMod, version 2022.1. The higher emissions between summer and winter were presented as a conservative analysis.
2. Modeling assumptions include compliance with BAAQMD Basic Best Management Practices which requires the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.
3. BAAQMD thresholds for PM_{10} and $PM_{2.5}$ during construction are for exhaust emissions only. However, as a conservative analysis, total emissions of the Project, including exhaust and fugitive dust emissions, are presented and compared to the BAAQMD thresholds.

Source: See Appendix A, *Air Quality/Greenhouse Gas/Energy Data* for detailed modeling data.

The BAAQMD requires the implementation of all Basic Best Management Practices for Construction-Related Fugitive Dust Emissions whether or not a project's construction-related emissions exceeds applicable thresholds. Therefore, the Project would be required to implement the BAAQMD's construction control measures as a project design feature to control fugitive dust emissions at the Project site during all phases of construction.

PDF AQ-1 The County Department of Public Works will ensure the contractor implements the following basic construction control measures for the Project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- Soil piles shall be covered with plastic sheeting and weighted with sandbags when not in active use.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 miles per hour.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Unpaved roads providing access to sites located 100 feet or farther from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
- A publicly visible sign shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's General Air Pollution Complaints phone number shall also be visible to ensure compliance with applicable regulations.

Operations

After construction, any potential long-term maintenance of the proposed pipe segments would be similar to existing conditions and not result in a substantial increase to the roadway capacity or generate additional traffic, which would contribute to criteria pollutant emissions. In addition, due to the nature of the Project, no area or energy source emissions would be generated. As such, as the Project would not result in new mobile sources of emissions or permanent stationary sources, and the Project would not have the potential to generate criteria air pollutants emissions from Project operations. No operational impacts to air quality would occur.

Source: BAAQMD Guidelines. Air Quality/Greenhouse Gas/Energy Data (Appendix A).

3.c.	Expose sensitive receptors to substantial pollutant concentrations, as defined by the Bay Area Air Quality Management District?			**X**	

Discussion: Sensitive land uses are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The California Air Resources Board (CARB) has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The closest sensitive receptor is the existing hospital use (Kaiser Permanente) located approximately 1,200 feet to the west; the nearest residential uses are the single-family residences located approximately 1,620 feet southwest of the Project site.

Construction

The sensitive receptors would be exposed to emissions from construction activities, mainly dust. However, these emissions would be temporary and would cease once construction work is completed. Also, as described above, the Project would implement basic construction control measures and would be required to comply with applicable BAAQMD rules and regulations, which would reduce fugitive dust emissions from construction activities.

Potential health effects on sensitive receptors occur with long-term exposure to pollutants. This includes diesel particulate matter, a toxic air contaminant (TAC) often associated with construction activities, generated by construction equipment. As previously noted, the closest sensitive receptors are the existing hospital use and single-family residences. TAC emissions would not cause significant localized impacts due to the distance between the construction activities and the sensitive receptors. In addition, construction impacts would cease with the completion of Project work, and the length of exposure time would be short. Impacts due to exposure of sensitive receptors to construction emissions would be less than significant.

Operations

As previously discussed, maintenance of the proposed improvements would be similar to existing conditions and would not result in a substantial increase in roadway capacity or generate additional traffic. In addition, due to the nature of the Project, no stationary source emissions would be generated. As the Project would not include new mobile sources of emissions or permanent stationary sources, the Project would not have the potential to generate air pollutant emissions, including TACs, from Project operations. Impacts due to exposure of sensitive receptors to operational emissions would be less than significant in this regard.

Source: Bay Area Air Quality Management District CEQA Guidelines. Air Quality/Greenhouse Gas/Energy Data (Appendix A).

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

Discussion: According to the BAAQMD, land uses associated with odor complaints typically include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The Project does not include any uses identified by the BAAQMD as being associated with odors.

Construction activities associated with the Project may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short term in nature and cease upon Project completion. Any odor impacts to existing adjacent land uses would be short term and not substantial. In addition, the Project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would further reduce the detectable odors from heavy-duty equipment exhaust. The Project would also comply with the BAAQMD Regulation 8, Rule 3, which would minimize odor impacts from ROG emissions. Any impacts to existing adjacent land uses would be short term and are less than significant.

Source: Bay Area Air Quality Management District CEQA Guidelines.

4.	**BIOLOGICAL RESOURCES.** Would the project:				
		Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
4.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 or National Marine Fisheries Service?			**X**	

Discussion: Sensitive plants include those listed as threatened or endangered, proposed for listing, or candidate for listing by the US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society. Sensitive wildlife species are those species listed as threatened or endangered, proposed for listing, or candidate for listing by the USFWS and/or

CDFW, or considered special status by the CDFW. Sensitive habitats are those that are regulated by the USFWS and US Army Corps of Engineers, and/or those considered sensitive by the CDFW.

A Biological Assessment Memo was prepared for the Project (Appendix B). The Project site is fully developed with a mix of roadways, unvegetated easements, and landscaped area. There are no natural vegetation communities on the Project site. Based on the existing site conditions and disturbances and lack of natural habitat, there are no special-status plant or animal species that would have a potential to occur on the Project site.

There is a potential for birds to nest on the ground or in trees within the Project site or its immediate vicinity, such as on the transmission towers near the PG&E substation. The Project would be required to comply with the federal Migratory Bird Treaty Act and California Fish and Game Code, which would limit potential direct and/or indirect impacts to active bird nests and/or nesting birds, included as a project design feature. Compliance with existing laws and regulations would ensure that impacts to migratory birds would be less than significant.

PDF BIO-1 In compliance with the Migratory Bird Treaty Act and California Fish and Game Code, if Project-related activities are initiated during bird nesting season (February 1 to September 15) per each construction section, the County and/or its construction contractor shall retain a qualified biologist to conduct a preconstruction nesting bird clearance survey no more than three days prior to the start of any vegetation removal or ground-disturbing activities. The qualified biologist shall survey all trees and vegetation within 300 feet of the construction area. If no active bird nests are detected during the clearance survey, Project construction activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a “no-disturbance” buffer (300 feet for raptors and 50 feet for passerines) shall be established around the active nest. The size of the no-disturbance buffer shall be increased or decreased based on the judgment of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests identified to determine if Project-related activities occurring outside the no-disturbance buffer disturb the birds and if the buffer needs to be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, Project activities within the no-disturbance buffer may occur following an additional survey by the qualified biologist to search for any new bird nests in the restricted area. If Project activities within a section have ceased for more than 7 days during the bird nesting season, a preconstruction nesting bird clearance for the relevant section will be reinitiated to ensure no new nests are active.

Source: Biological Assessment Memo (Appendix B).

4.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 U.S. Fish and Wildlife Service or National Marine Fisheries Service?				**X**

Discussion: The Project site is developed in existing rights-of-way that are disturbed. As noted in the Biological Assessment Memo, there are no natural vegetation communities on the Project site. Per the USFWS's National Wetlands Inventory Mapper, there are no identified riparian habitats on the Project site. No riparian or sensitive natural community occurs within the Project site or surrounding area, and therefore no impact to riparian or sensitive natural communities would occur with the implementation of the proposed Project.

Source: Biological Assessment Memo (Appendix B); US Fish and Wildlife Service, National Wetlands Inventory Mapper, accessed April 27, 2024, https://www.fws.gov/wetlands/data/mapper.html**.**

4.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**

Discussion: The Project site is developed and within existing rights-of-way. Per the USFWS's National Wetlands Inventory Mapper, there are no identified state or federally protected wetlands on the Project site. The closest wetland habitat to the Project site is an identified lake feature approximately 300 feet to the north, identified as salt ponds in the Natural Resources Chapter of the City's General Plan; the closest federally managed land is the Don Edwards San Francisco Bay Wildlife Refuge, approximately 1 mile northwest of the Project site. Therefore, no impact to identified state or federally protected wetlands would occur with implementation of the proposed Project.

Source: Biological Assessment Memo (Appendix B); City of Redwood City, General Plan, Natural Resources Element, 2023, accessed April 25, 2024; US Fish and Wildlife Service, National Wetlands Inventory Mapper, accessed April 25, 2024, https://www.fws.gov/wetlands/data/mapper.html**.**

4.d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?				**X**
Discussion: In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and vital resources, thereby encouraging population growth and diversity. The Project site is completely disturbed and surrounded by transportation facilities, utility systems, including an electrical substation, and industrial and commercial developments. The Project site is not a part of or adjacent to undisturbed habitat fragments, designated wildlife migration corridors, or vital resources. The Project site is not easily accessible nor does it provide any resources, such as vegetative cover, for wildlife. No migratory corridors or linkages would be impacted by the proposed Project. Therefore, the Project would not interfere with the movement of wildlife, and no impact would occur. **Source:** Biological Assessment Memo (Appendix B).					
4.e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (including the County Heritage and Significant Tree Ordinances)?			**X**	
Discussion: The City's Street Tree Ordinance protects all City trees growing within the public right-of-way. These trees cannot be planted, pruned, or removed without first securing a permit from the City. The Project would require the removal of three gum trees (*Eucalyptus* sp.) and one canary palm tree (*Phoenix canariensis*), which are ornamental trees and within the Caltrans right-of-way. They are not protected species. Tree removal would comply with requirements identified in the Caltrans encroachment permit. Therefore, impacts related to the removal of trees would be less than significant. **Source:** Biological Assessment Memo (Appendix B); City of Redwood City, Municipal Code, Chapter 35 – Tree Preservation, accessed May 22, 2024; Project Plans.					
4.f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, other approved local, regional, or state habitat conservation plan?				**X**
Discussion: The Project site is located in an urban area and not within the boundaries of any adopted habitat conservation plan. Moreover, there are no natural vegetation communities on the Project site. Therefore, the Project would not conflict with the provisions of any adopted habitat conservation or similar plan, and no impact would occur. **Source:** Biological Assessment Memo (Appendix B).					

4.g.	Be located inside or within 200 feet of a marine or wildlife reserve?				**X**
Discussion: The Project site contains and is surrounded by urban and infrastructure uses. The Project site is not inside or within 200 feet of a marine or wildlife reserve. The closest wildlife reserve is the Don Edwards San Francisco Bay Wildlife Refuge, approximately 1 mile northwest of the Project site. Due to the distance, there would be no impact to the nearest wildlife reserve. **Source:** Biological Assessment Memo (Appendix B); US Fish and Wildlife Service, National Wetlands Inventory Mapper, accessed May 1, 2024, https://www.fws.gov/wetlands/data/mapper.html.					
4.h.	Result in loss of oak woodlands or other non-timber woodlands?				**X**
Discussion: As discussed in Section 2, Agricultural and Forest Resources, and as provided in the Biological Assessment Memo prepared for the Project, the Project site does not have oak or other non-timber woodlands. The Project does not propose the removal of any of these types of trees. Therefore, the Project would not result in the loss of oak woodlands or other non-timber woodlands; no impact would occur. **Source:** Project Plans; Biological Assessment Memo (Appendix B).					

5.	**CULTURAL RESOURCES.** Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
5.a.	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?				**X**
Discussion: CEQA Guidelines Section 15064.5 defines a historical resource as one that is eligible for listing on the California Register of Historical Resources, a resource included in a local register of historical resources, and any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. A Cultural Resources Identification Memorandum was prepared for the Project (Appendix C). The report included a Northwest Information Center records search, historical society consultation, literature and map review, Native American Heritage Commission Sacred Lands File search, and Native American outreach. Two cultural resources were identified immediately adjacent to the Project site; however, neither qualify as a historical resource, as described below: • P-41-002592 includes a portion of the former Redwood City Harbor Company Spur railroad (adjacent UPRR) line. This resource was determined ineligible for inclusion in the National Register of Historic Places by consensus in 2015.					

- P-41-002593 includes a collection of switches, transformers, circuit breakers, regulators, and busses at the adjacent PG&E Redwood City Substation, which are used to receive, step down, and distribute voltages for commercial and industrial use. The resource was evaluated and recommended not eligible for inclusion in either the National or California Register in 2014.

There are no historical resources, as defined in CEQA Guidelines Section 15064.5, on the Project site as identified in the Cultural Resources Identification Memorandum. The Project site is not listed on the National Register, California Historical Resources, California Historical Landmarks, California Office of Historic Preservation's Built Environment Resources Directory, or Redwood City Historic Districts, identified in the Historic Resources chapter of the City's General Plan. As such, no impact to historical resources would occur.

Source: Cultural Resources Identification Memorandum (Appendix C); City of Redwood City, General Plan, Historic Resources Chapter, accessed May 21, 2024; National Park Services, National Register of Historic Places, accessed September 1, 2023, https://www.nps.gov/subjects/nationalregister/database-research.htm#table; California State Parks, Office of Historic Preservation, accessed September 1, 2023, https://ohp.parks.ca.gov/.

5.b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Section 15064.5?			**X**	

Discussion: As defined in CEQA Guidelines Section 15064.5, an archaeological resource is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria provided in the Public Resource Code Section 21083.2(g):

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

The Cultural Resources Identification Memorandum included a buried archaeological site sensitivity assessment that determined a low sensitivity for buried archaeological resources within the Project site. The Project site has been subject to considerable disturbance from the twentieth century to the present, including railroad and interstate construction, building construction, and the installation of the existing sewer, all of which would be expected to have impacted the underlying soils to a considerable depth. Therefore, based on soils, previous disturbance, and lack of previously identified resources in the area, the Project site's buried site sensitivity is low.

While research suggests that archaeological sensitivity is low within the Project site, there is the potential, however remote, to identify resources during earth-moving activities. Impacts to archaeological resources and human remains will be avoided through implementation of existing laws, including Public Resources Code Section 5097.5(a), which address the treatment of archaeological or historical sites or features in the event of accidental discoveries. Compliance with existing regulations, including the below project design feature will ensure that any impacts of construction and operation of the pipeline to archaeological resources are less than significant.

PDF CUL-1 In the event that any subsurface cultural resources are encountered during earth-moving activities, excavations within 50 feet should be halted until an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology can evaluate the findings and make recommendations. Prehistoric materials can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, or quartzite toolmaking debris; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash, and charcoal, shellfish remains, and cultural materials); and stone milling equipment (e.g., mortars, pestles, handstones). Historical materials might include wood, stone, or concrete footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, metal, glass, ceramics, and other refuse. The archaeologist may evaluate the find in accordance with federal, state, and local guidelines, including those set forth in the California Public Resources Code Section 21083.2, to assess the significance of the find and identify avoidance or other measures as appropriate.

Source: Cultural Resources Identification Memorandum (Appendix C).

5.c.	Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

Discussion: The Project site is not a known burial site. Due to the previous disturbance as described in Section 5.b, the likelihood of finding buried remains during construction is considered low. While the archaeological sensitivity is low within the Project site, there is the potential, however remote, to identify resources during earth-moving activities. Significant impacts to archaeological resources and human remains would be avoided through application of existing laws that address the accidental discovery of human remains, as identified below in PDF CUL-2; additionally, PDF CUL-2 would ensure that any Project impacts to human remains are less than significant.

PDF CUL-2 If human remains are found, excavations shall stop within 50 feet of the find, and State of California Health and Safety Code Sections 7050.5-7055 will be followed. The contractor shall notify the County immediately. The County will notify the San Mateo County coroner. If the coroner determines the remains are human and archaeological, in compliance with Section 5097.98 of the California Public Resources Code, the coroner shall notify the Native American Heritage Commission, who will identify the legal most likely descendant (MLD). If avoidance is not feasible, then the qualified archaeologist, in consultation with the MLD, shall prepare and execute a plan of treatment with the advice and consent of the County. Treatment is anticipated to include respectful excavation of the remains and repatriation and reburial.

Source: Cultural Resources Identification Memorandum (Appendix C).

6. ENERGY. Would the project**:**				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
6.a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			**X**	

Discussion: Appendix F of the CEQA Guidelines is an advisory document that assists environmental document preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy. The analysis below relies upon CEQA Guidelines Appendix F, which recommends the following topics that a lead agency may consider to determine whether the project would result in inefficient, wasteful, and unnecessary consumption of energy and whether the project would conflict with adopted energy conservation plans:

- **Topic 1**: The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- **Topic 2**: The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- **Topic 3**: The effects of the project on peak and base period demands for electricity and other forms of energy.
- **Topic 4**: The degree to which the project complies with existing energy standards.
- **Topic 5**: The effects of the project on energy resources.
- **Topic 6**: The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Construction

Project construction would require temporary energy consumption, primarily from the use of fuel for construction equipment, construction worker vehicle trips to and from the Project site, and the import and export of earth materials to and from the Project site by heavy trucks. The Project would involve the demolition of approximately 200 tons of concrete pipes and manholes and an import and export of approximately 200 cubic yards of soil materials. It should be noted that the Project's construction duration and equipment list has been adjusted based on the information provided by the County. Energy consumption during construction, including fuel consumption from construction equipment, hauling trips, vendor trips, and worker trips, was estimated using the assumptions and factors from CalEEMod version 2022.1.

During construction, the Project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials.

Fossil fuels for construction vehicles and other energy-consuming equipment would be used during pipeline construction, paving, and trenching and excavation activities. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation would occur during construction through compliance with state requirements that heavy-duty diesel equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest US Environmental Protection Agency and CARB engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

The Project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials would not substantially increase demand for energy compared to overall local and regional demand for construction materials. As shown in

Table *3: Project and County Energy Consumption*, the Project's annual average fuel consumption from off-road construction equipment use would be approximately 15,229 gallons, which would increase fuel use in the County by 1.6320 percent. Also indicated in Table 3, the Project's annual average fuel consumption from on-road construction vehicle use would be approximately 3,580 gallons, which would increase fuel use in the San Mateo County by 0.4935 percent. As such, construction would have a nominal effect on the local and regional energy supplies.

Table 3: Project and County Energy Consumption

Energy Type	Project Annual Energy Consumption	San Mateo County Annual Energy Consumption	Percentage Increase Countywide
Construction Off-Road Fuel Consumption[1]	15,229 gallons	933,150 gallons	1.6320%
Construction On-Road Fuel Consumption[1]	3,580 gallons	725,429 gallons	0.4935%

Notes:
1. The Project's construction and automotive fuel consumption is compared with the projected Countywide fuel consumption in 2025 (construction start year). Countywide fuel consumption is from the California Air Resources Board EMFAC2021 model.

Source: Refer to Appendix A, *Air Quality/Greenhouse Gas/Energy Data* for detailed modeling data.

It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or state. Additionally, construction contractors would be required to comply with the provisions of California Code of Regulations Title 13, Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes and would minimize unnecessary fuel consumption. Construction equipment would be subject to the US Environmental Protection Agency Construction Equipment Fuel Efficiency Standard, which would also minimize inefficient, wasteful, or unnecessary fuel consumption. Furthermore, per applicable regulatory requirements, such as the 2022 CALGreen Code (California Code of Regulations, Title 24, Part 11), the Project would comply with construction waste management practices to divert a minimum of 65 percent of non-hazardous construction and demolition waste. Therefore, construction

fuel consumption would not be any more inefficient, wasteful, or unnecessary than development projects. As such, a less than significant impact would occur.

Operation

The Project involves replacing the existing NFOTS outfall trunk sewer. The Project would not require maintenance during operation that would be beyond existing conditions. The Project would not increase the roadway capacity or generate additional traffic. As such, the Project would not include new mobile sources or permanent stationary sources that would require operational energy consumption. Therefore, operational fuel and energy consumption would not be any more inefficient, wasteful, or unnecessary than the existing conditions. No impact would occur.

Source: Project Plans; Air Quality/Greenhouse Gas/Energy Data (Appendix A).

6.b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.				**X**

Discussion: State and regional plans for renewable energy and energy efficiency include the California Energy Commission's Integrated Energy Policy Report and Title 24 standards, which includes CALGreen standards. The County's General Plan and Community Climate Action Plan (CCAP) both identify goals, policies, measures, and strategies to reduce energy consumption throughout the County. These standards and plans focus on the long-term operation of projects, including energy efficiency and on-road transportation. As the proposed sewer replacement project would have minimal construction energy consumption and no operational energy consumption, energy conservation strategies from state, regional, and local plans do not apply to the Project. Therefore, the Project would not conflict with or obstruct a state, regional, or local plan for renewable energy and energy efficiency.

Source: Project Plans; San Mateo County, Community Climate Action Plan, 2022, accessed April 2024, https://www.smcsustainability.org/climate-change/climate-action-planning/cc-action-plan#.

7. GEOLOGY AND SOILS. Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
7.a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the following, or create a situation that results in:				
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? *Note: Refer to Division of Mines and Geology Special Publication 42 and the County Geotechnical Hazards Synthesis Map.*				**X**
Discussion: The Project site is not located within a state-designated Alquist-Priolo fault hazard zone. The nearest fault hazard zone is the Hayward fault, located approximately 10 miles east of the Project site. No active faults are known to cross the Project site and surrounding vicinity. Therefore, the Project would not directly or indirectly cause substantial adverse effects related to the rupture of a known earthquake fault. No impact would occur. **Source:** Geotechnical Evaluation (Appendix D); California Geological Survey, Earthquake Zones of Required Investigation Data Viewer, accessed April 25, 2024, https://maps.conservation.ca.gov/cgs/EQZApp/app/.				
ii. Strong seismic ground shaking?			**X**	
Discussion: A Geotechnical Evaluation (Appendix D) was prepared for the Project in October 2023. The Project site is located within a seismically active region and may experience a relatively high degree of ground shaking following a seismic event on a nearby fault. However, due to the nature of the Project, effects related to seismic ground shaking on the surrounding environment would pose negligible hazard to human life. Thus, impacts would be less than significant. **Source:** Geotechnical Evaluation (Appendix D).				
iii. Seismic-related ground failure, including liquefaction and differential settling?			**X**	
Discussion: The site is located within a seismic hazard zone for liquefaction as mapped by the California Geological Survey. However, the Geotechnical Evaluation determined that liquefaction-related impacts to the proposed pipeline replacement pose negligible hazard to human life. Thus, impacts would be less than significant. **Source:** Geotechnical Evaluation (Appendix D).				

iv. Landslides?				**X**
Discussion: The Project is not located in an area identified as having existing landslides per the County of San Mateo County Hazards Existing Landslides map. The Project is located in the "flat land" designation. Thus, there would be no impacts. **Source:** San Mateo County, Hazards – Existing Landslides, accessed May 1, 2024, https://www.smcgov.org/media/73076/download?inline= .				
v. Coastal cliff/bluff instability or erosion?				**X**
Discussion: The Project site is not located on a coastal cliff or bluff. There would be no impact related to coastal cliff/bluff instability and erosion. **Source:** Project Plans.				
7.b. Result in substantial soil erosion or the loss of topsoil?			**X**	
Discussion: Construction activities would be required to implement standard construction best management practices for erosion control and therefore limit the loss of topsoil. As discussed in Section 10.a below, the Project would implement Project Design Feature WQ-1, which would require Project compliance with the San Francisco Bay Regional Water Quality Control Board's (RWQCB) National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R2-2022-0018, NPDES Permit No. CAS612008), also known as the San Francisco Bay Municipal Regional Stormwater Permit. Best management practices included in the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) would be implemented to reduce soil erosion and the loss of topsoil. Thus, impacts would be less than significant. **Source:** Project Plans.				
7.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, severe erosion, liquefaction or collapse?			**X**	
Discussion: The Project site is in an area mapped for susceptibility for liquefaction and dynamic settlement. As analyzed in the Geotechnical Evaluation, dynamic settlement and liquefaction-related impacts pose negligible hazard to human life. Project design and construction will comply with recommendations and standards regarding excavation and soils in the evaluation, including compliance with Excavation Rules and Regulations (29 Code of Federal Regulations, Part 1926) developed by the Occupational Safety and Health Administration, Guidelines for Temporary Shoring, and disposal of groundwater in accordance with San Francisco Bay Regional Water Quality Control Board guidelines. With the implementation of construction design features and recommendations in the Geotechnical Evaluation (PDF GEO-01), impacts would be less than significant.				

PDF GEO-1 The Project will comply with recommendations and standards as contained in the Geotechnical Evaluation prepared for the Project, which includes compliance with Excavation Rules and Regulations as developed by the Occupational Safety and Health Administration, UPRR/BNSF Guidelines for Temporary Shoring, and disposal of groundwater in accordance with guidelines of the San Francisco Bay RWQCB. The Project will comply with any subsequent geotechnical reports and recommendations from a certified geologist. **Source:** Geotechnical Evaluation (Appendix D).					
7.d.	Be located on expansive soil, as defined in Table 18-1-B of Uniform Building Code, creating substantial direct or indirect risks to life or property?			**X**	
Discussion: Per the Geotechnical Evaluation prepared for the site, the Project is underlain by Holocene-age estuarine organic clay and silty clay. The proposed Project is a replacement of a subterranean pipeline. Construction and operation of the Project would not cause a substantial direct or indirect risk to life or property due to the nature of the Project. Impacts would be less than significant. **Source:** Project Plans; Geotechnical Evaluation (Appendix D).					
7.e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				**X**
Discussion: The Project would replace an aging 33-inch sewer pipe segment with an industry-standard 36-inch pipe segment. Construction of Section 2 of the proposed pipeline segment would require redirecting existing sewage between new Manhole 3609A and new Manhole 3629A via a temporary bypass pumping system that would be installed aboveground. This alternative wastewater disposal system would be removed after the new pipe segments in Section 2 are operable. The Project does not propose any septic systems. Thus, there would be no impact. **Source:** Project Plans.					
7.f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			**X**	
Discussion: The Project site has been previously disturbed, including for the development of the existing pipeline, highway system, and UPRR track. No paleontological resources have been previously discovered on the Project site and surrounding areas. Impacts would be less than significant. **Source:** Project Plans.					

8. **GREENHOUSE GAS EMISSIONS.** Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
8.a. Generate greenhouse gas (GHG) emissions (including methane), either directly or indirectly, that may have a significant impact on the environment?			**X**	

Discussion: The BAAQMD has established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and air pollutants that affect the health of residents. The BAAQMD also seeks to support and stimulate climate protection programs in the region through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

CEQA Guidelines Section 15064.4 recommends that lead agencies quantify GHG emissions of projects and consider several other factors that may be used in the determination of significance of GHG emissions from a project, including the extent to which the project may increase or reduce GHG emissions, whether a project exceeds an applicable significance threshold, and the extent to which the project complies with regulations or requirements adopted to implement a plan for the reduction or mitigation of GHG emissions.

However, CEQA Guidelines Section 15064.4 does not establish a threshold of significance. Rather, it provides lead agencies the discretion to establish significance thresholds for their respective jurisdictions. In establishing those thresholds, a lead agency may appropriately look to thresholds developed by other public agencies or suggested by other experts, if any threshold chosen is supported by substantial evidence. The County of San Mateo has adopted a CCAP; however, the CCAP does not contain a numerical significance threshold for assessing impacts related to GHG emissions. Similarly, the BAAQMD, the Governor's Office of Planning and Research, CARB, California Air Pollution Control Officers Association, and any other state or applicable regional agency have not yet adopted a numerical significance threshold for assessing GHG emissions that is applicable to the Project.

According to the BAAQMD 2022 CEQA Guidelines, the GHG thresholds of significance are either whether land use projects include certain project design elements related to buildings and transportation or whether the project is consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b). The County's CCAP is the applicable local GHG plan.

Therefore, the significance of the Project's potential impacts regarding GHG emissions and climate change will be assessed solely on its consistency with plans and policies adopted for the purposes of reducing GHG emissions and mitigating the effects of climate change, which includes the County's CCAP, and the Project's ability to incorporate sustainable features and strategies in its design to reduce GHG emissions. The analysis has also quantified the Project's GHG emissions for informational purposes only, as neither the County nor any other public agency has an applicable numeric significance threshold for GHG emissions.

CalEEMod version 2022.1 was used to calculate direct and indirect Project-related GHG emissions. The Project involves construction activities associated with sewer pipeline construction, paving, and trenching and excavation activities. The Project would be constructed over approximately six months, beginning in April 2025. CalEEMod outputs are contained in Appendix A, *Air Quality/Greenhouse Gas/Energy Data*. Table 4: *Construction Greenhouse Gas Emissions (MTCO2e*) shows the estimated GHG emissions associated with the Project.

As shown in Table 4, Project construction would result in approximately 205 metric tons of carbon dioxide equivalent ($MTCO_2e$) of GHG emissions. Amortized over a 30-year period, the proposed Project would generate 6.8 $MTCO_2e$ per year of GHG emissions.

Table 4: Construction Greenhouse Gas Emissions ($MTCO_2e$)

Construction Year[1,2]	CO_2	CH_4	N_2O	Refrigerants	Total $MTCO_2e$
Year 1	204	0.01	<0.01	0.02	205
Amortized Over 30 Years	**6.8**	**<0.01**	**<0.01**	**<0.01**	**6.8**

Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent.
1. Emissions calculated using California Emissions Estimator Model Version 2022.1 computer model.
2. Totals may be slightly off due to rounding.

Source: Refer to Appendix A, *Air Quality/Greenhouse Gas/Energy Data*.

Project operations would not increase the roadway capacity or generate additional traffic beyond that associated with the operation of the existing sewer system. In addition, due to the nature of the Project, no area, water, waste, refrigerant, or energy sources emissions would be generated. As the Project would not include new mobile sources of emissions or permanent stationary sources, the Project would not have the potential to generate GHG emissions from Project operations.

As demonstrated in the analysis of Section 8.b, the proposed Project would be consistent with CARB's 2022 Scoping Plan, the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments' (ABAG) Plan Bay Area 2050, the County's General Plan, and the County's CCAP. As the proposed Project is consistent with these GHG reduction plans, the proposed Project would also be consistent with the state's long-term goal to achieve statewide carbon neutrality (zero-net emissions). Accordingly, impacts related to GHG emissions resulting from the proposed Project would be less than significant.

Source: Project Plans; Air Quality/Greenhouse Gas/Energy Data (Appendix A).

8.b.	Conflict with an applicable plan (including a local climate action plan), policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			**X**	

Discussion: CARB's 2022 Scoping Plan identifies reduction measures necessary to achieve the goal of carbon neutrality by 2045 or earlier. The MTC and ABAG's Plan Bay Area 2050 includes strategies to advance the region toward the adopted vision of a Bay Area that is affordable, connected, diverse, healthy, and vibrant for all residents, with a strong focus on measuring equity outcomes. The County's General Plan and CCAP identify goals, policies, measures, and strategies to reduce GHG emissions throughout the County. These plans focus on the long-term operation of projects, including energy efficiency, on-road transportation, water consumption, and waste generation. As a sewer replacement project with minimal construction GHG emissions and no new operational emissions, GHG emission reduction strategies from state, regional, and local plans do not apply to the Project. In addition, Project design elements required by the BAAQMD CEQA Guidelines are for land use development projects, which do not apply to the proposed Project. Therefore, the Project is not anticipated to conflict with or obstruct state, regional, or local plans for GHG emissions reductions. Specifically, as shown in Table 4, Project-related GHG emissions would result in approximately 6.8 $MTCO_2e$ per year. Compared to land use development projects, the Project would generate a nominal amount of GHG emissions and would not have the potential to conflict with the 2022 Scoping Plan, Plan Bay Area 2050, the County's General Plan, the County's CCAP, or any other applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. Impacts would be less than significant in this regard.

Source: Project Plans; California Air Resources Board, 2022 Scoping Plan, accessed April 2024, https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents; Association of Bay Area Governments, Plan Bay Area 2050, accessed April 2024, https://planbayarea.org/; County of San Mateo, General Plan, accessed April 2024; County of San Mateo, Community Climate Action Plan, 2022, https://www.smcsustainability.org/climate-change/climate-action-planning/cc-action-plan#.

8.c.	Result in the loss of forestland or conversion of forestland to non-forest use, such that it would release significant amounts of GHG emissions, or significantly reduce GHG sequestering?				**X**

Discussion: The Project site does not have any forestland. Thus, there would be no loss of forestland or conversion of forestland to non-forest uses, and the Project would result neither in the release of significant amounts of GHG emissions nor reduce GHG sequestering. No impact would occur.

Source: Biological Assessment Memo (Appendix B); Project Plans.

8.d.	Expose new or existing structures and/or infrastructure (e.g., leach fields) to accelerated coastal cliff/bluff erosion due to rising sea levels?				**X**
Discussion: The Project site does not have any existing structures, and no new aboveground structures are proposed. The Project proposes the replacement of an existing subterranean sewer pipeline with another subterranean sewer pipeline immediately upstream from where the NFOTS discharges into the City's sanitary sewer system, which conveys collected sewage to the Silicon Valley Clean Water Treatment Plant. The Project is not located in an area susceptible to accelerated coastal cliff or bluff erosion. Project construction or operation would not expose new or existing structures and/or infrastructure to accelerated coastal erosion due to rising sea levels. Thus, there would be no impact. **Source:** Project Plans.					
8.e.	Expose people or structures to a significant risk of loss, injury or death involving sea level rise?				**X**
Discussion: The Project is located in Sea Level Rise scenarios in the City's Public Safety Element. However, as noted in Section 8.d, the Project site does not have any existing structures, and no new aboveground structures are proposed. The construction and long-term operation of the Project would not expose people to significant risk of loss, injury, or death involving sea level rise. Thus, no impact would occur. **Source:** Project Plans; City of Redwood City, General Plan, Public Safety Element, 2010; County of San Mateo Hazard Mapping Tool: Sea Level Rise, accessed May 1, 2024, https://www.arcgis.com/apps/webappviewer/index.html?id=37133d60123940d18a1eb9f5e83ec1c8.					
8.f.	Place structures within an anticipated 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?			**X**	
Discussion: The Project site is mapped by the Flood Insurance Rate Map as a Special Flood Hazard Area Zone AE. Development in an AE flood zone is permitted when a project's development combined with all other existing and anticipated development will not increase the water surface elevation of the base flood more than one foot at any point within the community. Construction of the Project would be primarily through microtunneling and open trenching. These techniques would not cause the water surface elevation to increase, and the microtunneling technique would further minimize surface disruption. Moreover, the Project does not propose the development of aboveground structures and would not expose people to potential flooding hazards. Project impacts related to the mapped AE flood zone would be less than significant. **Source:** Project Plans; Federal Emergency Management Agency, "Flood Zones," accessed April 18, 2024, https://www.fema.gov/glossary/flood-zones.					
8.g.	Place within an anticipated 100-year flood hazard area structures that would impede or redirect flood flows?			**X**	

Discussion: As described in Section 8.f, the Project site is mapped in the AE zone. However, it does not propose the construction of any aboveground structures. Rather, the proposed Project would replace an existing 33-inch pipe with a 36-inch pipe, the construction and operation of which would not cause the water surface elevation to increase. Thus, the Project would not place any structure in a 100-year flood hazard area and impacts would be less than significant.

Source: Project Plans; Federal Emergency Management Agency, "Flood Zones," accessed April 18, 2024, https://www.fema.gov/glossary/flood-zones.

9. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
9.a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (e.g., pesticides, herbicides, other toxic substances, or radioactive material)?			**X**	

Discussion: A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined by the California Health and Safety Code, Section 25501 as follows:

> A "Hazardous material" means a material as identified by the state that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

An extremely hazardous material is defined in Title 22, Section 66260.10, of the California Code of Regulations as follows:

> A substance or combination of substances which, if human exposure should occur, may likely result in death, disabling personal injury or serious illness caused by the substance or combination of substances because of its quantity, concentration or chemical characteristics.

The release of hazardous materials into the environment could potentially contaminate soils, surface water, and groundwater supplies.
The Project would involve replacing an existing 33-inch trunk sewer line with a 48-inch steel casing around a 36-inch PVC sewer line. Construction activities would involve the temporary use, storage, and transport of hazardous materials typical of construction of underground utilities, such as oil, gasoline, and/or diesel fuel. If not properly stored and handled, incidental spills and leaks of such substances could occur, which would represent a potential hazard to human health and the environment. The County requires that all potentially hazardous materials used during construction to be handled and disposed of in accordance with manufacturers' specifications and instructions, thereby reducing the risk of hazardous materials use. In addition, the County would comply with existing federal,

state, and local regulations related to the transport, use, management, and disposal of hazardous materials, including but not limited to the Resource Conservation and Recovery Act, California Hazardous Waste Control Law, and federal and state Occupational Safety and Health Acts, as well as regulations promulgated by agencies such as Caltrans, Department of Toxic Substances Control, San Francisco Bay RWQCB, and BAAQMD. The existing regulations are aimed at the amount of hazardous materials used, accident prevention, protection from exposure to specific chemicals, and the proper storage and disposal of hazardous materials. Any associated risk would be adequately reduced to a less-than-significant level through compliance with these standards and regulations. Additionally, the disposal of hazardous materials would occur in a manner consistent with applicable regulations and at an appropriate off-site disposal facility.

Operation of the proposed Project as a trunk sewer line would not involve the routine use or transport of hazardous materials.

Therefore, with compliance with manufacturers' standards and all applicable local, state, and federal laws and regulations relating to environmental protection and the management of hazardous materials, impacts associated with the routine transport, use, or disposal of hazardous materials during construction and operation of the proposed Project would be less than significant.

Source: Project Plans.

9.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**		

Discussion: Project construction would require the temporary handling and diversion of sewage around and through the Project site, including from bypass pumping, piping, and other conveyance of sewage flows to make connections into existing systems, and to cap and abandon portions of the existing sewers and facilities. The Project would be obligated to comply with requirements related to spills and exposures of sewage during Project construction pursuant to the San Francisco Bay RWQCB, California Department of Public Health, and County of San Mateo. To ensure the County's compliance with existing regulations, the County and its construction contractor will prepare and enforce a Spill Prevention, Control and Countermeasure Plan as a project design feature to ensure potential spills and exposures are minimized to the maximum extent possible during construction activities.

PDF HAZ-1 The County and its construction contractor shall prepare a Spill Prevention, Control and Countermeasure Plan that will address the handling of sewage during the drainage of existing sewage pipelines to be capped and abandoned; handling of nuisance sewage flows when making connections to existing county sewers and facilities; handling of sewage during a temporary handling and diversion of flow system failure; and handling sewage or flush water inside temporary piping. The Spill Prevention, Control and Countermeasure Plan must also identify best management practices and protective measures, including barricades to protect the pipelines to prevent potential damage to the bypass system and for the overall assurance that the Project will comply with adopted regulations under the San Francisco Bay RWQCB, California Department of Public Health, and County of San Mateo to limit spills and exposure of untreated wastewater to humans and the environment.

Assuming proper installation of the proposed sewer pipeline, the Project as designed would not result in the accidental release of wastewater into the environment. However, it is possible that settlement could occur and/or the sewer pipeline segments could be damaged during their installation. To ensure there are no reasonably foreseeable upset and accidental conditions involving the release of sewage into the environment, the Project must implement Mitigation Measure HAZ-1, which requires the testing of each section of the pipeline segment, new manholes, and the bypass pumping system prior to their conveyance of sewage.

With the compliance with existing regulations for the safe handling of hazardous materials and through Project Design Feature HAZ-1 and implementation of Mitigation Measure HAZ-1, the proposed Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions during construction or operation of the Project. Impacts would be less than significant with mitigation.

MM HAZ-1: Prior to the operation of any new equipment and facilities that will handle and convey sewage, including but not limited to Sections 1, 2, and 3 pipe segments, their related new manholes, and the temporary sewage bypass system that would be installed prior to the construction of Section 2, the County and/or its construction contractor must test these facilities to ensure they were not damaged during construction and are operating properly.

Source: Project Plans.

9.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**	

Discussion: The closest existing or proposed school to the Project site is Summit Preparatory Charter High School, located just over one-quarter mile southwest of the Project site. Operation of the Project would not emit hazardous emissions or handle acutely hazardous materials or substances. Compliance with regulations for the transportation of hazardous waste during Project construction would ensure that impacts would be less than significant.

Source: Project Plans.

9.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**

Discussion: Section 65962.5 specifies lists of hazardous materials sites—hazardous waste facilities; hazardous waste discharges for which the State Water Resources Control Board (SWRCB) has issued certain types of orders; public drinking water wells containing detectable levels of organic contaminants; underground storage tanks with reported unauthorized releases; and solid waste disposal facilities from which hazardous waste has migrated.

To determine if the Project site is on a list compiled by Section 65962.5, a review of the following data resources, also known as the Cortese list, was conducted:

- List of Hazardous Waste and Substances sites from the California Department of Toxic Substances Control online EnviroStor database
- List of leaking underground storage tank sites from the SWRCB online GeoTracker database
- California Environmental Protection Agency
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit
- List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from the SWRCB
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by Department of Toxic Substances Control

The Project site is not listed on any of the above databases. As such, Project implementation would not expose hazards to the public or environment. No impact would occur.

Source: Cortese List, accessed April 2024.

9.e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?				**X**

Discussion: The Project is not located with an airport land use plan or within 2 miles of a public airport or public use airport. The closest airport to the Project site is the San Carlos Airport, located 2.7 miles to the northwest. As such, the Project would not cause a safety hazard or excessive noise sensitive uses in the Project area. There would be no impact.

Source: Project Plans.

9.f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			**X**	

Discussion: The Project would be subject to a traffic control plan that would be approved by the County Division of Transportation and Traffic and Caltrans prior to the start of construction that would affect the public right-of-way. The traffic control plan would comply with the *California Manual on Uniform Traffic Control Devices*. K-rails and barricades would be installed during construction of Section 3 of the Project to protect active construction areas; these installations would result in the temporary removal of roadway shoulders of the US 101 on-ramp at Seaport Boulevard and southbound Seaport Boulevard and the closure of a traffic lane on East Bayshore Road, although two of the three lanes would be available for bidirectional traffic during the entire construction period. The Project would not require any roadway closures. As impacts would be short term and traffic circulation would be maintained, Project construction would not impede emergency response to emergency evacuation.

The County of San Mateo *Multijurisdictional Local Hazard Mitigation Plan*, which includes the City, does not identify emergency evacuation routes. During construction of Section 3, traffic on southbound East Bayshore Road would be shifted to the center median. K-rails would be installed around the drive pit portal to secure the work area. Traffic controls, including signage and traffic cones, would be installed near the receiving pits to maintain safety. Once Segment 6 is realigned and operating, the K-rails would be removed, the driving and receiving pits would be sealed and backfilled to grade, and all temporary traffic controls would be removed. Temporary traffic controls would not affect access along East Bayshore Road. Sidewalks would remain open during construction. Temporary traffic controls would not affect the emergency access along East Bayshore Road. Bidirectional traffic would be maintained at all times. Therefore, the Project would have a less than significant impact on an adopted response plan or emergency evacuation plan.

Source: Project Plans; County of San Mateo, Multijurisdictional Local Hazard Mitigation Plan, 2021, accessed May 23, 2024, https://www.smcgov.org/media/53471/download?inline=.

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

Discussion: The Project is not located in an area identified or recommended by the California Department of Forestry and Fire Protection (Cal Fire) as a very high fire hazard severity zone. A small portion of the City is denoted as a very high fire hazard severity zone, approximately 4 miles southwest of the Project site. The Project is an infrastructure improvement project and would not expose people or structures to risk of wildland fires. The Project area is currently developed with an existing sewer line and is surrounded by urban uses. The Project does not propose any alterations of site conditions that would expose people or structure to significant wildfire risks. Thus, there would be no impact.

Source: Project Plans; California Department of Forestry and Fire Protection, Very High Fire Hazard Severity Zones in LRA, Redwood City, accessed April 25, 2024, https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps.

9.h.	Place housing within an existing 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?			**X**	

Discussion: As described in Section 8.f above, the Project site is mapped in the AE zone; however, it does not propose the construction of any structures or housing. Rather, the proposed Project would replace an existing 33-inch pipe with a 36-inch pipe, the construction and operation of which would not cause the water surface elevation to increase. Thus, the Project would not place any housing in a 100-year flood hazard area, and impacts would be less than significant.

Source: Project Plans; Federal Emergency Management Agency, "Flood Zones," accessed April 18, 2024, https://www.fema.gov/glossary/flood-zones.

9.i.	Place within an existing 100-year flood hazard area structures that would impede or redirect flood flows?			**X**	

Discussion: As discussed in Section 8.f above, the proposed Project would not result in the construction of any aboveground structures within an existing 100-year flood hazard area. Thus, impacts would be less than significant.

Source: Project Plans; Federal Emergency Management Agency, "Flood Zones," accessed April 18, 2024. https://www.fema.gov/glossary/flood-zones.

9.j.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				**X**

Discussion: The Project is not located in a dam inundation zone. Furthermore, there are no levees or dams in the Project vicinity. Thus, neither people nor structures would be exposed to flooding caused by the failure of a levee or dam. There would be no impact.

Source: San Mateo County, Hazard Mapping Tool, accessed May 1, 2024, https://www.arcgis.com/apps/webappviewer/index.html?id=37133d60123940d18a1eb9f5e83ec1c8.

9.k.	Inundation by seiche, tsunami, or mudflow?				**X**

Discussion: The Project site is not located in a mapped hazard zone for tsunami, seiche, and/or mudflows. Thus, there would be no impact.

Source: San Mateo County, Hazard Mapping Tool, accessed May 1, 2024, https://www.arcgis.com/apps/webappviewer/index.html?id=37133d60123940d18a1eb9f5e83ec1c8; California Department of Water Resources, Division of Safety of Dams, California Dam Breach Inundation Maps, accessed May 1, 2024. https://fmds.water.ca.gov/maps/damim/

10. HYDROLOGY AND WATER QUALITY. Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
10.a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality (consider water quality parameters such as temperature, dissolved oxygen, turbidity and other typical stormwater pollutants (e.g., heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash))?			**X**	

Discussion: Water quality standards and waste discharge requirements, including the federal Water Pollution Control Act Amendment of 1972 (also referred to as the Clean Water Act) and the California Porter-Cologne Water Quality Control Act (Section 13000 et seq. of the California Water Code), are intended to protect the quality of waters within the state of California and require that comprehensive water quality control plans be developed. Impacts related to water quality would fall under two general categories: short-term construction-related impacts and long-term operational impacts.

San Mateo County is a permittee under the California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2022-0018, NPDES Permit No. CAS612008), also known as the San Francisco Bay Municipal Regional Stormwater Permit.

The Project would affect a construction area of less than 1 acre. Therefore, Project construction would not be required to obtain a General Construction Activity Storm Water Permit (Construction General Permit) or prepare a formal Stormwater Pollution Prevention Plan. Notwithstanding its size, Municipal Regional Stormwater Permit Provision C.2, Municipal Operations, would apply to the Project. Provision C.2 requires permittees to implement best management practices to control and reduce non-stormwater and polluted stormwater discharges to storm drains and watercourses during operation, inspection, and routine repair and maintenance of municipal facilities and infrastructure. Accordingly, the Project would be required to implement Project Design Feature WQ-1, which requires the County and its construction contractor to implement construction best management practices to reduce pollution from construction activity, as provided in the San Mateo Countywide Water Pollution Prevention Program. The best management practices would address materials and waste management; equipment management and spill control; earthwork and contaminated soils; paving and asphalt work; concrete, grout, and mortar application; dewatering; painting and paint removal; and landscape material. Best management practices may also include placing rumble strips at the site entrance, spill prevention, and inlet protection. Compliance with existing regulation under PDF WQ-1 would reduce construction-related impacts on water quality to acceptable standards. Construction impacts would be less than significant.

PDF WQ-1 The County and its construction contractor shall comply with NPDES Permit No. CAS612008 (Order No. R2-2022-0018), also known as the San Francisco Bay Municipal Regional Stormwater Permit (MRP). The County and its contractor will implement best management practices, such as those described in the California Stormwater Quality Association Municipal Stormwater BMP Handbook and Construction Stormwater BMP Handbook), to control debris and waste materials during all construction activities.

In paved areas, the County and its construction contractor must manage concrete slurry and wastewater, asphalt, pavement cutting, and other street and road maintenance materials and wastewater to avoid discharge to storm drains from the work sites. The County and its construction contractor must receive appropriate approval to confirm that wastewater generated can be discharged to the sanitary sewer system and pretreatment standards are met.

The County and its construction contractor will sweep and/or vacuum to remove debris, concrete, or sediment residues from work sites upon completion of work. They shall require cleanup of all construction debris, spills, and leaks using dry methods (e.g., absorbent materials, rags, pads, and vacuuming), as described in the Bay Area Stormwater Management Agencies Association Blueprint for a Clean Bay or the CASQA Municipal Stormwater BMP Handbook.

As the Project would not increase impermeable surfaces or on-site and/or off-site stormwater runoff, Project operations would have no impact on water quality standards or waste discharge requirements.

Source: Project Plans.

10.b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			**X**	

Discussion: There are no operating wells on the Project site. Furthermore, the Project would not increase impervious surfaces or lead to increased water demand from groundwater sources. Paving would be limited to approximately 1,000 square feet of existing pavement restoration.
The Geotechnical Evaluation prepared for the Project site identified groundwater in the borings at depths ranging between 10–15 feet below the ground surface. The proposed replacement pipeline would be installed at an elevation consistent with that of the existing pipeline at approximately 7–9 feet below mean sea level. Construction activities may encounter groundwater. Due to bay mud and clayey and impervious soil, dewatering will be performed inside tunnel shafts and sump pumps along open trenches. Dewatering effluent will go through a desilting basin, then be discharged to the sanitary sewer. Dewatering methods will lower the groundwater level to 24 inches below the bottom of the pipe. Discharge to the sanitary sewer ensures that the Project will not substantially decrease groundwater supplies or interfere with groundwater recharge. Impacts would be less than significant.

Source: Geotechnical Evaluation (Appendix D); Project Plans.

10.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 that would:				
	i. Result in substantial erosion or siltation on- or off-site;			**X**	
Discussion: There are no streams or rivers located within the Project site. Construction of the Project would result in temporary ground disturbance in the Project site, including open-trench and microtunneling installation of a subterranean sewer line. The Project does not propose the construction of new impervious surfaces. Paving would be limited to approximately 1,000 square feet of existing pavement restoration. The proposed Project would implement PDF WQ-1, which would require standard temporary construction best management measures to prevent impacts to water quality and to control for erosion and siltation. Thus, impacts would be less than significant. **Source:** Project Plans; San Mateo County Stormwater Pollution Prevention Program, accessed May 1, 2024, https://www.flowstobay.org.					
	ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;			**X**	
Discussion: The Project site does not consist of any rivers or streams and does not propose any new impervious surfaces. The Project consists of the replacement of a subterranean 33-inch pipeline with an industry-standard 36-inch pipeline. The Project would not substantially alter existing drainage patterns of the site. Therefore, the Project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Impacts would be less than significant. **Source:** Project Plans.					
	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**	
Discussion: The Project site does not consist of any rivers or streams and does not propose any new impervious surfaces. Dust control during Project construction would involve watering soil surfaces and would be subject to best management practices. The Project would not introduce a new, permanent source of runoff. Impacts would be less than significant. **Source:** Project Plans.					
	iv. Impede or redirect flood flows?			**X**	
Discussion: The proposed Project would not include the development of any structures that could impede or redirect flood flows. The proposed Project would not significantly change existing site conditions and would not result in flooding or create new runoff. Impacts would be less than significant. **Source:** Project Plans.					

10.d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			**X**	

Discussion: The Project is not located in a tsunami or seiche hazard zone. The Project site is mapped by the Flood Insurance Rate Map as a Special Flood Hazard Area Zone AE. Development in an AE flood zone is permitted when a project's development, combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than 1 foot at any point within the community. Construction of the Project would be primarily through microtunneling and open trenching. These techniques would not cause the water surface elevation to increase, and the microtunneling technique would further minimize surface disruption. Moreover, the Project does not propose the development of structures and would not expose people to potential flooding hazards. Project impacts related to the mapped AE flood zone would be less than significant.

Source: Project Plans; San Mateo County Hazard Mapping Tool, accessed May 1, 2024, https://www.arcgis.com/apps/webappviewer/index.html?id=37133d60123940d18a1eb9f5e83ec1c8; California Department of Water Resources, Division of Safety of Dams, California Dam Breach Inundation Maps.

10.e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			**X**	

Discussion: The Project would be required to comply with NPDES permitting standards. Additionally, as discussed in Section 10.b., dewatering would be performed inside the microtunneling shafts and sump pumps along open trenches. Dewatering effluent would be collected in a desilting basin, then be discharged to the sanitary sewer. Dewatering methods will lower the groundwater level to 24 inches below the bottom of the pipe. Discharge to the sanitary sewer ensures that the Project will not substantially decrease groundwater supplies or interfere with groundwater recharge. The Project would not conflict with or obstruct implementation of the Water Quality Control Plan for the San Francisco Bay Basin. Impacts would be less than significant.

Source: Project Plans; San Francisco Regional Water Quality Control Board, Water Quality Control Plan for the San Francisco Bay Basin, 2017, accessed May 1, 2024, https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html.

10.f.	Significantly degrade surface or groundwater water quality?			**X**	

Discussion: The Geotechnical Evaluation prepared for the Project site identified groundwater in the borings at depths ranging between 10–15 feet below the ground surface. The Geotechnical Evaluation provided recommendations for excavation stabilization and temporary slopes, excavation shoring, and construction dewatering to accommodate groundwater levels on the site and ensure the Project does not degrade groundwater quality. The Project shall implement recommendations provided in the Geotechnical Evaluation as a part of Project Design Feature GEO-1. With implementation of recommendations from the Geotechnical Evaluation, impacts would be less than significant.

Source: Geotechnical Evaluation (Appendix D).

10.g. Result in increased impervious surfaces and associated increased runoff?			X	

Discussion: The Project would replace an existing 33-inch underground sewer line with an industry-standard 36-inch pipe. The Project does not propose the construction of any impervious surfaces and thus will not increase any associated runoff. Paving would be limited to approximately 1,000 square feet of existing pavement restoration. Impacts would be less than significant.

Source: Project Plans.

11. LAND USE AND PLANNING. Would the project:

	Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
11.a. Physically divide an established community?				X

Discussion: The Project site is in an urban area with highway and railroad infrastructure, above and belowground utility systems, a substation, and surrounding industrial and commercial uses. The Project would take place in existing rights-of-way and replace an existing subterranean sewer line. There are no residential uses surrounding the Project site. Any construction activities would not encroach upon existing neighborhoods in the City or the surrounding community. Thus, there would be no impact to any established communities.

Source: Project Plans.

11.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 Project site is not associated with an APN and does not contain a land use or zoning designation. No land use change would be necessary for the Project, and the Project would result in a continuation of the existing use of the site and would not conflict with any surrounding land uses. The Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impact.

Source: Project Plans; Redwood City Community GIS, Version 5, accessed April 25, 2024, https://webgis.redwoodcity.org/community/.

11.c.	Serve to encourage off-site development of presently undeveloped areas or increase development intensity of already developed areas (examples include the introduction of new or expanded public utilities, new industry, commercial facilities or recreation activities)?			X	

Discussion: The Project would replace an existing 33-inch pipeline with an industry-standard size of 36 inches. The Project is in a developed area and surrounded by highway and railroad infrastructure, above and belowground utility systems, a substation, and surrounding industrial and commercial uses. The Project would not increase the development intensity in these areas. The size of the new pipeline and the designed slope would increase flow in the affected segment of the pipeline, but would not increase the capacity of the entire wastewater system under the FOSMD. Thus, the Project would not encourage off-site development or increase development intensity of already developed areas, and impacts would be less than significant.

Source: Project Plans.

12. MINERAL RESOURCES. Would the project:					
		Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
12.a.	Result in the loss of availability of a known mineral resource that would be of value to the region or the residents of the State?				X

Discussion: California's Surface Mining and Reclamation Act of 1975 requires the State Geologist to classify land into mineral resource zones (MRZ) based on the known or inferred mineral resource potential of that land. The California Department of Conservation's Mineral Resources Program provides data about California's varied non-fuel mineral resources (such as metals and industrial minerals), naturally occurring mineral hazards (such as asbestos, radon, and mercury), and information about active and historical mining activities throughout the state. Classification is completed by the State Geologist, wherein MRZ-2 are areas that contain identified mineral resources.

According to the California Geological Survey, the City does not contain any land classified MRZ-2 or any active aggregative operations. There are no known mineral resources on the Project site. Thus, the Project would not result in the loss of availability of a known mineral resource that would be of value to the region or the residents of the state. No impact would occur.

Source: California Department of Conservation, Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area, Special Report 146, Part II, 1987, accessed April 25, 2024, https://www.conservation.ca.gov/cgs/documents/publications/special-reports/SR_146-MLC-Report02.pdf.

12.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 Project area does not contain and is not adjacent to any identified natural resource as identified in the Natural Resources Areas Map of the City's General Plan. Thus, the Project would not result in the loss of locally important mineral resources and cause no impact.

Source: City of Redwood City, General Plan, Natural Resources Chapter, page NR-30, Accessed April 25, 2024.

13. NOISE. Would the project result in:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
13.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**	

Discussion:

Construction

Construction activities generally are temporary and have a short duration, resulting in periodic increases in the ambient noise environment. The Project involves replacing the existing NFOTS outfall trunk sewer; construction activities include pipeline construction, paving, and trenching and excavation activities. The Project would be constructed over approximately six months, beginning in April 2025. It should be noted that the Project's construction duration and equipment list have been adjusted based on the information provided by the County.

Ground-borne noise and other types of construction-related noise impacts typically occur during the initial trenching and excavation phase, which has the potential to create the highest levels of noise. Construction equipment produces maximum noise levels when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or partial power. The closest sensitive receptor is the existing hospital use (Kaiser Permanente) located approximately 1,200 feet to the west, and the nearest residential uses are the single-family residences located approximately 1,620 feet to the southwest of the Project site. Table 5: *Maximum Noise Levels Generated by Typical Construction Equipment*, displays the anticipated maximum noise levels at the nearest sensitive receptors from typical construction equipment.

Table 5: Maximum Noise Levels Generated by Typical Construction Equipment

Equipment Type	Acoustical Use Factor[1] (percent)	L_{max} at 50 Feet (dBA)[2]	L_{max} at 1,200 Feet (dBA)	L_{max} at 1,620 Feet (dBA)
Crane	16	81	53	51
Dozer	40	82	54	52
Dump Truck	40	76	48	46
Excavator	40	81	53	51
Flatbed Truck	40	74	46	44
Loader	40	79	51	49
Paver	50	77	49	47
Roller	20	80	52	50
Tractor	40	84	56	54

Notes:
1. The Acoustical Use Factor expresses the fraction of time in percent that a piece of construction equipment is anticipated to be operating at full power (i.e., the noisiest condition) during construction activities.
2. Reference distance of 50 feet.

Source: Federal Highway Administration, *Construction Noise Handbook*, 2006.

As shown in Table 5, the nearest receptors to the Project site could be exposed to temporary and intermittent construction noise levels ranging from 46 to 56 dBA L_{max} at the nearest hospital use to the west and approximately 44 to 54 dBA L_{max} at the nearest residential uses to the southwest. Noise generated by construction and grading activities are regulated by Section 4.88.360 – Exemptions of the San Mateo County Ordinance Code for Noise Control, which limits noise sources associated with demolition, construction, repair, remodeling, or grading of any real property to the hours of 7:00 a.m. to 6:00 p.m. on weekdays and 9:00 a.m. to 5:00 p.m. on Saturdays. Such activities are prohibited on Sundays, Thanksgiving, and Christmas.

Compliance with the San Mateo County Ordinance Code for Noise Control would minimize impacts from construction noise, as construction would be limited to the permitted times. In addition to the distance between the Project and the sensitive receptors, Project construction noise would be further reduced due to the two- and three-story buildings located between the Project site and these receptors. Therefore, due to the lack of clear line-of-sight, construction noise of the Project would be further reduced than what is shown in Table 5. As such, construction impacts resulting from the proposed Project would be less than significant.

Operations

The Project involves replacing the existing NFOTS outfall trunk sewer with an industry-standard 36-inch diameter PVC pipeline. Maintenance of the proposed improvements would be similar to existing conditions and would not result in an increase in roadway capacity or generate additional traffic. Therefore, the Project would not result in new stationary noise sources and would not increase operational noise levels compared to existing conditions. No new operational noise impacts would occur.

Source: Project Plans; San Mateo County Noise Ordinance.

13.b.	Generation of excessive ground-borne vibration or ground-borne noise levels?			**X**	

Discussion:

Construction

Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

Construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. The vibration level at which human annoyance is perceived is 0.2 inch/second peak particle velocity (PPV). Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 25 feet from most construction vibration sources. This distance can vary substantially depending on the soil composition and underground geological layer between the vibration source and the receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Construction activities that may result under the proposed Project have the potential to generate ground-borne vibration. This evaluation uses the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual* architectural damage criterion for continuous vibrations of 0.3 inch/sec PPV for engineered concrete and masonry because the closest structures to the Project site are hospital buildings. Table 6*: Typical Vibration Levels for Construction Equipment*
identifies various vibration velocity levels for types of construction equipment that could operate within the Project area during construction.

Table 6: Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inch/sec)	Approximate peak particle velocity at 1,200 feet (inch/sec)[1]
Large Bulldozer	0.089	0.0003
Loaded Trucks	0.076	0.0002
Small Bulldozer	0.003	<0.0001
Vibratory Rollers	0.210	0.0006

Notes:
1. Calculated using the following formula:
$PPV_{equip} = PPV_{ref} \times (25/D)^{1.1}$
where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

As indicated in Table 6, vibration velocities from typical heavy construction equipment operation would range from 0.003 to 0.210 inch/sec PPV at 25 feet from the source of activity. The nearest structures with sensitive receptors to the Project site are hospital buildings located approximately

1,200 to the west. Vibration levels during the operation of construction equipment would range from approximately 0.0001 inch/sec PPV to 0.0006 inch/sec PPV at 1,200 feet. As a result, construction ground-borne vibration would not be capable of exceeding the human annoyance vibration threshold of 0.2 inch/sec PPV nor the architectural damage criterion for continuous vibrations of 0.3 inch/sec PPV at the nearest structures. A less than significant impact would occur in this regard.

Operations

The proposed Project would replace the existing sewer pipeline, and therefore, would not change the existing operation nor result in perceptible ground-borne vibration compared to the existing conditions. As such, it can be reasonably inferred that operation of the proposed Project would not create perceptible vibration impacts to the nearest sensitive receptors. Therefore, no vibration impacts related to human annoyance and building damage during operation would occur.

Source: Project Plans; San Mateo County Noise Ordinance.

13.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 2 miles of a public airport or public use airport, exposure to people residing or working in the project area to excessive noise levels?				**X**

Discussion: The nearest airport to the Project site is the San Carlos Airport, located approximately 2.26 miles to the northwest. The proposed Project would not involve land uses that would require people to reside or work within the Project area. As such, due to the nature of the Project, the Project would not expose people residing or working in the Project area to excessive noise levels. No impact would occur.

Source: Project Plans.

14. POPULATION AND HOUSING. Would the project:

		Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
14.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)?			**X**	

Discussion: Given the temporary nature of construction industry jobs, the relatively large regional construction industry, and the relatively nominal total number of construction workers needed during any construction phase, the labor force from within the region would be sufficient to complete Project construction without an influx of new workers and their families. Therefore, construction of the proposed Project would not directly induce population growth, and there would be no impact.

The Project does not propose new homes or businesses. It does not include the extension of roads or any new infrastructure. The Project consists of upsizing an existing 33-inch trunk sewer line with an industry standard-sized diameter of 36 inches. The Project would upsize the pipeline to the next industry standard size, which inadvertently expands the capacity of the sewer line segment. However, the purpose and intent of the Project is not to expand existing wastewater operations or the capacity of the NFOTS system. The Project would not involve the construction of any new land uses that would directly increase the volume of wastewater or indirectly increase water consumption beyond what is existing in the areas served by the FOSMD. Thus, impacts would be less than significant.

Source: Project Plans.

14.b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				**X**

Discussion: The Project does not propose the demolition of any housing units. There is no existing housing on the Project site. Thus, the Project would not displace any existing people or housing and there would be no impact.

Source: Project Plans.

15. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
15.a.	Fire protection?				**X**
15.b.	Police protection?				**X**
15.c.	Schools?				**X**
15.d.	Parks?				**X**
15.e.	Other public facilities or utilities (e.g., hospitals, or electrical/natural gas supply systems)?				**X**

Discussion: The Project does not include the development of any housing, commercial, or industrial buildings that would result in population growth or the need for expanded services. The Project site is served by the Redwood City Fire Department, Stations 9 and 11 (0.8 and 0.9 miles away, respectively), and the Redwood City Police Department (0.6 miles away). The Project proposes the replacement of a 33-inch trunk sewer line with an industry-standard 36-inch pipe. The replacement of the line would not cause the need for any increased fire protection, police protection, schools, parks, or other public facilities. There would be no impact.

Source: Project Plans.

16. RECREATION. Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
16.a. Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				**X**
Discussion: The Project would not induce population growth to the area or introduce any new uses to the area. There would be no increase of demand on existing neighborhood or regional parks or recreation facilities as a result of the Project. The Project would be installed below the proposed Class I Bikeway, planned to be installed as a part of the US 101/SR 84 Interchange Improvement Project. The Project would install the sewer line underground in 2025, prior to the development of the bikeway, which is planned for construction beginning in 2027. There would be no impact. **Source:** Project Plans; City of Redwood City, 101/84 Interchange, accessed May 22, 2024, https://www.redwoodcity.org/departments/community-development-department/engineering-transportation/transportation-parking/101-woodside-interchange.				
16.b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				**X**
Discussion: The Project does not propose the construction of recreational facilities. Additionally, as described in Section 16.a, the Project would not induce population growth or introduce any new uses to the area. Thus, there would be no environmental impacts caused by the inclusion or expansion of recreational facilities. **Source:** Project Plans.				

17. TRANSPORTATION. Would the project:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
17.a.	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities, and parking?			**X**	

Discussion: The Project would not generate long-term vehicle trips beyond those existing and does not propose permanent changes to the geometric design of the existing circulation system. Therefore, Project operations would not conflict with existing program plans, ordinances, or policies addressing the circulation system.

Section 1 of the Project is proposed beneath a future Class I Bikeway, which is a component of the City's US 101/SR 84 (Woodside Road) Interchange Improvement Project. Construction of this related project would begin in 2027. As the proposed Project construction is expected to begin in April 2025 and last for six months, the Project would be completed prior to the initiation of the Woodside Road Interchange Improvement Project. The Project would therefore not conflict with any future circulation plans and improvements, including the development of the future bike lane.

Project construction would generate traffic associated with the hauling of debris and delivery of new pipe segments. The number of construction-related trips generated would not be substantial and could be accommodated on the existing circulation system, including roadway facilities.

Construction activities for Sections 1 and 2 of the Project would occur off-street, in the County-owned parking lot at 1513 Veteran Boulevard and within the Caltrans easement, near the entrance of the PG&E Substation. Therefore, construction effects of Sections 1 and 2 would be de minimis. Construction of Section 3 of the Project, however, would temporarily affect the existing circulation system. Traffic controls, including K-rails and barricades, would be installed near the driving and receiving microtunneling pits along southbound Seaport Boulevard and the US 101/Seaport Boulevard on-ramp; these barriers would result in the temporary removal of the roadway shoulders adjacent to the barriers. Additionally, an approximately 150-foot segment of one of the three travel lanes along East Bayshore Road, near the receiving pit and Manholes 3631 and 3632, would be used as a construction work area; two of the three lanes of the roadway would be maintained at all times. The curbs are painted red on this segment of East Bayshore Road, and there are no bus stops. Therefore, parking and transit facilities would not be impacted. The existing sidewalks in this area would be maintained during construction activities. However, the shared bicycle lanes would be temporarily closed.

The City and Caltrans will review the Project Plans, including the traffic control plans, to ensure Project impacts to transportation facilities are limited. Construction of Section 3 would last four months and would be an inconvenience for users of the facilities. The proposed temporary traffic control improvements would not conflict with existing program plans, ordinances, or policies addressing the circulation system. Therefore, construction activities would not conflict with existing program plans, ordinances, or policies addressing the circulation system, and impacts would be less than significant.

Source: Project Plans.

17.b.	Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) *Criteria for Analyzing Transportation Impacts*? *Note to reader: Section 15064.3 refers to land use and transportation projects, qualitative analysis, and methodology.*				**X**
Discussion: CEQA Guidelines Section 15064.3(b) outline the criteria for analyzing transportation impacts for land use projects and transportation projects as well as providing guidance on qualitative analysis and methodology for evaluation. The proposed Project is an infrastructure project. It is not a transportation project and would not involve the development of land, change land use, or increase vehicle miles traveled. As such, CEQA Guidelines Section 15064.3(b) would not apply, and there would be no impact. **Source:** Project Plans.					
17.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**	
Discussion: The Project would consist of subterranean replacement of an existing sewer line. The Project does not propose the development of new or the reconfiguration of existing roadways. Construction of the Project would require the closure of highway lanes; however, a traffic control plan has been prepared and will be reviewed and approved by applicable agencies, such as the City and Caltrans, which will ensure any potential hazards related to Project construction would be reduced. Traffic on southbound East Bayshore Road would be shifted to the center median, which would not increase design-related road hazards; the road would remain operational during construction. No other roadway improvements are identified for construction or operation of the Project. Therefore, impacts would be less than significant. **Source:** Project Plans.					
17.d.	Result in inadequate emergency access?			**X**	
Discussion: See Section 9.f, above. Operation of the replacement pipeline segments would be similar to existing conditions and would not result in inadequate emergency access. Construction would not generate significant traffic and would not impede emergency access. During construction, circulation would be maintained using traffic controls, including signage and traffic cones. Construction of the pipeline segments under East Bayshore Road would require reducing the three-lane roadway (southbound, median, and northbound) to two lanes. Bidirectional traffic would be maintained at all times. A traffic control plan has been prepared and will be reviewed and approved by the applicable agencies, including the City and Caltrans, to ensure the temporary traffic controls do not affect emergency access along East Bayshore Road. Therefore, the Project would not result in inadequate emergency access, and impacts would be less than significant. **Source:** Project Plans.					

18. TRIBAL CULTURAL RESOURCES. Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
18.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 or 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)			**X**	

Discussion: The Project site is not listed on the California Historical Resources, California Historical Landmarks, California Office of Historic Preservation's Built Environment Resources Directory, or the list of historic districts as identified in the Historic Resources chapter of the City's General Plan. Further, according to the Cultural Resources Identification Memorandum prepared for the Project (Appendix C), archaeological sensitivity is low within the Project site. Nevertheless, a California Historical Resource Information System (CHRIS) records search was conducted with the Northwest Information Center for the Project site and a 0.5-mile radius. A Sacred Lands File search was also conducted with the Native American Heritage Commission for the Project vicinity for any Native American cultural resources that might be affected by the Project and identified a positive result. Accordingly, all tribes identified by the commission were notified on April 16, 2024. Two responses were received:

- Chairperson Andrew Galvan, Ohlone Indian Tribe, requested the results of the Sacred Lands File search as well as the results of the archaeological study. The requested information, including the draft archaeological memorandum dated September 8, 2023, which documented the CHRIS records search results, Sacred Lands File search results, literature review, buried site sensitivity analysis, conclusions, and recommendations, excepting only the results of Assembly Bill 52 consultation, were transmitted via email.
- Chairperson Irene Zwierlein, Amah Mutsun Tribal Band of Mission San Juan Bautista, responded with a form letter, which recommended the Project applicant request a Sacred Lands File search and a CHRIS records search to determine the sensitivity of the Project area. The letter provided that "[i]f you have received any positive cultural or historic sensitivity within 1 mile of the project area," then the band recommends worker sensitivity training, archaeological monitoring, and Native American monitoring. A rate sheet was provided indicating the cost of these services.

The tribes invited to consult did not request additional consultation regarding the Project. Accordingly, based on the Cultural Resources Identification Memorandum's finding that archaeological sensitivity of the Project Site is low, and as none of the tribal contacts provided substantial evidence indicating the presence of or heightened sensitivity for buried tribal cultural resources within the Project site as defined by Public Resources Code 21074, the County determined impacts would be less than significant. Moreover, compliance with Project Design Feature CUL-1, included in Section 5 above, would ensure that impacts to tribal cultural resources during construction are less than significant. **Source:** Cultural Resources Identification Memorandum (Appendix C); City of Redwood City, General Plan, Historic Resources Chapter, accessed May 21, 2024; California State Parks, Office of Historic Preservation.				
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 (c) of Public Resources Code Section 5024.1. (In applying the criteria set forth in Subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.)			**X**	
Discussion: The Cultural Resources Identification Memorandum (Appendix C) prepared for the Project identified two cultural resources in the vicinity of the Project site; however, neither qualify as a historical resource as described in Section 5.a., and are not considered valuable by the Native American tribes who reviewed the cultural study during consultation (see Section 18.a.i), or are eligible for the California Register of Historical Resources, per the criteria in Public Resources Code 5024.1. Compliance with Project Design Features CUL-1 and CUL-2, as provided in Section 5 above, will ensure that any impacts of construction of the pipeline to tribal cultural resources are less than significant. **Source:** Cultural Resources Identification Memorandum (Appendix C).				

19. UTILITIES AND SERVICE SYSTEMS. Would the project:				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
19.a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			**X**	

Discussion: The Project is the replacement of an existing 33-inch sewer line segment with an industry-standard 36-inch pipeline, the environmental effects of which are studied throughout this document. The Project would upsize the pipeline to the next industry standard size, which inadvertently expands the capacity of the sewer line segment. However, the purpose and intent of the Project is not to expand existing wastewater operations. The Project would not involve the construction of any new land uses that would directly increase the volume of wastewater or indirectly increase water consumption beyond what is existing in the areas served by the FOSMD. The Project site is immediately upstream from the City's Interceptor Metering Station, which is the point where the NFOTS discharges into the City's sanitary sewer system and conveys collected sewage to the Silicon Valley Clean Water Treatment Plant. The Project would connect to the existing sanitary sewer system and will not cause an excess flow into the Silicon Valley Clean Water Treatment Plan. Moreover, Project implementation would not create a need for new or expanded electric power, natural gas, or telecommunications facilities.

Project construction, however, would require temporary relocation of the existing sewer line. The Project has been designed to ensure existing wastewater services are continuous and would not be disrupted. The existing pipeline segments under Sections 1 and 3 would continue operation until their construction are complete. Once completed, existing flows would be redirected to the new pipeline segments; the existing segments would be capped and left in place. Construction of Section 2 of the pipeline would require the temporary installation of an aboveground bypass line between the two ends of Section 2. Sewage would be pumped through the bypass line around the construction area. Once the new pipeline is installed in its current place, the temporary bypass line would be removed. The bypass line would be designed and installed in conformance with health and safety standards and its installation, operation, and ultimate removal, once the construction of Section 2 is complete, would not cause any significant environmental effects.

Therefore, Project construction and operational effects would be less than significant.

Source: Project Plans.

19.b.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			**X**	
Discussion: Project operations would be similar to existing conditions and would have no demand for water. Project construction may have limited demand for water dust suppression, trench preparation, and backfill; however, water consumption would be temporary and would not exceed existing available water supplies. Thus, impacts to water supplies would be less than significant. **Source:** Project Plans.					
19.c.	Result in a determination by the waste-water 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**
Discussion: The Project includes replacing an existing 33-inch sewer line segment with an industry-standard 36-inch line with slight realignment. It would not induce additional demand for wastewater treatment. The Project would not result in additional wastewater connectors. The pipe segment would be replaced in three sections. During construction, existing sewage would be pumped to a bypass line around the construction areas and service and capacity would not be affected. Therefore, there would be no impact to the provision of wastewater services. **Source:** Project Plans.					
19.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?			**X**	
Discussion: Project operation would be similar to existing conditions and would not generate any solid waste. Construction of the Project would involve demolition of approximately 200 tons of concrete pipes and manholes and the import and export of approximately 200 cubic yards of soil materials. The existing pipe segments in Section 1 and Section 3 would be abandoned. The abandoned pipe segments would be cement-slurry filled and left in place. Section 2 of the Project would consist of the removal of 586 linear feet of pipeline. Debris from the Project construction would be brought to the closest landfill, the Ox Mountain Landfill, which has projected capacity through 2039. The Project would not generate waste in excess of established standards, or in excess of local capacity infrastructure. Thus, impacts would be less than significant. **Source:** Project Plans; Ox Mountain Landfill Activity, accessed April 18, 2024, https://www.smcsustainability.org/wp-content/uploads/Ox-Landfill-Capacity.pdf.					

19.e.	Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?			**X**	

Discussion: The Project would comply with all applicable federal, state, and local management and reduction statutes and regulations related to solid waste. As discussed in Section 19.d, the Project would generate minimal construction waste and operation would be similar to existing conditions and would not generate substantial waste, if any. Impacts would be less than significant.

Source: Project Plans.

20. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

		Potentially Significant Impact	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
20.a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?			**X**	

Discussion: The Project is not located in an area identified or recommended by Cal Fire as a very high fire hazard severity zone. The Project is not located in a state responsibility area. A small portion of the City is denoted as a very high fire hazard severity zone, approximately 4 miles southwest of the Project site. The County of San Mateo *Multijurisdictional Local Hazard Mitigation Plan* does not identify emergency evacuation routes for wildfire. Project operation would be similar to existing conditions and have no impact on emergency response or evacuation plans.

The Project would be subject to a traffic control plan that would be approved by the County Division of Transportation and Traffic prior to the start of work impacting the public right-of-way. The traffic control plan would be prepared in compliance with the *California Manual on Uniform Traffic Control Devices*. Temporary traffic controls would not affect the emergency access. During construction of the pipeline segments under East Bayshore Road, the three-lane roadway (southbound, median, and northbound) would be reduced to two lanes. Bidirectional traffic would be maintained at all times. Therefore, the Project would have a less than significant impact on an adopted response plan or emergency evacuation plan.

Source: Project Plans; Cal Fire, Very High Fire Hazard Severity Zones in LRA, Redwood City, accessed April 25, 2024, https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps; County of San Mateo, *Multijurisdictional Local Hazard Mitigation Plan*, 2021, accessed May 23, 2024, https://www.smcgov.org/media/53471/download?inline=.

20.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**
Discussion: The Project site and surrounding areas are disturbed with urban uses and are not located on or near designated wildfire zones and risks that could expose persons to pollutant concentrations from a wildfire. As the Project would be underground, it would not exacerbate wildfire risks due to slope, prevailing winds, and other factors. There would be no impact. **Source:** Cal Fire, Very High Fire Hazard Severity Zones in LRA, Redwood City, accessed April 25, 2024, https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps.				
20.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**
Discussion: The proposed Project is located in a fully urbanized area, and is served by Redwood City Fire Department Stations 9 and 11, which are 0.8 and 0.9 miles from the site, respectively. The proposed replacement subterranean sewer line segment would not require the installation of maintenance roads, fuel breaks, emergency water sources, power lines, or other utilities that may exacerbate fire risk or result in temporary or ongoing impacts to the environment. Thus, there would be no impact. **Source:** Project Plans.				
20.d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				**X**
Discussion: The Project is an infrastructure improvement project that would not expose people or structures to flooding or landslides. The Project site is currently developed with an existing sewer line and surrounded by urban uses. It is not located in a very high fire hazard severity zone. The Project does not propose any alterations of site conditions that would expose people or structure to significant wildfire risks. Thus, there would be no impact. **Source:** Project Plans.				

21. MANDATORY FINDINGS OF SIGNIFICANCE.				
	Potentially Significant Impact	***Less Than Significant with Mitigation***	***Less Than Significant Impact***	***No Impact***
21.a. Does the project 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?		**X**		
Discussion: The Project proposes the replacement of existing wastewater infrastructure in an urban area that does not contain known biological and cultural resources. Nevertheless, project design features (Project Design Features AQ-1, BIO-1, CUL-1, CUL-2, GEO-1, HAZ-1, and WQ-1) and Mitigation Measure HAZ-1 have been identified to reduce and mitigate any potentially significant impacts to the quality of the environment, biological species, and California history and prehistory. With the implementation of the project design features and mitigation measure, the Project would not result in any residual significant impacts. **Source:** Project Plans.				
21.b. Does the project 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**	
Discussion: The County of Public Works has not identified any other improvements proposed within the Project site at this time. However, based on continued evaluation of the pipelines within the FOSMD, the County expects replacement of other segments of the sewer system located upstream from the Project site. Improvements to these other pipe segments would occur after Project implementation, at least five years after Project construction. Therefore, the environmental effects of these future projects would not combine with those of the Project. The San Mateo County Transportation Authority will be working with the City and Caltrans to implement the US 101/Woodside Road Interchange Project, which involves reconstructing the interchange by eliminating the five-legged intersection at Broadway and Woodside Road (located approximately one-				

quarter mile south of the Project site), building direct-connect flyover ramps to Veterans Boulevard and US 101, adding new sidewalks and bikeways, and enhancing the railroad crossing at Veterans Boulevard. Construction of this related project would commence in 2027 and end in 2029. The Project has been planned with the US 101/Woodside Road Interchange Project in mind. The Project would not conflict with the improvements proposed by the US 101/Woodside Road Interchange Project. The proposed sewer realignment under the US 101 underpass would be installed below the planned Class I Bikeway, which would be developed as a part of the US 101/Woodside Road Interchange Project. Moreover, construction of the Project and the related project would not cause cumulatively considerable environmental effects. Construction of the proposed pipeline replacement project would commence the beginning of April 2025 and end in November 2025. The US 101/Woodside Road Interchange Project would start in 2027. Therefore, the Project's environmental effects would not combine with those of the US 101/Woodside Road Interchange Project.

The County is not aware of any other related projects that would result in environmental effects that would combine with the Project's to cause potentially significant environmental impacts. Therefore, Project implementation would not result in cumulatively considerable environmental impacts, and impacts would be less than significant.

Source: Project Plans; City of Redwood City, 101/84 Interchange, accessed May 23, 2024, https://www.redwoodcity.org/departments/community-development-department/engineering-transportation/transportation-parking/101-woodside-interchange.

21.c	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		**X**		

Discussion: The design and operation of the proposed improvements would not have any environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. Project construction, however, may result in potential environmental effects. As discussed throughout this Initial Study, short-term construction effects would be reduced to acceptable standards with the implementation of project design features that would ensure the Project's compliance with existing applicable state, federal, and local regulations and standards. Additionally, implementation of Mitigation Measure HAZ-1, which requires the County and/or its construction contractor to confirm the proposed improvements are not damaged during their installation prior to their first use, would reduce the potential accidental release of hazardous materials into the environment and its exposure to humans. Therefore, potential impacts to human beings would be reduced to less than significant with mitigation incorporated.

Source: Project Plans.

RESPONSIBLE AGENCIES

Check what agency has permit authority or other approval for the project.

AGENCY	YES	NO	TYPE OF APPROVAL
Bay Area Air Quality Management District	X		Construction Generators
Caltrans	X		Encroachment Permit
City of Redwood City	X		Encroachment Permit/Dirt Hauling Permit
California Coastal Commission		X	
California Department of Food and Agriculture		X	
County Airport Land Use Commission		X	
Other:		X	
National Marine Fisheries Service		X	
Regional Water Quality Control Board		X	
San Francisco Bay Conservation and Development Commission		X	
Sewer/Water District:		X	
California Department of Fish and Wildlife		X	
California Department of Public Health		X	
State Water Resources Control Board		X	
US Army Corps of Engineers		X	
US Environmental Protection Agency		X	
US Fish and Wildlife Service		X	

MITIGATION MEASURES		
	Yes	No
Mitigation measures have been proposed in project application.	**X**	
Other mitigation measures are needed.		**X**

The following measures are included in the project plans or proposals pursuant to Section 15070(b)(1) of the State CEQA Guidelines:

MM HAZ-1 Prior to the operation of any new equipment and facilities that will handle and convey sewage, including but not limited to Sections 1, 2, and 3 pipe segments, their related new manholes, and the temporary sewage bypass system that will be installed prior to the construction of Section 2, the County and/or its construction contractor must test these facilities to ensure they were not damaged during construction and are operating properly.

DETERMINATION. On the basis of this initial evaluation:

	I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Planning Department.
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 of the mitigation measures in the discussion have been included as part of the proposed project. 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.

Signature

07/30/2024

Date

Principal Civil Engineer

Title

ABBREVIATIONS

APN	Assessor's Parcel Number
BAAQMD	Bay Area Air Quality Management District
CalEEMod	California Emissions Estimator Model
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAP	Community Climate Action Plan
CDFW	California Department of Fish and Wildlife
CHRIS	California Historical Resource Information System
City	City of Redwood City
FOSMD	Fair Oaks Sewer Maintenance District
GHG	greenhouse gas emissions
MGD	million gallons per day
MRZ	mineral resource zone
$MTCO_2e$	metric tons of carbon dioxide equivalent
NFOTS	North Fair Oaks Trunk Sewer
PPV	peak particle velocity
PVC	polyvinyl chloride
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
UPRR	Union Pacific Railroad
USFWS	US Fish and Wildlife Service

Michael Baker
INTERNATIONAL

Appendix A: Air Quality/Greenhouse Gas/Energy Data

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North Fair Oaks Trunk Sewer, Redwood Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	North Fair Oaks Trunk Sewer, Redwood
Construction Start Date	4/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.70
Precipitation (days)	3.20
Location	37.49030324402656, -122.21401947670219
County	San Mateo
City	Redwood City
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1288
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Road Construction	0.30	Mile	0.01	0.00	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-9	Use Dust Suppressants
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.77	1.48	13.6	18.3	0.03	0.64	0.24	0.89	0.59	0.06	0.65	—	3,445	3,445	0.14	0.04	0.80	3,460
Mit.	1.77	1.48	13.6	18.3	0.03	0.64	0.24	0.89	0.59	0.06	0.65	—	3,445	3,445	0.14	0.04	0.80	3,460
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.63	0.53	4.89	6.53	0.01	0.23	0.09	0.32	0.21	0.02	0.23	—	1,232	1,232	0.05	0.02	0.12	1,239
Mit.	0.63	0.53	4.89	6.53	0.01	0.23	0.09	0.32	0.21	0.02	0.23	—	1,232	1,232	0.05	0.02	0.12	1,239
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.12	0.10	0.89	1.19	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	204	204	0.01	< 0.005	0.02	205
Mit.	0.12	0.10	0.89	1.19	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	204	204	0.01	< 0.005	0.02	205
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.77	1.48	13.6	18.3	0.03	0.64	0.24	0.89	0.59	0.06	0.65	—	3,445	3,445	0.14	0.04	0.80	3,460
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.63	0.53	4.89	6.53	0.01	0.23	0.09	0.32	0.21	0.02	0.23	—	1,232	1,232	0.05	0.02	0.12	1,239
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.12	0.10	0.89	1.19	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	204	204	0.01	< 0.005	0.02	205

2.3. Construction Emissions by Year, Mitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.77	1.48	13.6	18.3	0.03	0.64	0.24	0.89	0.59	0.06	0.65	—	3,445	3,445	0.14	0.04	0.80	3,460

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.63	0.53	4.89	6.53	0.01	0.23	0.09	0.32	0.21	0.02	0.23	—	1,232	1,232	0.05	0.02	0.12	1,239
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.12	0.10	0.89	1.19	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	204	204	0.01	< 0.005	0.02	205

3. Construction Emissions Details

3.1. Construction (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.13	0.95	8.70	10.5	0.02	0.44	—	0.44	0.40	—	0.40	—	2,133	2,133	0.09	0.02	—	2,140
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.41	0.34	3.12	3.77	0.01	0.16	—	0.16	0.14	—	0.14	—	765	765	0.03	0.01	—	768
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	0.07	0.06	0.57	0.69	< 0.005	0.03	—	0.03	0.03	—	0.03	—	127	127	0.01	< 0.005	—	127
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	0.03	0.03	0.02	0.39	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	103	103	< 0.005	< 0.005	0.34	104
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	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.0	30.0	< 0.005	< 0.005	0.06	31.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	35.0	35.0	< 0.005	< 0.005	0.05	35.5
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	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.80	5.80	< 0.005	< 0.005	0.01	5.88
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	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.88

3.2. Construction (2025) - Mitigated

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	1.13	0.95	8.70	10.5	0.02	0.44	—	0.44	0.40	—	0.40	—	2,133	2,133	0.09	0.02	—	2,140
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.34	3.12	3.77	0.01	0.16	—	0.16	0.14	—	0.14	—	765	765	0.03	0.01	—	768
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	0.07	0.06	0.57	0.69	< 0.005	0.03	—	0.03	0.03	—	0.03	—	127	127	0.01	< 0.005	—	127
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	0.03	0.03	0.02	0.39	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	103	103	< 0.005	< 0.005	0.34	104
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	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.0	30.0	< 0.005	< 0.005	0.06	31.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	35.0	35.0	< 0.005	< 0.005	0.05	35.5
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	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.80	5.80	< 0.005	< 0.005	0.01	5.88
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	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.88

3.3. Paving (2025) - Unmitigated

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

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

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.94	5.91	0.01	0.18	—	0.18	0.16	—	0.16	—	905	905	0.04	0.01	—	908
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.41	2.12	< 0.005	0.06	—	0.06	0.06	—	0.06	—	325	325	0.01	< 0.005	—	326
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.26	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53.7	53.7	< 0.005	< 0.005	—	53.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.31	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	82.4	82.4	< 0.005	< 0.005	0.27	82.9
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.0	28.0	< 0.005	< 0.005	0.04	28.4
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.64	4.64	< 0.005	< 0.005	0.01	4.71
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

3.4. Paving (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.94	5.91	0.01	0.18	—	0.18	0.16	—	0.16	—	905	905	0.04	0.01	—	908
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.41	2.12	< 0.005	0.06	—	0.06	0.06	—	0.06	—	325	325	0.01	< 0.005	—	326
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03	0.02	0.26	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53.7	53.7	< 0.005	< 0.005	—	53.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.31	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	82.4	82.4	< 0.005	< 0.005	0.27	82.9
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.0	28.0	< 0.005	< 0.005	0.04	28.4
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.64	4.64	< 0.005	< 0.005	0.01	4.71
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Trenching and Excavation (2025) - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.83	1.02	< 0.005	0.03	—	0.03	0.02	—	0.02	—	142	142	0.01	< 0.005	—	142
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.30	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	50.8	50.8	< 0.005	< 0.005	—	51.0
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.42	8.42	< 0.005	< 0.005	—	8.45
Demolition	—	—	—	—	—	—	< 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	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	20.6	20.6	< 0.005	< 0.005	0.07	20.7
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	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.0	30.0	< 0.005	< 0.005	0.06	31.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.00	7.00	< 0.005	< 0.005	0.01	7.10
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	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	< 0.005	1.18
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	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.88

3.6. Trenching and Excavation (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.83	1.02	< 0.005	0.03	—	0.03	0.02	—	0.02	—	142	142	0.01	< 0.005	—	142
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.30	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	50.8	50.8	< 0.005	< 0.005	—	51.0
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.42	8.42	< 0.005	< 0.005	—	8.45
Demolition	—	—	—	—	—	—	< 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	0.01	0.01	< 0.005	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	20.6	20.6	< 0.005	< 0.005	0.07	20.7
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	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.0	30.0	< 0.005	< 0.005	0.06	31.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.00	7.00	< 0.005	< 0.005	0.01	7.10
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	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	< 0.005	1.18

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	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.88

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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
Construction	Linear, Drainage, Utilities, & Sub-Grade	4/1/2025	9/30/2025	5.00	131	—

Paving	Linear, Paving	4/1/2025	9/30/2025	5.00	131	—
Trenching and Excavation	Linear, Trenching	4/1/2025	9/30/2025	5.00	131	—

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
Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Construction	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Construction	Other Construction Equipment	Diesel	Average	2.00	8.00	82.0	0.42
Construction	Signal Boards	Electric	Average	1.00	8.00	6.00	0.82
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Signal Boards	Electric	Average	1.00	8.00	6.00	0.82
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Trenching and Excavation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Construction	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Construction	Other Construction Equipment	Diesel	Average	2.00	8.00	82.0	0.42
Construction	Signal Boards	Electric	Average	1.00	8.00	6.00	0.82
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Signal Boards	Electric	Average	1.00	8.00	6.00	0.82
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Trenching and Excavation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Trenching and Excavation	—	—	—	—
Trenching and Excavation	Worker	2.50	11.7	LDA,LDT1,LDT2
Trenching and Excavation	Vendor	—	8.40	HHDT,MHDT
Trenching and Excavation	Hauling	0.38	20.0	HHDT
Trenching and Excavation	Onsite truck	—	—	HHDT
Construction	—	—	—	—
Construction	Worker	12.5	11.7	LDA,LDT1,LDT2
Construction	Vendor	0.00	8.40	HHDT,MHDT
Construction	Hauling	0.38	20.0	HHDT
Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	10.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	0.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Trenching and Excavation	—	—	—	—
Trenching and Excavation	Worker	2.50	11.7	LDA,LDT1,LDT2
Trenching and Excavation	Vendor	—	8.40	HHDT,MHDT
Trenching and Excavation	Hauling	0.38	20.0	HHDT
Trenching and Excavation	Onsite truck	—	—	HHDT
Construction	—	—	—	—
Construction	Worker	12.5	11.7	LDA,LDT1,LDT2
Construction	Vendor	0.00	8.40	HHDT,MHDT
Construction	Hauling	0.38	20.0	HHDT
Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	10.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	0.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

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

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Construction	200	200	0.01	0.00	—
Trenching and Excavation	0.00	0.00	0.00	200	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Road Construction	0.02	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	58.7	204	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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18.2.2. Mitigated

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	9.82	annual days of extreme heat

Extreme Precipitation	6.25	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	9.53	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	2	0	0	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	N/A	N/A	N/A	N/A
Extreme Precipitation	2	1	1	3
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	7.52
AQ-PM	15.5
AQ-DPM	46.4
Drinking Water	43.3
Lead Risk Housing	16.7
Pesticides	0.00

Toxic Releases	30.5
Traffic	97.3
Effect Indicators	—
CleanUp Sites	99.2
Groundwater	98.8
Haz Waste Facilities/Generators	98.9
Impaired Water Bodies	77.3
Solid Waste	94.3
Sensitive Population	—
Asthma	56.8
Cardio-vascular	17.6
Low Birth Weights	46.3
Socioeconomic Factor Indicators	—
Education	48.3
Housing	27.2
Linguistic	27.3
Poverty	52.9
Unemployment	48.3

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	31.2074939
Employed	13.98691133
Median HI	30.32208392
Education	—

Bachelor's or higher	42.28153471
High school enrollment	100
Preschool enrollment	95.7141024
Transportation	—
Auto Access	37.4566919
Active commuting	68.34338509
Social	—
2-parent households	9.239060695
Voting	69.38277942
Neighborhood	—
Alcohol availability	97.0101373
Park access	15.59091492
Retail density	57.03836777
Supermarket access	49.44180675
Tree canopy	27.51186963
Housing	—
Homeownership	43.62889773
Housing habitability	69.07481073
Low-inc homeowner severe housing cost burden	75.83728988
Low-inc renter severe housing cost burden	87.89939689
Uncrowded housing	24.56050302
Health Outcomes	—
Insured adults	45.81034262
Arthritis	13.0
Asthma ER Admissions	45.4
High Blood Pressure	40.5
Cancer (excluding skin)	34.5

Asthma	23.6
Coronary Heart Disease	19.3
Chronic Obstructive Pulmonary Disease	12.3
Diagnosed Diabetes	35.6
Life Expectancy at Birth	9.1
Cognitively Disabled	36.6
Physically Disabled	41.1
Heart Attack ER Admissions	91.9
Mental Health Not Good	29.3
Chronic Kidney Disease	35.4
Obesity	25.8
Pedestrian Injuries	77.0
Physical Health Not Good	28.8
Stroke	22.5
Health Risk Behaviors	—
Binge Drinking	60.3
Current Smoker	27.2
No Leisure Time for Physical Activity	36.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	5.6
Children	81.0
Elderly	59.3
English Speaking	37.9
Foreign-born	60.4
Outdoor Workers	38.7
Climate Change Adaptive Capacity	—

Impervious Surface Cover	19.6
Traffic Density	99.1
Traffic Access	23.0
Other Indices	—
Hardship	53.4
Other Decision Support	—
2016 Voting	75.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	53.0
Healthy Places Index Score for Project Location (b)	43.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification

Construction: Construction Phases	As per the construction questionnaire
Construction: Off-Road Equipment	Project will utilize Cat 345 excavator or similar for trenching and shaft excavation, crawler crane to place tunneling equipment and pipe into tunnel shaft, front-end loader periodically to move bedding material and soil disposal, various flat-bed trucks and maintenance trucks and pipe delivery trucks (25 total truck-loads). New paving limited to approximately 1,000 square feet of existing pavement restoration.
Construction: Demolition	200 tons of Concrete pipe and manholes
Construction: Trips and VMT	—
Construction: Paving	New paving limited to approximately 1,000 square feet of existing pavement restoration.

North Fair Oaks Trunk Sewer, Redwood
Energy Calculations

WORKER TRIPS

Phase	Phase Length (# days)	# Worker Trips	Worker Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Trenching and Excavation	131	5	11.7	7,664		307.74
Construction	131	25	11.7	38,318	**24.90284233**	1,538.68
Paving	131	20	11.7	30,654		1,230.94
						3,077.36

VENDOR TRIPS

Phase	Phase Length (# days)	# Vendor Trips	Vendor Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Trenching and Excavation	131	0	10.2	0		0.00
Construction	131	0	10.2	0	**8.343886151**	0.00
Paving	131	0	20	0		0.00
						0.00

HAULING TRIPS

Phase	Phase Length (# days)	# Hauling Trips	Hauling Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)[1]	Total Fuel Consumption
Trenching and Excavation	131	0.8	20	2,096		251.20
Paving	131	0.8	20	2,096	**8.343886151**	251.20
						502.40

Countywide operational fuel consumption, off-road construction equipment diesel fuel consumption, and on-road fuel consumption are from CARB EMFAC2021.

TOTAL OFF-SITE MOBILE GALLONS CONSUMED DURING CONSTRUCTION **3,579.76**

County On-road Gallons 725,429

2025 0.4935%

North Fair Oaks Trunk Sewer, Redwood
Energy Calculations

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Fuel Consumption Rate (gallons per hour)	Duration (total hours/day)	# days	Total Fuel Consumption (gallons)
Trenching and Excavation	Excavators	1	8	36	0.38	0.5472	8	131	573.47
Construction	Cranes	1	8	367	0.29	4.2572	8	131	4461.55
Construction	Rubber Tired Loader	1	8	150	0.36	2.16	8	131	2263.68
Construction	Other Construction Equipment	2	8	82	0.42	1.3776	16	131	2887.45
Construction	Signal Boards	1	8	6	0.82	0.1968	8	131	206.25
Paving	Pavers	1	8	81	0.42	1.3608	8	131	1426.12
Paving	Paving Equipment	1	8	89	0.36	1.2816	8	131	1343.12
Paving	Signal Boards	1	8	6	0.82	0.1968	8	131	206.25
Paving	Tractors/Loaders/Backhoes	1	8	84	0.37	1.2432	8	131	1302.87
Architectural Coating	Air Compressors	1	6	37	0.48	0.7104	6	131	558.37
								Total:	**15,229.12**

Notes:

Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor

Where:

Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.

Countywide operational fuel consumption, off-road construction equipment diesel fuel consumption, and on-road fuel consumption are from CARB EMFAC2021.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

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Appendix B: Biological Assessment Memo

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MEMORANDUM

TO:	Tiffany Deng, P.E., Associate Civil Engineer County of San Mateo	DATE:	July 26, 2024
FROM:	Marisa Flores, Senior Biologist/Project Manger		
SUBJECT:	San Mateo County Sewer Improvement Project for the Fair Oaks Sewer Maintenance District, San Mateo County, California		

The Fair Oaks Sewer Maintenance District (FOSMD) proposes the replacement of an existing trunk sewer of 1,404 linear feet, which is near the end of its service life, with in-kind facilities. This Biological Technical Report assesses the potential biological resources for the proposed Project. A literature review and desktop review was conducted to document existing site conditions and assess the potential for special-status plant or wildlife species that may have a potential to occur on or within the Project site. The documentation in this report will provide the information to support the project's environmental review pursuant to the California Environmental Quality Act (CEQA).

PROJECT LOCATION

The Project site is located near the intersection between Woodside Road and Highway 101 in Redwood City, San Mateo County (County). Figure 1, *Vicinity and Location Map*, shows the regional vicinity and Project location.

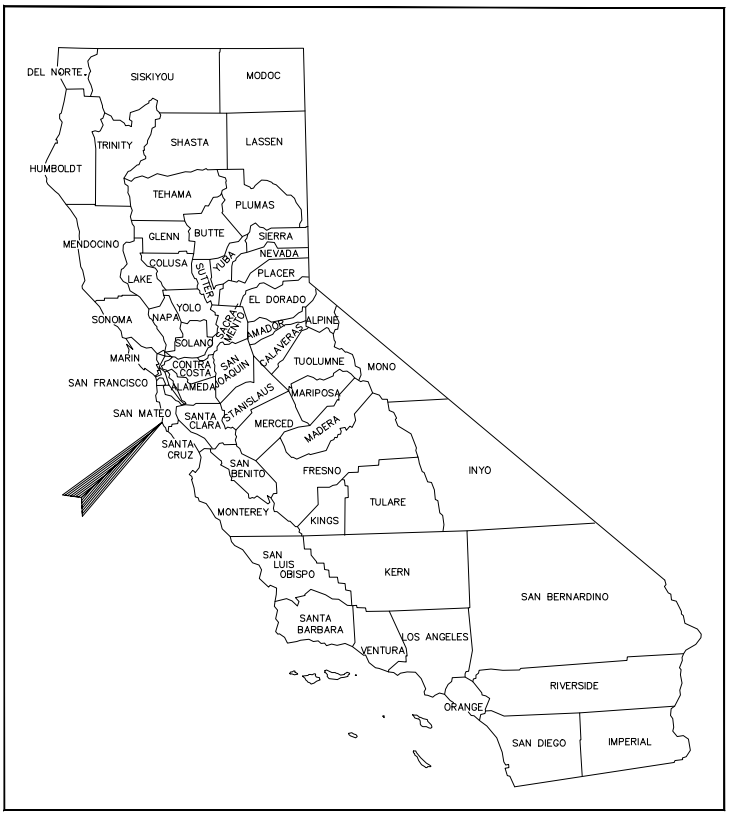
EXISTING SETTING

Existing Uses

The Project site occurs within the public right-of-way (ROW) and County property at an elevation approximately 6 feet above mean sea level. The Project site consists of the existing ROW for US Highway 101 and adjacent parking lot, unvegetated areas adjacent to the northbound on-ramp from Seaport Boulevard, and landscaped road dividers west of Bayshore Drive.

Surrounding Uses

The Project site is surrounded by the Redwood City Substation to the north, Bayshore Drive and commercial buildings to the east, US 101/Woodside Road interchange to the south, and an empty lot and commercial buildings to the west (see Attachment 1, *Site Photographs*).



VICINITY MAP

NOT TO SCALE

N

LOCATION MAP

NOT TO SCALE

FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

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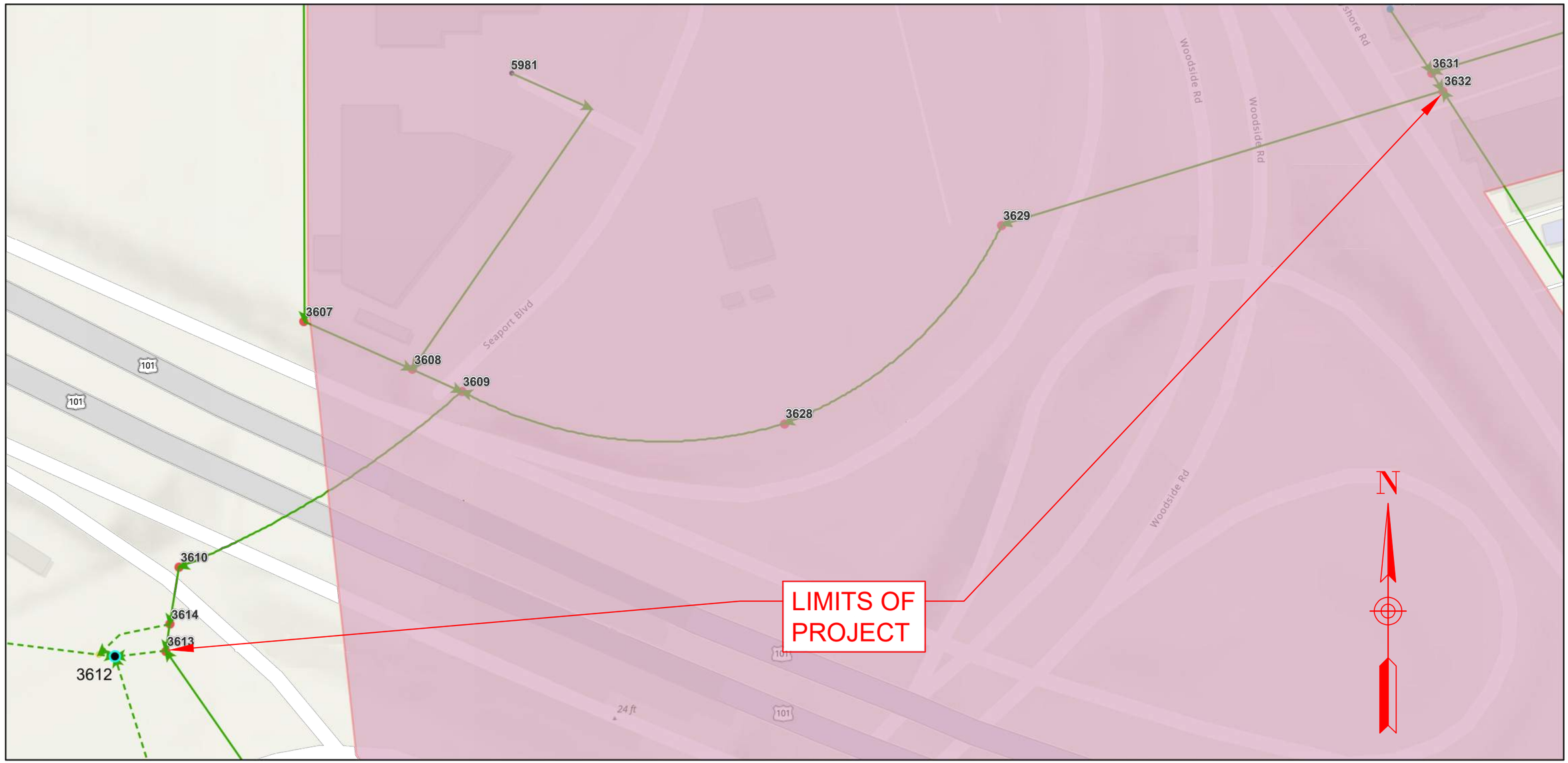
VICINITY AND LOCATION MAP

FIGURE 1



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Sewer Districts - County

Fair Oaks Sewer District

Sewer Mains

CO

NCO

Sewer Nodes

MANHOLE

FLUSHING INLET

TERMINUS

Sewer Nodes - NCO

CLEANOUT

1:1,362

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.08 km

FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

PROJECT MAP

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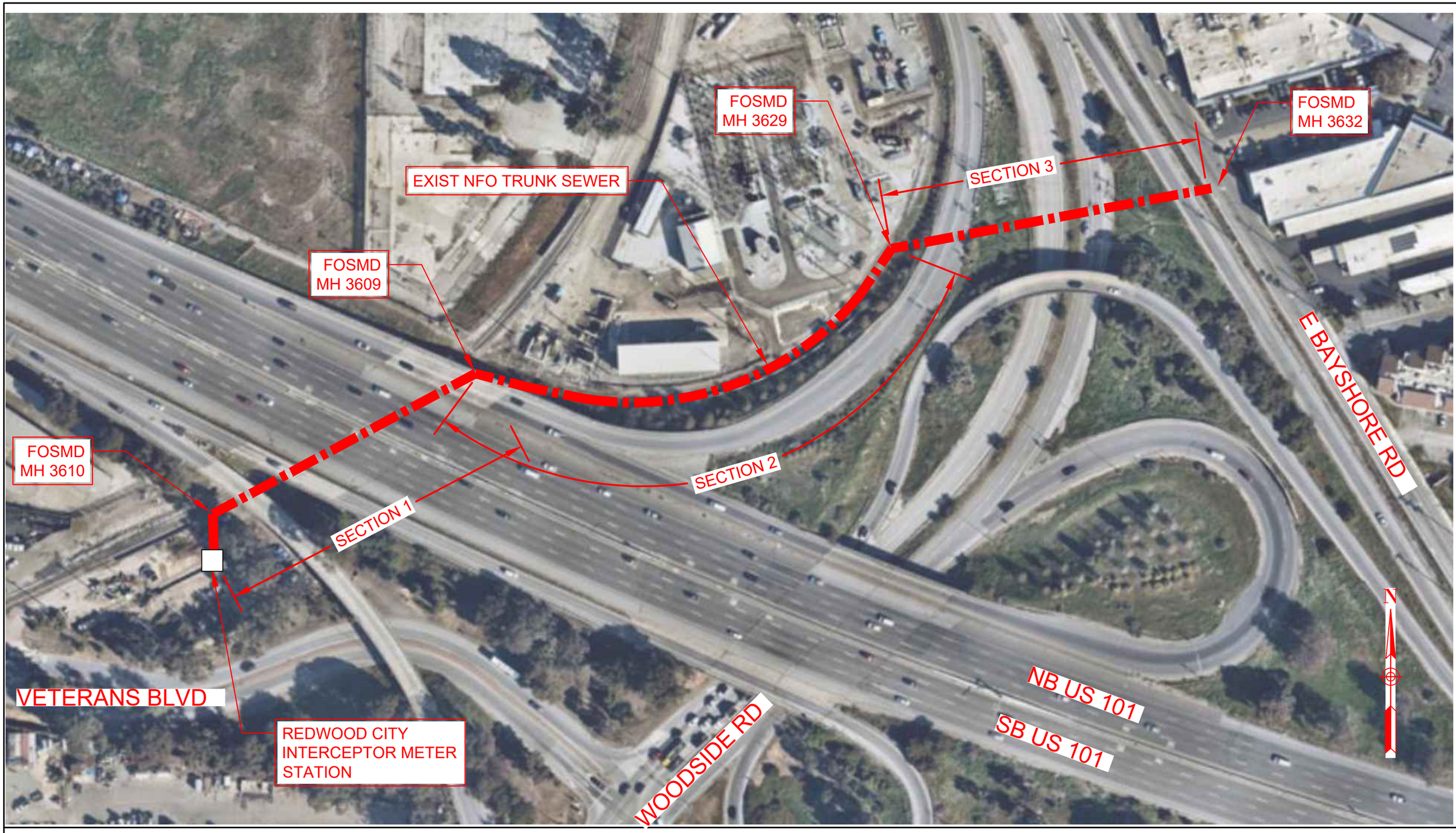
FIGURE 2



FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

EXISTING TRUNK SEWER - SECTION LIMITS

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FIGURE 3

PROJECT DESCRIPTION

Project Understanding

The County's 1,404-linear-foot outfall trunk sewer system is nearing its useful service period. The trunk sewer will be replaced with an industry-standard, 36-inch diameter polyvinyl chloride (PVC) pipeline between manholes (MO) 3613 and 3632 in the vicinity of Woodside Road and Highway 101 in Redwood City.

Proposed Improvements

The FOSMD proposes the replacement of the existing North Fair Oaks Trunk Sewer outfall with an industry-standard, 36-inch diameter PVC pipeline. The replacement would occur in three sections. Section 1 would require realignment of the pipeline segment under the US 101 underpass. The improvements in Section 2 would involve removing 586 feet of existing pipeline and replacing it in-place with the new pipeline via open trench construction. Section 3 would require the realignment of Segment 6, which currently cuts across the US 101/Seaport Boulevard northbound on-ramp, Seaport Boulevard/Woodside Road, and East Bayshore Road. The improvements would be in a heavily urban and disturbed environment, along a well-travelled highway within the jurisdictions and/or easements of the City of Redwood City, Union Pacific Railroad, California Department of Transportation (Caltrans), and Pacific Gas and Electric.

The majority of the new alignment in Section 1 and Section 3 will be conducted by microtunneling the pipeline between entry and exit points at each end of the line. These entry and exit pits would be sealed and backfilled to grade when construction is completed. Impacts within staging areas at each end of the pipeline would be on the ground surface for staging of equipment and extracted soils. Work in Section 2 would consist of trenching and replacement of 586 feet of pipeline, which would be reconnected to the existing sewer at the meter station. During construction of Section 2, existing sewage would be pumped into a bypass line around the construction area. No pile driving or other vibrations are anticipated as a result of the work. Staging areas would occur at the Redwood City Interceptor Meter Station, where Segments 1 and 2 intersect, and at each end of Section 3 (Figures 6 through Figure 9).

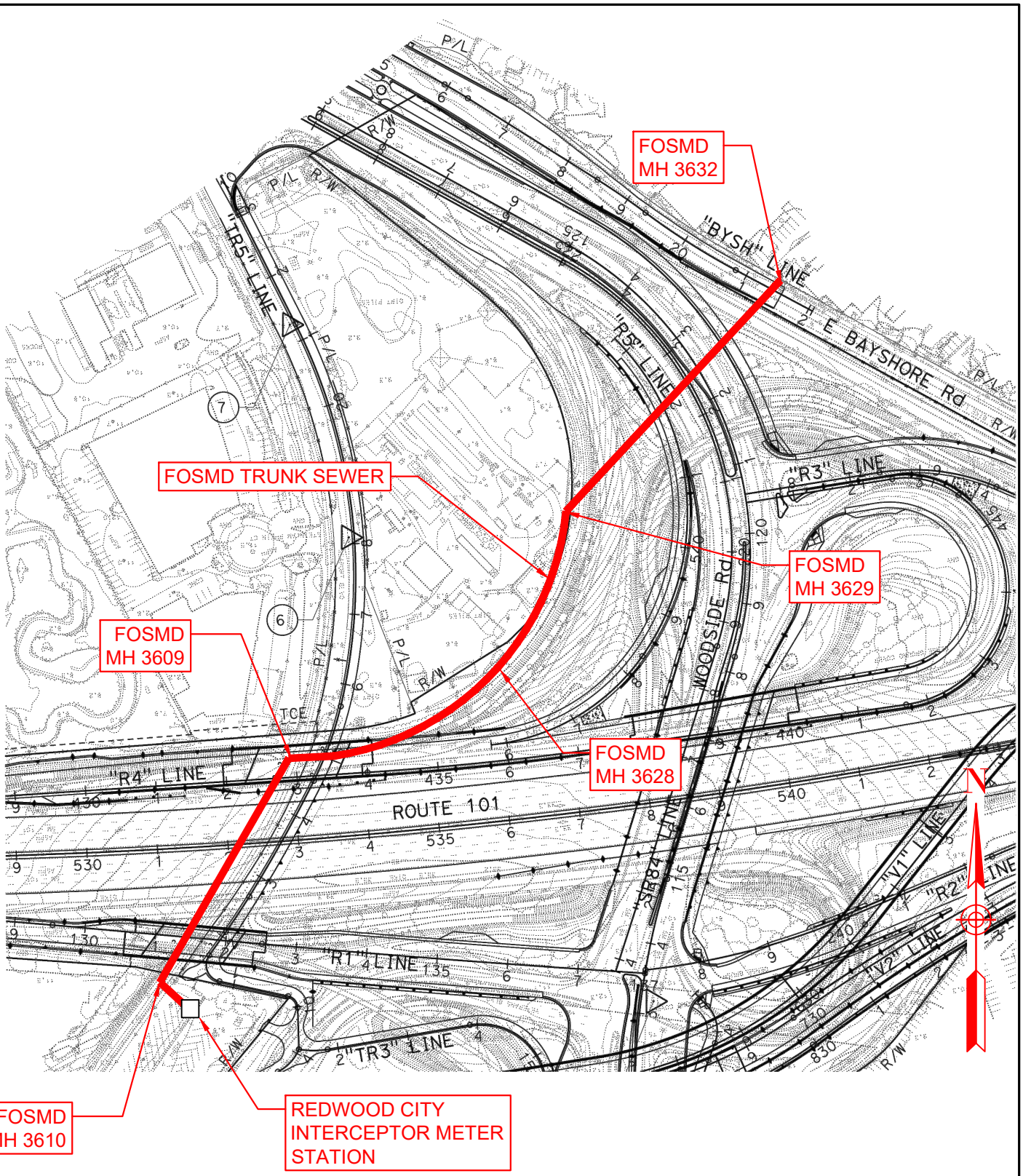
METHODOLOGY

A literature review and records search was conducted to identify the sensitive biological resources that have the potential to occur on or within the general vicinity of the Project site. Occurrence records for special-status plant and wildlife species within the USGS Palo Alto, California 7.5-minute quadrangle (USGS 2015) was reviewed through a query of the California Natural Diversity Database (CNDDB) Rare Find 5 (CDFW 2023; Attachment 2), CNPS Inventory of Rare and Endangered Plants (CNPS 2023; Attachment 3), and the USFWS Information for Planning and Consultation (IPaC) species list (USFWS 2023a; Attachment 4). The following databases were also reviewed for the Project site:

- Google Earth Pro Historical Aerial Imagery, various views from the 1940s to 2023 (Google Earth Pro 2023; HistoricAerials 2023);
- Custom Soil Resource Report for Antelope Valley Area, California (US Department of Agriculture [USDA] 2023);
- USFWS Critical Habitat Mapper and Environmental Conservation Online System (USFWS 2023b);
- USGS topography maps; and
- National Wetlands Inventory mapper (USFWS 2023c)

Since the Project site occurs within an urbanized and developed area, a desktop review was conducted by Michael Baker biologist Marisa Flores for the Project site. The desktop review was conducted by reviewing current and historical aerial imagery and the Street View feature in Google Earth (Google Earth Pro 2023). Land use types and vegetation communities occurring on the Project site were mapped on aerial imagery and classified in accordance with the vegetation descriptions provided in *A Manual of California Vegetation* (Sawyer et al. 2009). Site characteristics reviewed included topography, hydrology, anthropogenic disturbances, soil indicator species, and condition of on-site vegetation, and the presence of potentially regulated jurisdictional features were noted. After the desktop review was completed, land uses and vegetation

communities were digitized into Google Earth Pro software and then uploaded to geographic information systems (GIS) ArcView software. Photographs documenting the existing Project site conditions are provided in Attachment 1.



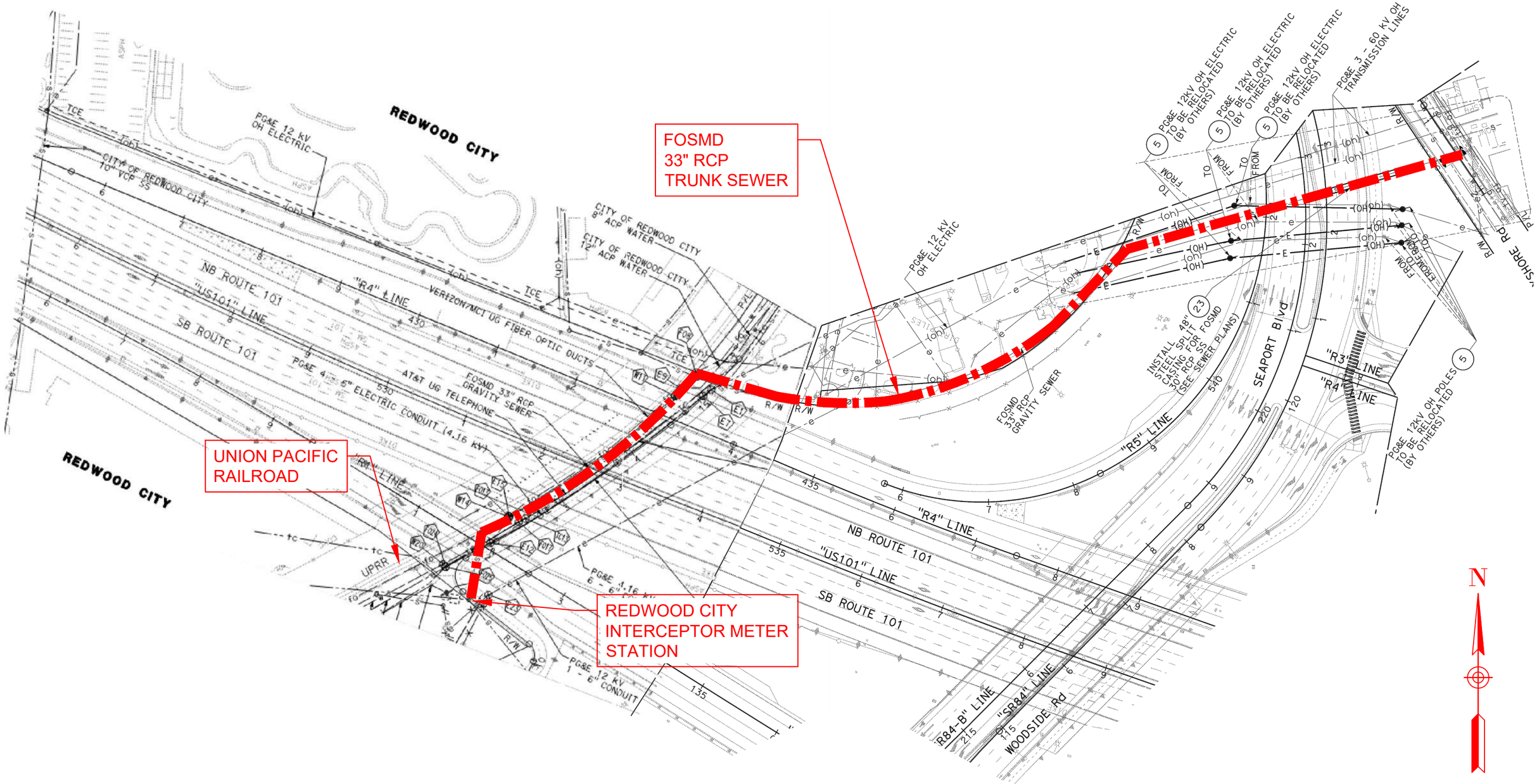
SOURCE: HWY 101/SR 84; 95% DESIGN PLANS, MARCH, 2020, AECOM

FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

Michael Baker INTERNATIONAL

RIGHT-OF-WAY LOCATION MAP

FIGURE 4



SOURCE: HWY 101/SR 84; 95% DESIGN PLANS, MARCH, 2020, AECOM

FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

EXISTING UTILITIES

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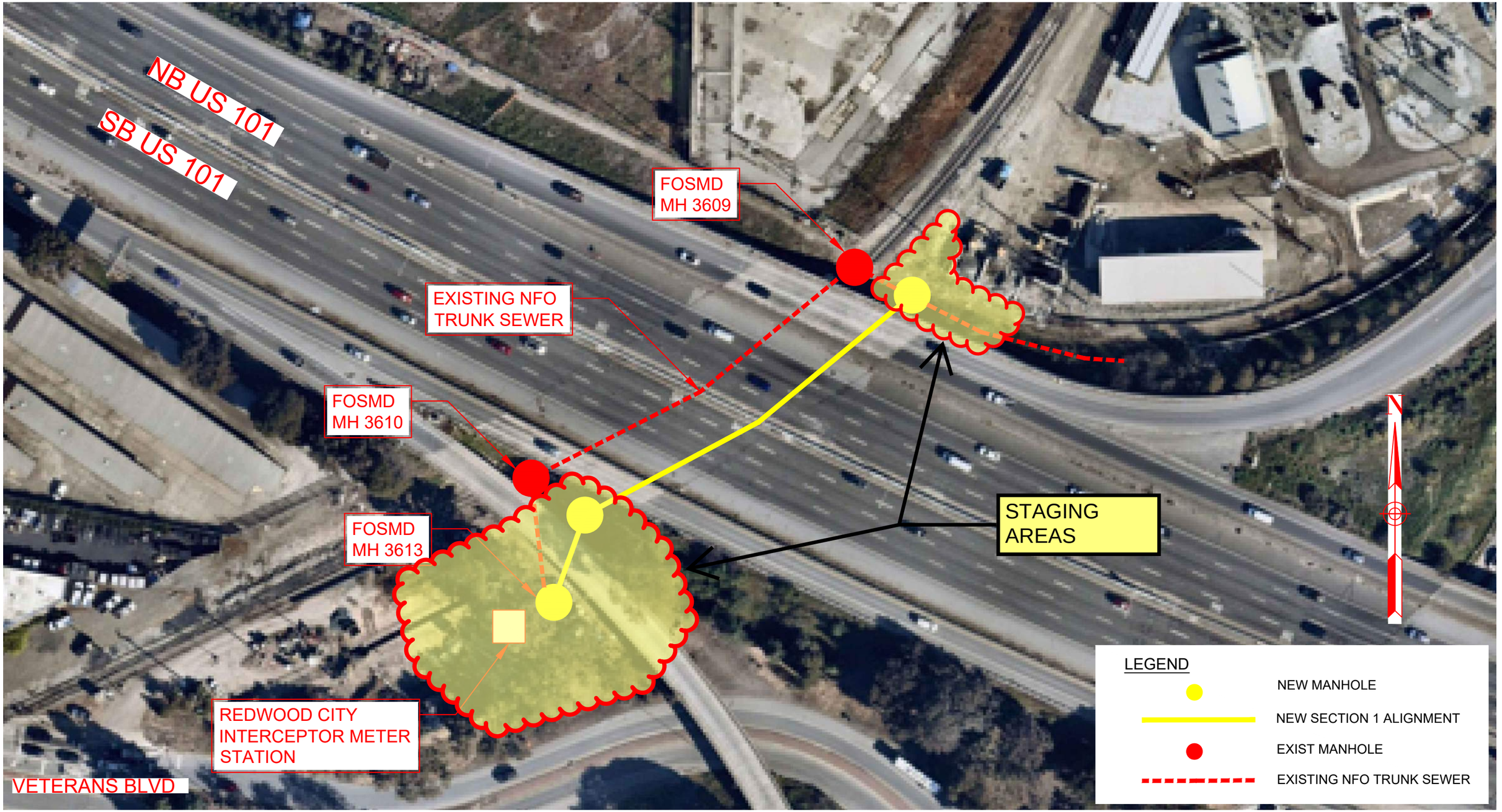
FIGURE 5



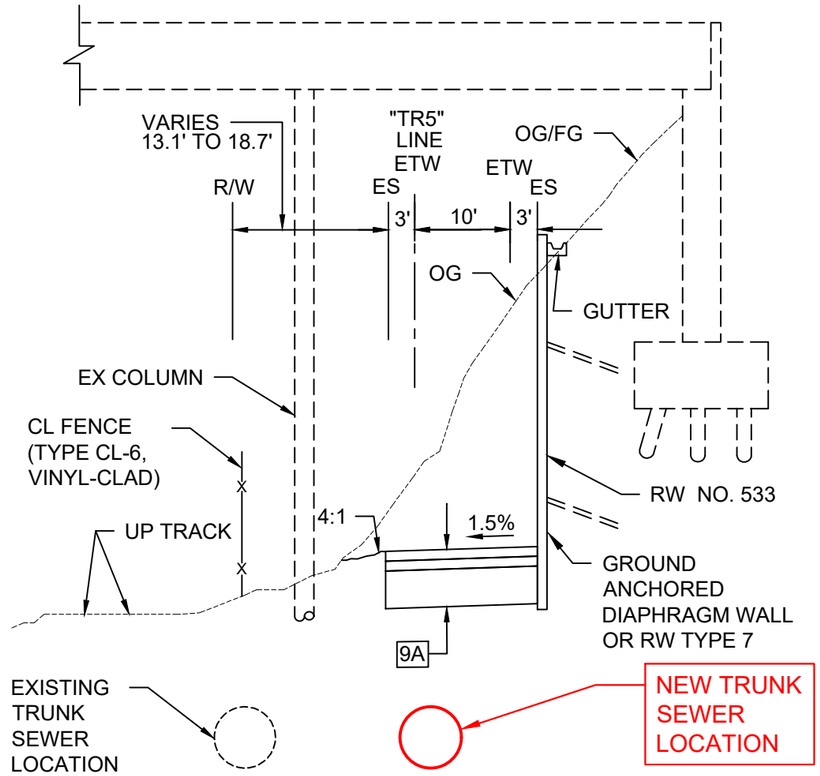
FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

PROPOSED TRUNK SEWER - SECTION 1

Michael Baker INTERNATIONAL

FIGURE 6

NEW TRUNK SEWER ALIGNMENT UNDER SOUTHERLY BRIDGE CELL



CROSS SECTION - LOOKING EAST
PROPOSED BIKE TRAIL AS PART OF HWY
101/WOODSIDE RD INTERCHANGE PROJECT

FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

PROPOSED TRUNK SEWER - SECTION 1 CROSS SECTIONS

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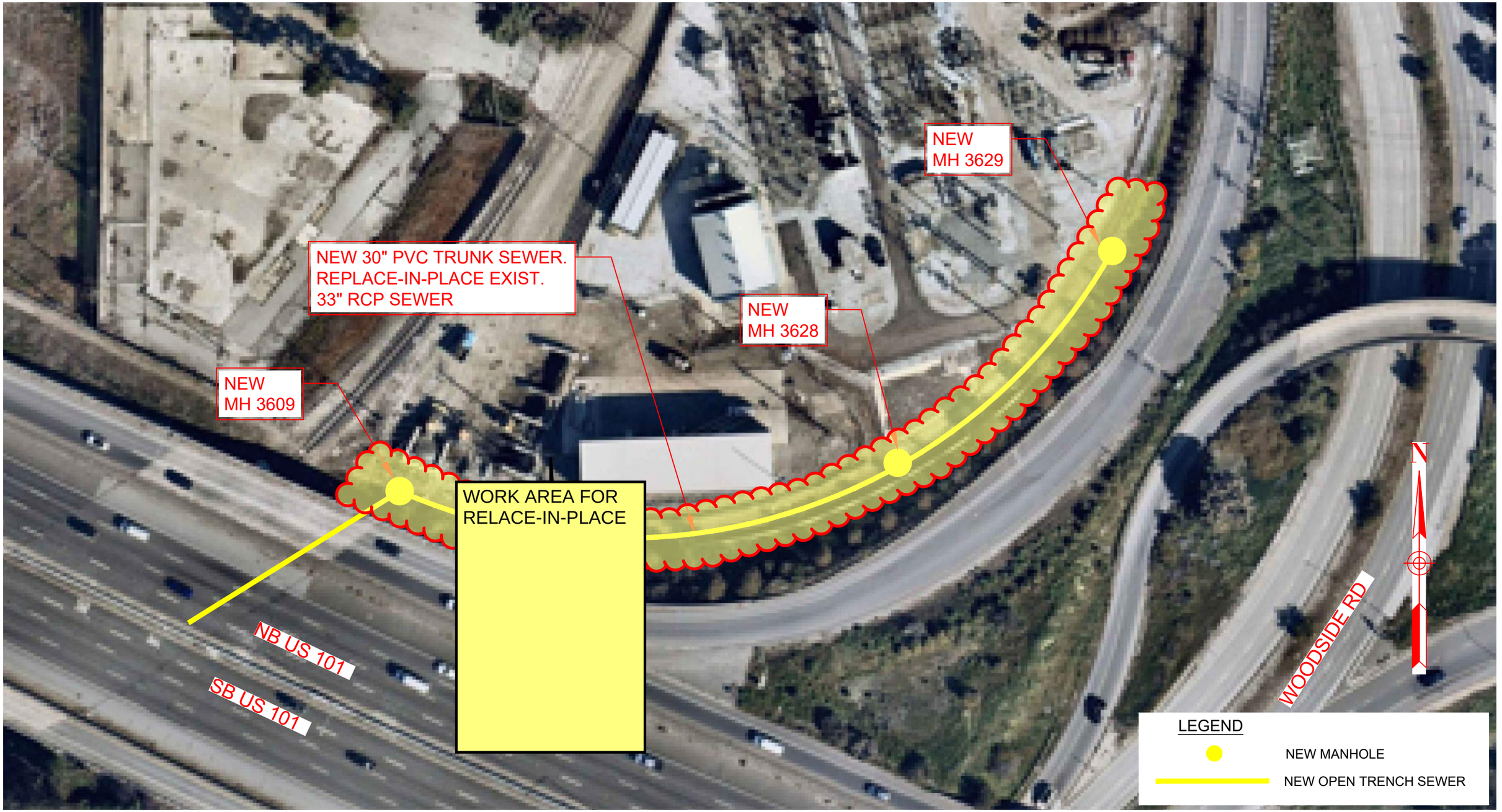
FIGURE 7

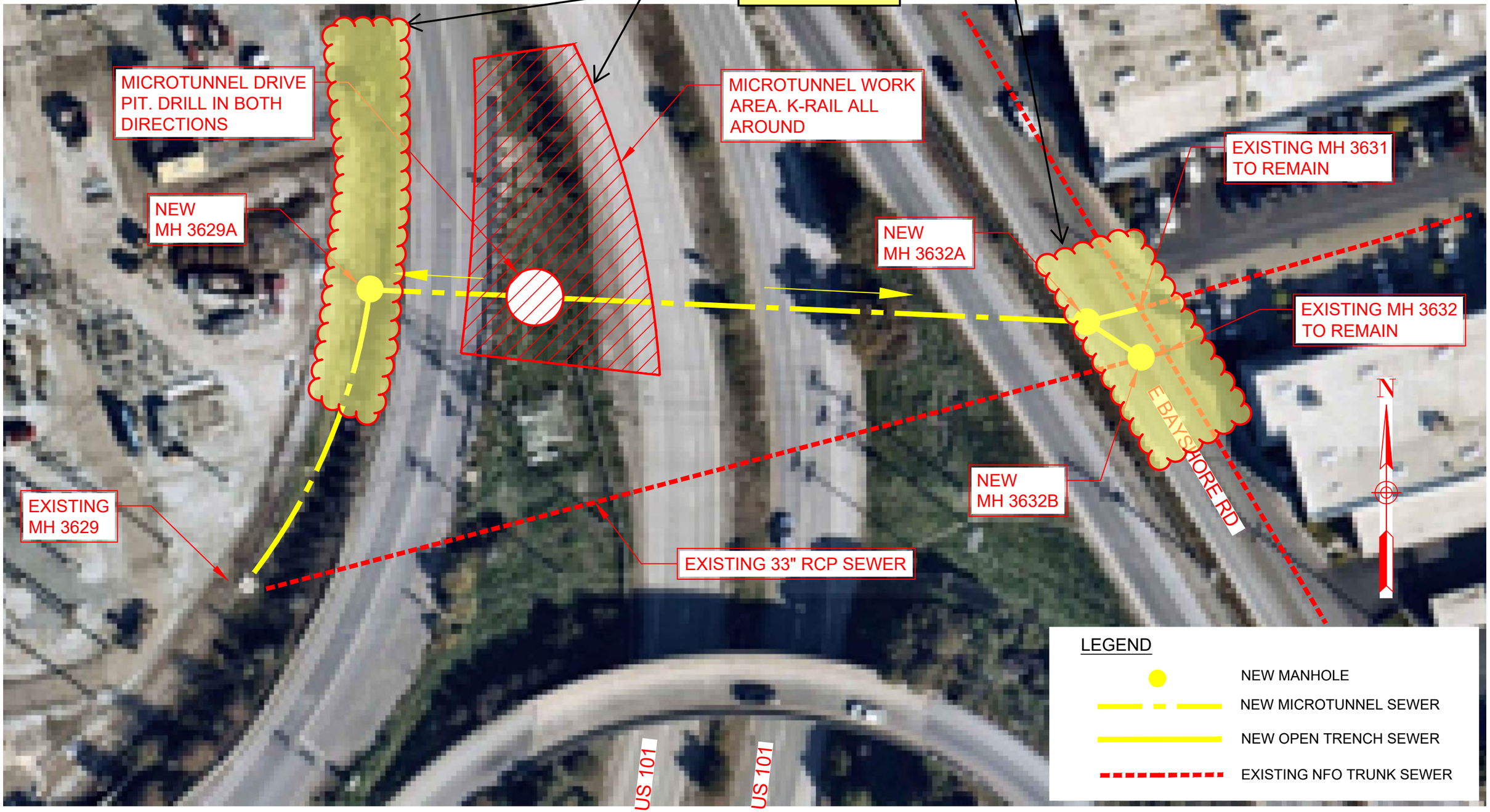


FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

PROPOSED TRUNK SEWER - SECTION 2

Michael Baker INTERNATIONAL

FIGURE 8



FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

PROPOSED TRUNK SEWER - SECTION 3

Michael Baker INTERNATIONAL

FIGURE 9

RESULTS AND IMPACTS

The Project site is heavily disturbed with a mix of developed roadways, unvegetated easements, and landscaped areas within the gore point for the highway ROW. Since all areas are maintained for the roadway, the entire Project site area is characterized as developed (Figure 10, *Land Uses*). There are no natural vegetation communities present on the Project site. Table 1 summarizes the land uses within each section of the proposed Project area.

Table 1. Project Site Description

Section	Location	Vegetation/Land Uses
1	Located between the west side of southbound US 101 and the northbound side of US 101.	The Redwood City Interceptor Meter Station sits in an existing vacant parking lot. The vegetation surrounding the parking lot appears to consist of ornamental trees, such as gum trees (*Eucalyptus* sp.), canary palm (*Phoenix canariensis*), and pine trees (*Pinus* sp.).
2	Located along the north side of the Seaport Blvd/US 101 northbound on-ramp.	An unvegetated easement located between the Redwood City Substation and the Seaport Blvd/US 101 northbound on-ramp. Landscaping occurs on the slopes adjacent to the work area.
3	Located between the easement just east of the Redwood City Substation and Bayshore Road.	Landscaping and existing developed roadway.

It is expected that wildlife that may occur in the area would be species common in urban settings, such as American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), and feral dogs or cats. Vegetation on the project site is composed of non-native weeds and/or plants used for landscaping. Trees noted on aerial imagery are gum trees and canary palm.

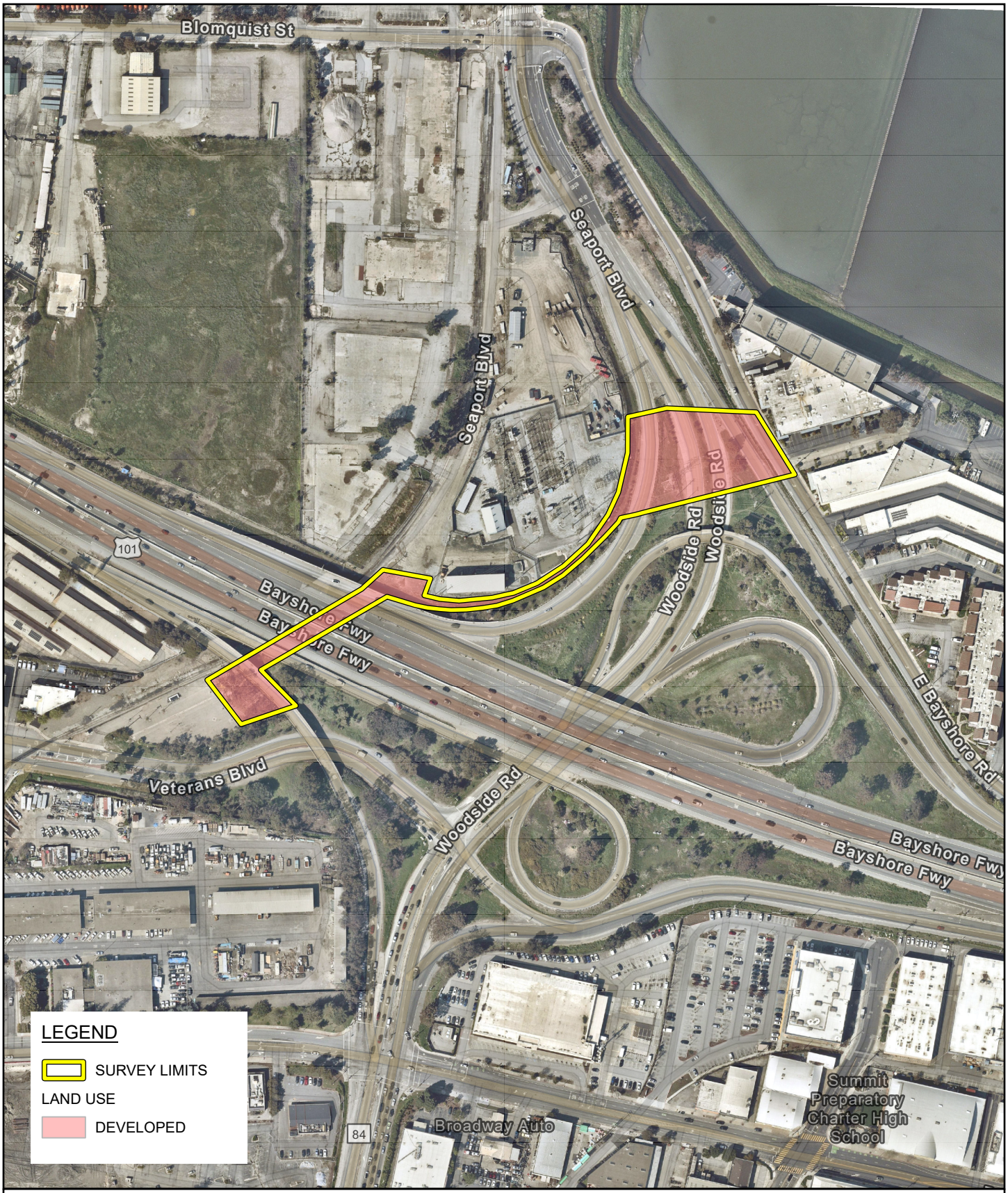
Since the Project site is in a heavily disturbed and urbanized area, soils are expected to be compacted. The soils mapped by the Natural Resources Conservation Service are Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes. This soil classification is not considered hydric.

Special-Status Species

The CNDDB (CDFW 2023; Attachment 2), CNPS (CNPS 2023; Attachment 2), and unofficial USFWS species list (USFWS 2023a; Attachment 3) were reviewed to determine the potential for special-status species to occur on the Project site. Based on the existing site conditions and disturbances and lack of natural habitat, there are no sensitive plant or animal species that would have a potential to occur on the Project site.

Nesting Birds

There is a potential for birds to nest on the ground, in trees, and transmission lines within the Project site or its immediate vicinity.



FAIR OAKS SEWER MAINTENANCE DISTRICT
SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT - PHASE 1

VEGETATION/LAND USES

Michael Baker INTERNATIONAL

FIGURE 10

Jurisdictional Waters

The nearest aquatic resource is Redwood Creek, approximately 2,000 feet from the Project site (estimated on aerial imagery). On the Project site, there is a treatment swale within the ROW on the southbound side of Seaport Boulevard. The treatment swale receives surface water from the adjacent developed areas and roadways and does not appear to drain into any jurisdictional waterways. No jurisdictional waters are present.

Migratory Corridors or Linkages

The Project site is not easily accessible nor does it provide any resources, such as vegetative cover, for wildlife. No migratory corridors or linkages would be impacted by the proposed Project.

Protected Trees

The Redwood City Street Tree Ordinance protects all City-owned trees growing within the public ROW. These trees cannot be planted, pruned, or removed without first securing a permit from the City. All trees that would be removed by the Project occur within the Caltrans right-of-way.

RECOMMENDATIONS

There is a potential for nesting birds to occupy trees adjacent to the staging areas; however, no direct impact is expected as no trees would be removed from staging areas. To ensure there are no birds nesting on the ground prior to staging or trenching activities, a nesting bird survey is recommended three days prior to construction to ensure construction does not impact an active nest during the bird breeding season (generally February 15–September 15).

Any tree removal will need to comply with any requirements identified in the Caltrans encroachment permit.

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Attachment 1
Site Photos

Attachment 1. Site Photographs

Photo 1. View north from staging area in Segment 1, south of Highway 101 off-ramp.

Photo 2. View northeast of Highway 101 underpass near western end of Segment 1.

Photo 3. View southeast of Highway 101 underpass at east end of Segment 1 staging area.

Photo 4. View west toward the Highway 101 underpass near the western end of Segment 2.

Attachment 1. Site Photographs

Photo 5. View south from the Seaport Boulevard/Highway 101 northbound on-ramp at the Segment 2/Segment 3 junction.

Photo 6. View west of Segment 3 across Bayshore Road and Seaport Boulevard.

Attachment 2

California Natural Diversity Database

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Palo Alto (3712242))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Acanthomintha duttonii San Mateo thorn-mint	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	170 170	5 S:1	0	0	0	0	1	0	1	0	0	0	1
Acipenser medirostris pop. 1 green sturgeon - southern DPS	G2T1 S1	Threatened None	AFS_VU-Vulnerable IUCN_EN-Endangered	0 0	14 S:1	0	1	0	0	0	0	0	1	1	0	0
Allium peninsulare var. franciscanum Franciscan onion	G4G5T2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	170 468	25 S:4	0	0	1	0	0	3	1	3	4	0	0
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	G2G3T3 S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	40 148	1273 S:4	0	1	0	0	2	1	3	1	2	0	2
Amsinckia lunaris bent-flowered fiddleneck	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley SB_UCSC-UC Santa Cruz		93 S:1	0	0	0	0	0	1	1	0	1	0	0
Aneides niger Santa Cruz black salamander	G3 S3	None None	CDFW_SSC-Species of Special Concern	340 340	78 S:1	0	0	0	0	0	1	1	0	1	0	0
Antrozous pallidus pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	70 420	420 S:2	0	0	0	0	0	2	2	0	2	0	0
Bombus caliginosus obscure bumble bee	G2G3 S1S2	None None	IUCN_VU-Vulnerable	75 400	181 S:2	0	0	0	0	0	2	2	0	2	0	0
Bombus crotchii Crotch bumble bee	G2 S2	None Candidate Endangered	IUCN_EN-Endangered	100 100	437 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Bombus occidentalis western bumble bee	G3 S1	None Candidate Endangered	IUCN_VU-Vulnerable USFS_S-Sensitive	15 400	306 S:4	0	0	0	0	0	4	4	0	4	0	0
Centromadia parryi ssp. congdonii Congdon's tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	2 2	96 S:1	0	0	1	0	0	0	1	0	1	0	0
Charadrius nivosus nivosus western snowy plover	G3T3 S3	Threatened None	CDFW_SSC-Species of Special Concern	0 5	138 S:2	0	1	0	0	1	0	1	1	1	1	0
Cirsium fontinale var. fontinale fountain thistle	G2T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	150 440	5 S:2	0	0	2	0	0	0	0	2	2	0	0
Cirsium praeteriens lost thistle	GX SX	None None	Rare Plant Rank - 1A	50 50	1 S:1	0	0	0	0	1	0	1	0	0	0	1
Collinsia corymbosa round-headed collinsia	G1 S1	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		13 S:1	0	0	0	0	1	0	1	0	0	0	1
Collinsia multicolor San Francisco collinsia	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCSC-UC Santa Cruz	100 100	36 S:1	0	0	0	0	0	1	1	0	1	0	0
Corynorhinus townsendii Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	160 570	635 S:2	0	0	0	0	0	2	2	0	2	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Coturnicops noveboracensis yellow rail	G4 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	8 18	45 S:3	0	0	0	0	0	3	3	0	3	0	0
Dicamptodon ensatus California giant salamander	G2G3 S2S3	None None	CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	380 380	234 S:1	0	0	0	0	0	1	1	0	1	0	0
Dipodomys venustus venustus Santa Cruz kangaroo rat	G4T1 S1	None None		20 600	29 S:3	0	0	0	0	3	0	3	0	0	3	0
Dirca occidentalis western leatherwood	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	150 595	90 S:4	0	1	0	0	0	3	2	2	4	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	100 200	1477 S:3	0	1	0	0	0	2	3	0	3	0	0
Eryngium aristulatum var. hooveri Hoover's button-celery	G5T1 S1	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	80 80	16 S:1	0	0	0	0	1	0	1	0	0	1	0
Eryngium jepsonii Jepson's coyote-thistle	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	525 625	19 S:2	0	0	0	0	0	2	1	1	2	0	0
Euphydryas editha bayensis Bay checkerspot butterfly	G5T1 S3	Threatened None		600 600	30 S:1	0	0	0	0	1	0	1	0	0	0	1
Fritillaria liliacea fragrant fritillary	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden USFS_S-Sensitive		82 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Geothlypis trichas sinuosa saltmarsh common yellowthroat	G5T3 S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	4 360	112 S:2	0	1	0	0	0	1	1	1	2	0	0
Haliaeetus leucocephalus bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive	430 430	332 S:1	0	0	1	0	0	0	0	1	1	0	0
Hesperolinon congestum Marin western flax	G1 S1	Threatened Threatened	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	200 450	27 S:2	0	1	1	0	0	0	0	2	2	0	0
Lasiurus cinereus hoary bat	G3G4 S4	None None	IUCN_LC-Least Concern		238 S:5	0	0	0	0	0	5	5	0	5	0	0
Laterallus jamaicensis coturniculus California black rail	G3T1 S2	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_EN-Endangered	5 5	303 S:1	0	1	0	0	0	0	0	1	1	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	110 110	508 S:1	0	0	0	0	0	1	1	0	1	0	0
Malacothamnus arcuatus arcuate bush-mallow	G2Q S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	300 377	34 S:3	0	1	0	1	0	1	1	2	3	0	0
Melospiza melodia pusillula Alameda song sparrow	G5T2T3 S2	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	4 70	38 S:6	0	3	0	0	0	3	3	3	6	0	0
Monolopia gracilens woodland woollythreads	G3 S3	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	400 600	67 S:2	0	0	0	0	0	2	2	0	2	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	G5T2T3 S2S3	None None	CDFW_SSC-Species of Special Concern	215 262	42 S:3	0	1	2	0	0	0	0	3	3	0	0
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	G3 S3.2	None None		10 10	53 S:2	0	1	0	0	0	1	2	0	2	0	0
Plagiobothrys chorisianus var. chorisianus Choris' popcornflower	G3T1Q S1	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCSC-UC Santa Cruz		42 S:1	0	0	0	0	0	1	1	0	1	0	0
Rallus obsoletus obsoletus California Ridgway's rail	G3T1 S2	Endangered Endangered	CDFW_FP-Fully Protected	1 4	99 S:3	1	1	1	0	0	0	0	3	3	0	0
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	G3T2 S2	Proposed Threatened Endangered	BLM_S-Sensitive USFS_S-Sensitive	80 500	178 S:2	0	0	0	0	2	0	2	0	0	0	2
Rana draytonii California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	130 231	1686 S:6	0	3	1	0	2	0	3	3	4	1	1
Reithrodontomys raviventris salt-marsh harvest mouse	G1G2 S3	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	0 0	144 S:3	0	1	2	0	0	0	3	0	3	0	0
Sagittaria sanfordii Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	185 185	143 S:1	0	0	0	0	0	1	0	1	1	0	0
Serpentine Bunchgrass Serpentine Bunchgrass	G2 S2.2	None None		5,800 5,800	22 S:1	0	0	0	0	0	1	1	0	1	0	0
Sorex vagrans halicoetes salt-marsh wandering shrew	G5T1 S1	None None	CDFW_SSC-Species of Special Concern	2 2	12 S:1	0	0	0	0	0	1	1	0	1	0	0
Spirinchus thaleichthys longfin smelt	G5 S1	Candidate Threatened	IUCN_LC-Least Concern	0 0	46 S:1	0	0	0	0	0	1	1	0	1	0	0
Sternula antillarum browni California least tern	G4T2T3Q S2	Endangered Endangered	CDFW_FP-Fully Protected	1 1	75 S:1	0	0	0	0	1	0	1	0	0	0	1
Stuckenia filiformis ssp. alpina northern slender pondweed	G5T5 S2S3	None None	Rare Plant Rank - 2B.2	50 50	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Taxidea taxus American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	70 347	594 S:5	0	0	0	0	0	5	2	3	5	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Thamnophis sirtalis tetrataenia San Francisco gartersnake	G5T2Q S2	Endangered Endangered	CDFW_FP-Fully Protected	350 350	66 S:1	0	0	0	0	0	1	1	0	1	0	0
Trifolium amoenum two-fork clover	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley SB_USDA-US Dept of Agriculture		26 S:1	0	0	0	0	0	1	1	0	1	0	0
Valley Oak Woodland Valley Oak Woodland	G3 S2.1	None None		40 40	91 S:1	0	0	0	0	0	1	1	0	1	0	0

Attachment 3

California Native Plant Society

Memorandum
September 6, 2023
San Mateo County Sewer Improvement Project, San Mateo County, CA

CNPS Rare Plant Inventory

California Native Plant Society

Search Results

29 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3712242**]

▲ SCIENTIFIC NAME	COMMON NAME	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK	GENERAL HABITATS	MICROHABITATS	LOWEST ELEVATION (FT)	HIGHEST ELEVATION (FT)	CA ENDEMIC
Acanthomintha duttonii	San Mateo thorn-mint	annual herb	Apr-Jun	FE	CE	1B.1	Chaparral, Valley and foothill grassland	Serpentinite	165	985	Yes
Allium peninsulare var. *franciscanum*	Franciscan onion	perennial bulbiferous herb	(Apr)May-Jun	None	None	1B.2	Cismontane woodland, Valley and foothill grassland	Clay, Serpentinite (often), Volcanic	170	1000	Yes
Amsinckia lunaris	bent-flowered fiddleneck	annual herb	Mar-Jun	None	None	1B.2	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland		10	1640	Yes
Androsace elongata ssp. *acuta*	California androsace	annual herb	Mar-Jun	None	None	4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland		490	4280	
Calandrinia breweri	Brewer's calandrinia	annual herb	(Jan)Mar-Jun	None	None	4.2	Chaparral, Coastal scrub	Burned areas, Disturbed areas, Loam (sometimes), Sandy (sometimes)	35	4005	
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	annual herb	May-Oct(Nov)	None	None	1B.1	Valley and foothill grassland (alkaline)		0	755	Yes

Cirsium fontinale var. *fontinale*	fountain thistle	perennial herb	(Apr)May-Oct	FE	CE	1B.1	Chaparral (openings), Cismontane woodland, Meadows and seeps, Valley and foothill grassland	Seeps, Serpentinite	150	575	Yes
Cirsium praeteriens	lost thistle	perennial herb	Jun-Jul	None	None	1A			0	330	Yes
Collinsia corymbosa	round-headed collinsia	annual herb	Apr-Jun	None	None	1B.2	Coastal dunes		0	65	Yes
Collinsia multicolor	San Francisco collinsia	annual herb	(Feb)Mar-May	None	None	1B.2	Closed-cone coniferous forest, Coastal scrub	Serpentinite (sometimes)	100	900	Yes
Dirca occidentalis	western leatherwood	perennial deciduous shrub	Jan-Mar(Apr)	None	None	1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, North Coast coniferous forest, Riparian forest, Riparian woodland	Mesic	80	1395	Yes
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	annual/perennial herb	(Jun)Jul(Aug)	None	None	1B.1	Vernal pools		10	150	Yes
Eryngium jepsonii	Jepson's coyote-thistle	perennial herb	Apr-Aug	None	None	1B.2	Valley and foothill grassland, Vernal pools	Clay	10	985	Yes
Fritillaria liliacea	fragrant fritillary	perennial bulbiferous herb	Feb-Apr	None	None	1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland	Serpentinite (often)	10	1345	Yes

Hesperolinon congestum	Marin western flax	annual herb	Apr-Jul	FT	CT	1B.1	Chaparral, Valley and foothill grassland	Serpentinite	15	1215	Yes
Iris longipetala	coast iris	perennial rhizomatous herb	Mar-May(Jun)	None	None	4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps	Mesic	0	1970	Yes
Leptosiphon ambiguus	serpentine leptosiphon	annual herb	Mar-Jun	None	None	4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland	Serpentinite (usually)	395	3710	Yes
Leptosiphon aureus	bristly leptosiphon	annual herb	Apr-Jul	None	None	4.2	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland		180	4920	Yes
Leptosiphon latisectus	broad-lobed leptosiphon	annual herb	Apr-Jun	None	None	4.3	Broadleafed upland forest, Cismontane woodland		560	4920	Yes
Lessingia hololeuca	woolly-headed lessingia	annual herb	Jun-Oct	None	None	3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	Clay, Serpentinite	50	1000	Yes
Lessingia tenuis	spring lessingia	annual herb	May-Jul	None	None	4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest	Openings	985	7055	Yes

Malacothamnus arcuatus	arcuate bush-mallow	perennial deciduous shrub	Apr-Sep	None	None	1B.2	Chaparral, Cismontane woodland		50	1165	Yes
Monolopia gracilens	woodland woollythreads	annual herb	(Feb)Mar-Jul	None	None	1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland	Serpentinite	330	3935	Yes
Piperia michaelii	Michael's rein orchid	perennial herb	Apr-Aug	None	None	4.2	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal scrub, Lower montane coniferous forest		10	3000	Yes
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	annual herb	Mar-Jun	None	None	1B.2	Chaparral, Coastal prairie, Coastal scrub	Mesic	10	525	Yes
Plagiobothrys chorisianus var. *hickmanii*	Hickman's popcornflower	annual herb	Apr-Jun	None	None	4.2	Chaparral, Closed-cone coniferous forest, Coastal scrub, Marshes and swamps, Vernal pools		50	1280	Yes
Sagittaria sanfordii	Sanford's arrowhead	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	1B.2	Marshes and swamps (shallow freshwater)		0	2135	Yes

Stuckenia filiformis ssp. *alpina*	northern slender pondweed	perennial rhizomatous herb (aquatic)	May-Jul	None	None	2B.2	Marshes and swamps (shallow freshwater)	985	7055	
Trifolium amoenum	two-fork clover	annual herb	Apr-Jun	FE	None	1B.1	Coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite)	15	1360	Yes

Showing 1 to 29 of 29 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 2 August 2023].

Attachment 4

USFWS IPAC Species List

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

San Mateo County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse Reithrodontomys raviventris Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail Rallus longirostris obsoletus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern Sterna antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle Chelonia mydas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake Thamnophis sirtalis tetrataenia Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Foothill Yellow-legged Frog Rana boylii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5133	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
California Seablite Suaeda californica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6310	Endangered

Fountain Thistle Cirsium fontinale var. fontinale Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7939

Marin Dwarf-flax Hesperolinon congestum Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5363

San Mateo Thornmint Acanthomintha obovata ssp. duttonii Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2038

Showy Indian Clover Trifolium amoenum Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6459

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list,click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

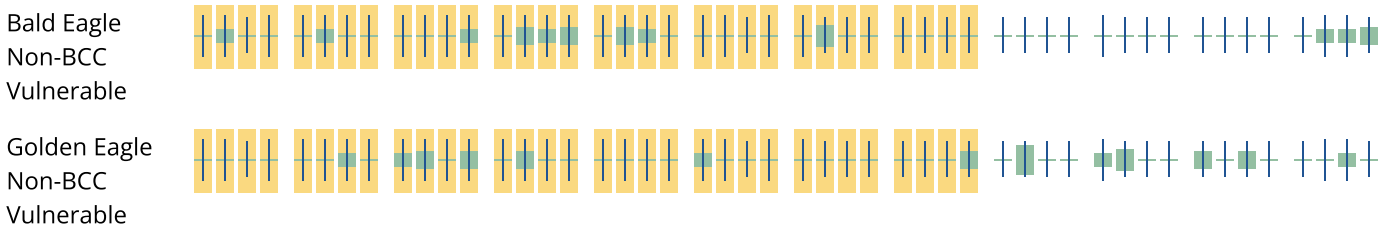
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Belding's Savannah Sparrow Passerculus sandwichensis beldingi — Breeds Apr 1 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the

probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

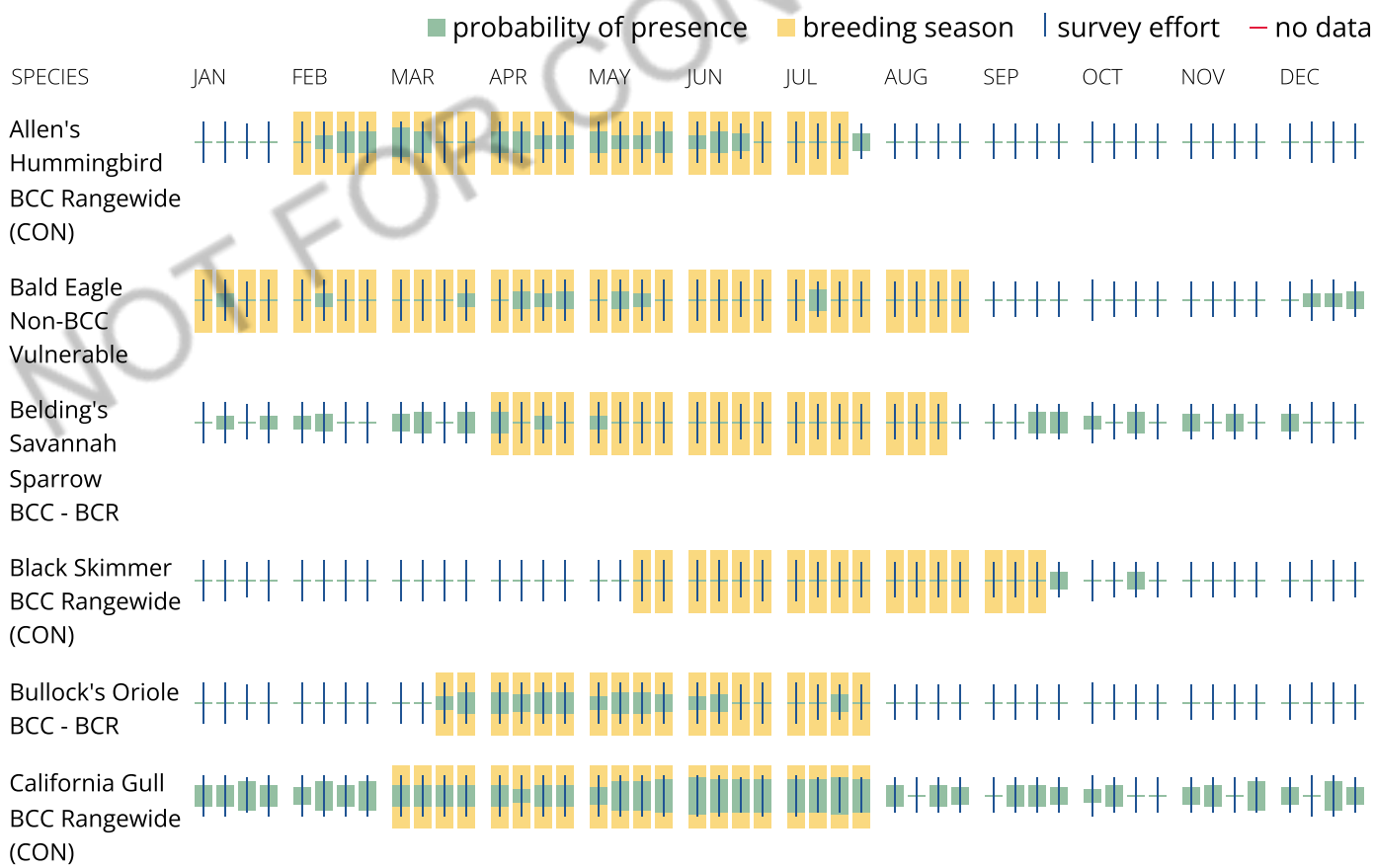
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

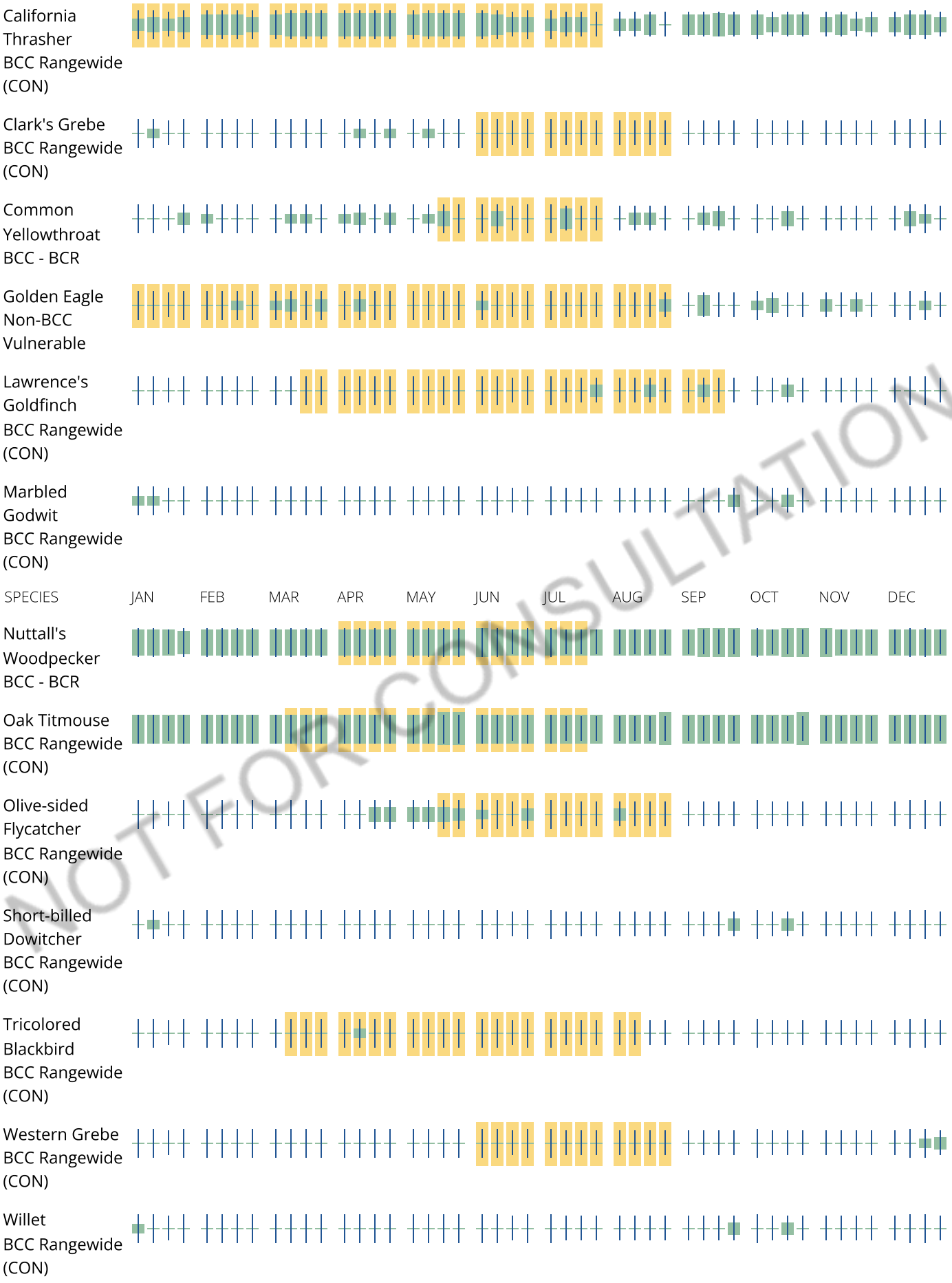
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

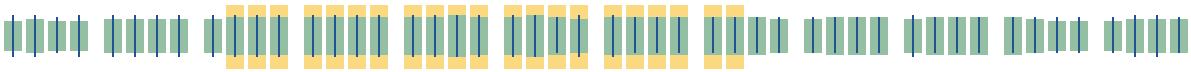
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Wrentit
BCC Rangewide
(CON)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird

on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is

the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

CBRA information is not available at this time

This can happen when the CBRS map service is unavailable, or for very large projects that intersect many coastal areas. Try again, or visit the CBRS map to view coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

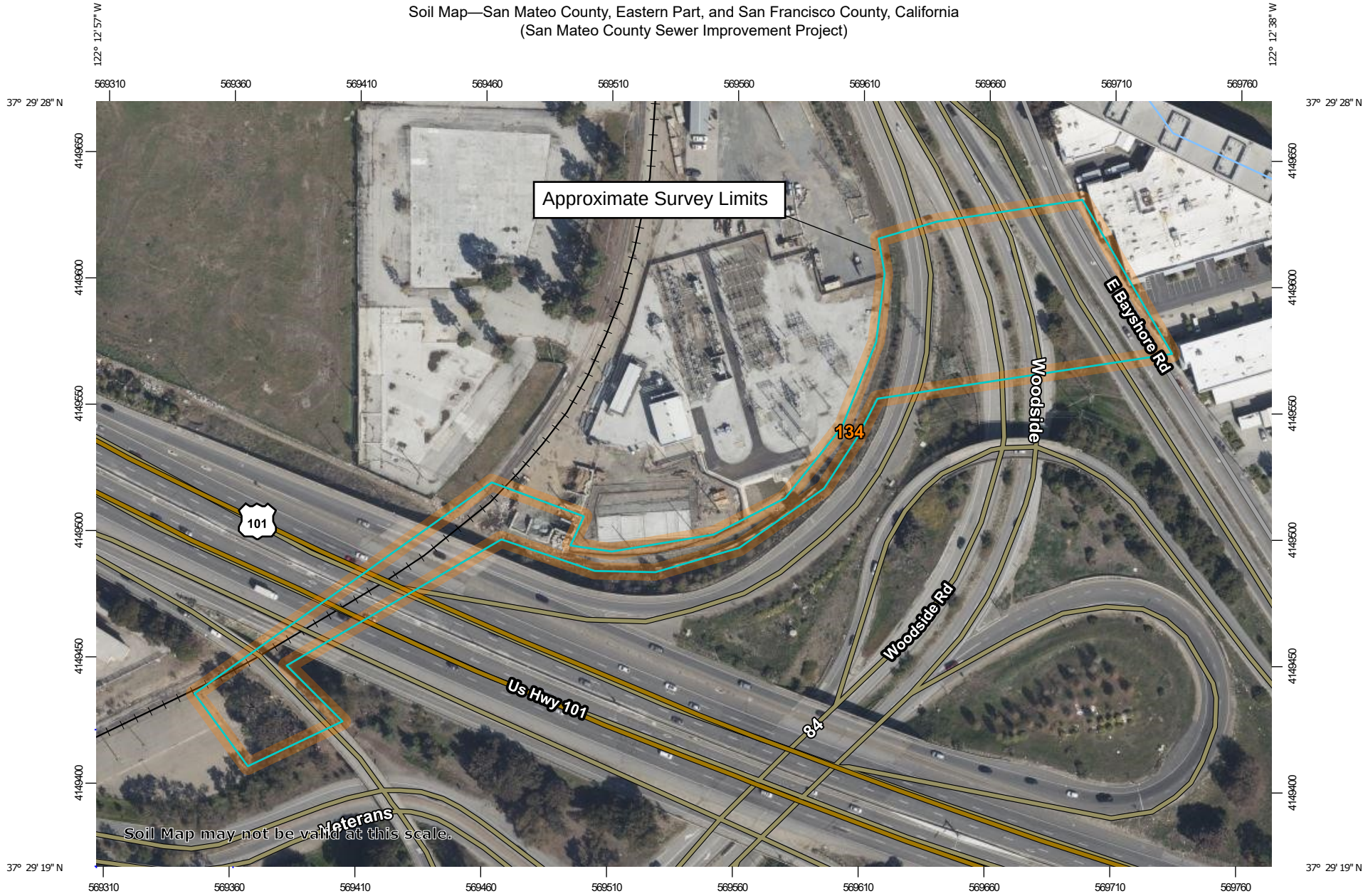
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment 5

Soil Resource Report for San Mateo County, Eastern Part and San Francisco County, California

Memorandum
September 6, 2023
San Mateo County Sewer Improvement Project, San Mateo County, CA

Soil Map—San Mateo County, Eastern Part, and San Francisco County, California
(San Mateo County Sewer Improvement Project)



Map Scale: 1:2,140 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 18, Sep 14, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 4, 2021—Mar 21, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Michael Baker
INTERNATIONAL

Appendix C: Cultural Resources Identification Memorandum

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Michael Baker
INTERNATIONAL

May 15, 2024

Tiffany Deng, P.E.
Associate Civil Engineer
County of San Mateo
County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063

RE: CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE NORTH FAIR OAKS SEWER TRUNK LINE REALIGNMENT PROJECT – PHASE 1, CITY OF REDWOOD CITY, SAN MATEO COUNTY, CALIFORNIA

Dear Ms. Deng:

The County of San Mateo (County) proposes replacement of the existing trunk sewer between manholes 3612 and 3632 in the vicinity of Woodside Road and Highway 101 in the City of Redwood City. This cultural resources identification memorandum is intended to fulfill the requirements of the California Environmental Quality Act (CEQA). In support of the project, Michael Baker International completed a Northwest Information Center (NWIC) records search of the California Historical Resources Information System (CHRIS); a literature, aerial photograph, and historical map review; and an archaeological sensitivity assessment to determine whether the project could result in a substantial adverse change to a historical resource in accordance with Public Resources Code Section 5020.1(q) and the CEQA Guidelines. Additionally, Michael Baker International conducted Native American outreach, and compiled the results of Assembly Bill (AB) 52 consultation to identify any tribal cultural resources within the project area and tribal concerns about the project. Methods, results, and recommendations are summarized below.

PROJECT DESCRIPTION

The County of San Mateo proposes the replacement of a section of their trunk sewer system that is near the end of its service life. Approximately 1,404 linear feet of an existing 33" trunk sewer would be replaced with an industry standard sized 36" pipeline. The project is located between manholes 3612 and 3632 in the vicinity of Woodside Road and Highway 101 in Redwood City.

The District provides wastewater collection services to an approximate 5-square-mile area south of Redwood City in the County. The collection system discharges to the Redwood City collection system at Veterans Boulevard, where it is then conveyed to the Silicon Valley Clean Water Interceptor System and Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is in the County's parking lot north of Veterans Boulevard.

A portion of the outfall trunk sewer immediately upstream from the IMS, termed the North Fair Oaks Trunk Sewer (NFOTS), is located along the Union Pacific Railroad tracks, under Highway 101, adjacent to Highway 101 and across Woodside Road into East Bayshore Road. The NFOTS was installed in the mid 1970s and has reached the end of its useful service. Continual maintenance and the risk exposure in the event of failure is very high within this corridor. In addition, Caltrans and Redwood City are planning to construct an interchange improvement project surrounding the NFOTS corridor in the 2025-2030 time frame. For these reasons, the District is evaluating replacement of the NFOTS.

The Project involves replacing the existing NFOTS outfall trunk sewer with an industry-standard, 36-inch diameter polyvinyl chloride (PVC) pipeline. Certain segments of the new pipeline cannot be replaced in-place, and the alignment of the NFOTS would be slightly modified.

The planned NFOTS replacement would take place within the existing NFOTS right-of-way, the Redwood City Substation, a City right-of-way, and the Caltrans right-of-way. Excavation methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101.

PROJECT SITE

The project site consists of the three-dimensional area within which project-related ground disturbance may take place. The project site comprises an irregularly shaped area of approximately one acre, including 1,404 linear feet of sewer trunk line, associated with Existing Manholes 3613, 3614, 3610, 3609, 3628, 3629 and 3632. The project site includes the maximum extent of ground disturbance associated with the development of the project, including launching and receiving pits, staging areas, and other locations of temporary ground disturbance (see **Attachment 1**). The maximum depth of excavation is 14 feet. Therefore, the vertical project site is 14 feet below ground surface to encompass the maximum depth of excavation anticipated.

CULTURAL RESOURCES IDENTIFICATION METHODS

The results of the NWIC records search, archival research, literature, historical map and aerial photograph review, local interested party consultation, Native American Heritage Commission (NAHC) Sacred Lands File search, and archaeological site sensitivity analysis are presented below.

NORTHWEST INFORMATION CENTER

On July 25, 2023, Michael Baker International archaeologist Elise Blindauer, BA, conducted a records search from the NWIC (**see Attachment 2**). The records search included the project site and a half-mile radius. The NWIC, located at Sonoma State University, Rohnert Park, California, is part of the California Historical Resources Information System, an affiliate of the California Office of Historic Preservation (OHP). It is the official state repository of cultural resources records and reports for San Mateo County. As part of the records search, the following federal and California inventories were reviewed:

- Built Environment Resources Directory (BERD) for San Mateo County (OHP 2023a). The BERD includes resources reviewed for eligibility for the National Register of Historic Places and the California Historical Landmarks programs through federal and state environmental compliance laws, and resources nominated under federal and state registration programs, including the National Register, California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. For the purposes of this study, the BERD was consulted for resources within the project site and a 0.5-mile buffer and located on streets within or adjacent to the project site, i.e., Bayshore Freeway (US Highway 101), East Bayshore Road, and Seaport Boulevard.
- California Inventory of Historic Resources (OHP 1976)
- California Points of Historical Interest (OHP 2023b)
- California Historical Landmarks (OHP 2023b)
- National Register of Historic Places (National Park Service 2020)

RECORDS SEARCH RESULTS

Previous Studies

Eleven cultural resources studies have previously been completed within the project site and one within the 0.5-mile buffer as outlined in Table 1, below. One hundred percent of the project site has been previously surveyed.

Table 1: Studies conducted within 0.5-mile of the project site.

Study Number	Author	Date	Title	Within Project Site?	Historical Resources Identified within the Project Site?
S-025081	John Holson	2002	Archaeological Survey for 101/Seaport, 8211.30 (Pl 1004-08) (letter report)	Yes	No
S-029527	Earth Touch, LLC	2001	Nextel Communications (On-Air), CA-1180A/Redwood Junction, 1711 East Bayshore Road, Redwood City, California	No	No
S-029869	Wayne H. Bonner	2005	Cultural Resource Records Search Results and Site Visit for Cingular Telecommunications Facility Candidate PN-604-01 (American Tower Monopole #91528), 1100 Broadway Street, Redwood City, San Mateo, San Mateo County, California (letter report)	Yes	No

Study Number	Author	Date	Title	Within Project Site?	Historical Resources Identified within the Project Site?
S-038684	Stacy Kozakavich and Alexandra Merritt-Smith	2008	A Cultural Resources Study for the San Mateo County SMART Corridors Project, San Mateo County, California	Yes	No
S-049066	Kathleen Kubal	2015	Historic Property Survey Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project, Project Approval/Environment Document Phase	Yes	Yes
S-049066a	Chandra Miller and Christopher McMorris	2015	Historical Resources Evaluation Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project, Project Approval/Environmental Document Phase	Yes	Yes
S-049066b	Karin G. Beck	2015	Archaeological Survey Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project Approval & Environmental Document Phase	Yes	Yes
S-049066c	Jay Rehor and Kathleen Kubal	2015	Extended Phase I Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project Project Approval/Environmental Document Phase	Yes	Yes
S-049125	Michael Meloy and Kathleen Kubal	2017	Historic Property Survey Report for the US 101 Managed Lanes Project, EA 04-1J560	Yes	No
S-049125a	Michael Meloy	2017	Historic Resources Evaluation Report for the US 101 Managed Lanes Project, EA 04-1J560	Yes	Yes
S-049125b	Karin G. Beck, Kathleen Kubal, and Jay Rehor	2017	Archaeological Survey Report and Extended Phase I Study, US 101 High-Occupancy Vehicle/Express (Managed) Lanes Project, San Francisco, San Mateo, and Santa Clara Counties, California, EA 04-1J5600	Yes	Yes
S-049125c	Julianne Polanco	2017	FHWA_2017_0508_001, Determinations of Eligibility for	Yes	Yes

Study Number	Author	Date	Title	Within Project Site?	Historical Resources Identified within the Project Site?
			the Proposed Creation of Approximately 22 Miles of Managed Lanes along United States Highway 101, San Mateo County, CA		

Previously Documented Resources

Two cultural resources were identified as a result of the studies documented above within or immediately adjacent to the project site, and are described more fully below. Ten cultural resources were identified within 0.5 miles of the project site, as summarized in Table 2, below.

Table 2: Resources located within 0.5-mile of the project site.

Resource #	Description	CRHR/NRHP Eligibility	Historical Resource	Within Project Site?
P-41-000238 CA-SMA-240	Prehistoric habitation debris	Appears destroyed.	No	No
P-41-000487	923 Stambaugh Street, Redwood City	6Z Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-000488	611, 619, & 627 Manzanita Street & 1025 Stambaugh Street	6Z Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-000774	Hanson Residence, 473 Elm Street	3S Appears eligible for NR as an individual property through survey evaluation.	Yes	No
P-41-002393	Frank's Tannery Sheet Scatter ca. 1910s-1920s archaeological refuse deposit	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-002592	Redwood City Harbor Company Spur / Union Pacific Railroad	6Y, Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.	No	Yes
P-41-002593	PG&E Redwood City Substation	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	Yes

Resource #	Description	CRHR/NRHP Eligibility	Historical Resource	Within Project Site?
P-41-002594	City of Redwood City Municipal Service Center, 1400 Broadway Street	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-002595	Broadway Pumping Station, 1180 Broadway Street	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-002596	U.S. Post Office, 1100 Broadway Street	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-002597	Kliklok Corporation Building, 1089 Mills Way	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No
P-41-002598	Denny's, 1201 Broadway Street	6Z, Found ineligible for NR, CR or Local designation through survey evaluation.	No	No

P-41-002592 – Redwood City Harbor Company Spur / Union Pacific Railroad

This resource consists of a portion of the former Redwood City Harbor Company spur, now the Union Pacific Railroad, in Redwood City paralleling Seaport Boulevard, located immediately adjacent to the project site. The railroad line recorded (three points) consists of single tracks with rails, which are all at grade. No railroad service buildings (e.g., stations, line shacks, or towers) are located along this stretch of tracks. Portions of the original rails were replaced in 1948, 1959, 1963 and 1992 (Miller and Miller 2014a). This resource was determined ineligible for inclusion in the National Register by consensus in 2015 (OHP 2023a).

P-41-002593 – Pacific Gas & Electric (PG&E) Redwood City Substation

This resource consists of a collection of switches, transformers, circuit breakers, regulators, and busses that are used to receive, step down, and distribute voltages for commercial and industrial use. The earliest construction in the facility took place in 1926, and the site has been subject to maintenance and considerable additions in the years since. The resource was evaluated and recommended not eligible for inclusion in either the National or California Register in 2014 (Miller and Miller 2014b).

LITERATURE, HISTORICAL MAP, AND AERIAL PHOTOGRAPH REVIEW

Michael Baker International reviewed literature, maps, and aerial photographs for historical and archaeological information about the project site and the vicinity. Below is a list of resources reviewed, followed by a narrative description of the results for the project site.

- Township 5 South, Range 3 West General Land Office Survey Plat Map (Archer 1912)
- Palo Alto, California, 1:62,500 scale topographic quadrangle (USGS 1899)
- Santa Cruz, California 1:125,000 scale topographic quadrangle (USGS 1902)
- Palo Alto, California, 1:62,500 scale topographic quadrangle (USGS 1941)
- Palo Alto, California, 1:62,500 scale topographic quadrangle (USGS 1943)
- Palo Alto, California, 1:62,500 scale topographic quadrangle (USGS 1948)
- Palo Alto, California, 1:24,000 scale topographic quadrangle (USGS 1953)
- Palo Alto, California, 1:24,000 scale topographic quadrangle (USGS 1961a)
- Palo Alto, California, 1:62,500 scale topographic quadrangle (USGS 1961b)
- Nationwide Environmental Title Research, LLC (NETR 2023)
- *Historic Spots in California* (Hoover et al. 2002)
- *Handbook of the Indians of California* (Kroeber 1925)
- "Costanoan" (Levy 1978)
- "Native Languages of California" (Shipley 1978)
- *California Archaeology* (Moratto 1984)
- "Tamien Station Archaeological Project" (Hylkema 1994)

Results

The project site is located on the south side of the San Francisco Bay, approximately 0.55 miles east of Redwood Creek. The mouth of Redwood Creek forms a natural deep-water channel. Geologic maps indicate the project site is San Francisco Bay Mud (Qbm). These estuarine organic clay and silty clay deposits are extremely variable in their sedimentary makeup (Dibblee and Minch 2007). The land on which the project site is located is reclaimed estuarine marshland. Before the development of Redwood City, the project vicinity would have provided rich floral and faunal resources for prehistoric and early historic inhabitants of the area.

Archaeological data indicates that human occupation in California occurred during the Early Holocene (11,500-7,000 years before present [BP]), but archaeological sites from this period are rare in the Bay Area. However, a few deeply stratified sites are known, and at least one, CA-SCL-178, near Coyote Creek in the southern Santa Clara Valley, has been excavated. Site CA-SCL-178 appears to have been occupied throughout the Holocene (Moratto 1984: 110). Radiocarbon dates from sites in the New Almaden Valley foothills have yielded dates as early as 6590 +/- 200 BP (Moratto 1984: 269).

In the Middle and Late Holocene, population density and cultural diversity increased, leaving more archaeological sites. Excavations in San Mateo County and elsewhere in the West Bay indicate the area was settled between about 3500 and 2500 BCE (Moratto 1984: 267).

One of the best documented archaeological sites in San Jose, the Tamien Station site (CA-SCL-690), yielded radiocarbon dates from 1230 +/- 70 uncalibrated years BP to 700 +/- 60 uncalibrated years BP. The site yielded a diverse archaeological assemblage including human burials, shell beads and pendants, projectile points, bone whistles and awls, and steatite tobacco pipes and plummets (Hylkema 1994).

At the time of Spanish intrusion into California, the project vicinity was occupied by a group known to descendant communities and anthropologists as the Ohlone (formerly known as the Costanoans). The Ohlone occupied the California coast stretching from the San Francisco Bay to Monterey Bay and into the lower Salinas Valley. The Ohlone are a group of ethnically diverse peoples who traditionally spoke more than 50 related languages that together formed a sub-family of the Utian language family. Specifically, the area was occupied by speakers of the Ramaytush branch of Ohlone languages. The basic unit of Ohlone political organization was the tribelet, consisting of one or more villages and varying numbers of associated camps (Levy 1978; Shipley 1978). Redwood City was inhabited by the Lamchin tribelet.

In 1776, the Spanish established the Presidio de San Francisco and the Mission San Francisco de Asis to the north of the project site. In 1777, Junipero Serra established Mission Santa Clara de Asis on the banks of the Guadalupe River south of the project site. In 1795, Spanish Governor Diego de Borica granted the 35,240-acre Rancho de las Pulgas to José Darío Argüello (Hoover et al. 2002: 402-403). The land grant took its name from a Lamchin village. The project site was at that time located in marshes just offshore from the land grant.

The project site appears as undeveloped swampland when it first appears in General Land Office and USGS maps in 1899 into the early 1900s (Archer 1912; USGS 1899, 1902). In USGS maps in the early 1940s, the land has been drained and earthworks are visible in the project vicinity. The Bayshore Freeway, the Redwood City Harbor Company Spur, and the PG&E Redwood City Substation are all in place, but the project vicinity remains largely undeveloped (USGS 1941, 1943). In successive maps and aerial photographs, the project vicinity is progressively developed (USGS 1948, 1953, 1961a, 1961b; NETR 2023).

INTERESTED PARTIES OUTREACH

Historical Society Outreach

On July 25, 2023, Michael Baker International archaeologist Marcel Young, BA, emailed a letter and a figure depicting the project site to the San Mateo County Historical Association, located in Redwood City. The letter requested any information or concerns regarding historical resources within the project site. No response has been received to date. See **Attachment 3**.

Native American Outreach

Michael Baker International requested the NAHC conduct a Sacred Lands File search of the project site, carried out Native American outreach for the project, and later facilitated government-to-government consultation triggered by AB 52.

On June 6, 2022, Michael Baker International sent a letter describing the project to the NAHC in Sacramento, asking the commission to review the Sacred Lands File for any Native American cultural resources that might be affected by the project. On July 26, 2023, Cody Campagne, NAHC Cultural Resources Analyst, responded via email and stated that a search of the Sacred Lands File yielded positive results. The NAHC Sacred Land File search results are presented in **Attachment 4**.

Positive results do not necessarily indicate the presence of a sacred land within the project site, but rather indicate a listing for a sacred land within the project vicinity. To check for the presence of sacred lands or other potential tribal cultural resources within the project site, Michael Baker International archaeologist Marcel Young conducted outreach phone calls to each tribal contact included in the NAHC list. The outreach did not result in the identification of any resources within the project site. **Table 3** summarizes the communications. A telephone log and correspondence are presented in **Attachment 4**.

Table 3: Results of Native American outreach.

Tribal Representative and Contact Information	Date of Outreach	Results
Amah Mutsun Tribal Band of Mission San Juan Bautista Irene Zwierlein, Chairperson 3030 Soda Bay Road Lakeport, CA, 95453 (650) 851-7489 amahmutsuntribal@gmail.com	8/10/2023	Voicemail with no response received to date.
Costanoan Rumsen Carmel Tribe Tony Cerda, Chairperson 244 E. 1st Street Pomona, CA, 91766 (909) 629-6081 rumsen@aol.com	8/10/2023	Number is not in service.
Indian Canyon Mutsun Band of Costanoan Kanyon Sayers-Roods, MLD 1615 Pearson Court San Jose, CA, 95122 (408) 673-0626 kanyon@kanyonkonsulting.com	8/10/2023	Voicemail with no response received to date.

Tribal Representative and Contact Information	Date of Outreach	Results
Indian Canyon Mutsun Band of Costanoan Ann Marie Sayers, Chairperson P.O. Box 28 Hollister, CA, 95024 (831) 637-4238 ams@indiancanyon.org	8/10/2023	Number rings and does not go to voicemail.
Muwekma Ohlone Indian Tribe of the SF Bay Area Monica Arellano, Vice Chairwoman 20885 Redwood Road, Suite 232 Castro Valley, CA, 94546 (408) 205-9714 monicavarellano@gmail.com	8/10/2023	Voicemail box is full so no message was left.
Tamien Nation Johnathan Wasaka Costillas, THPO 10721 Pingree Road Clearlake Oaks, CA, 94523 (925) 336-5359 thpo@tamien.org	8/10/2023	Voicemail with no response received to date.
Tamien Nation Quirina Luna Geary, Chairperson PO Box 8053 San Jose, CA, 95155 (707) 295-4011 qgeary@tamien.org	8/10/2023	Voicemail box is full so no message was left.
Tamien Nation Lillian Camarena, Secretary 336 Percy Street Madera, CA, 93638 (559) 363-5914 Lcamarena@tamien.org	8/10/2023	Conversation with Lillian resulted in a message taken for the Chairperson. Michael Baker provided maps of the project site via email.
The Ohlone Indian Tribe Vincent Medina, Tribal Consultant 17365 Via Del Rey San Lorenzo, CA, 94580 (510) 610-7587 vincent.d.medina@gmail.com	8/10/2023	Voicemail with no response received to date.

Tribal Representative and Contact Information	Date of Outreach	Results
The Ohlone Indian Tribe Andrew Galvan, Chairperson P.O. Box 3388 Fremont, CA, 94539 (510) 882-0527 chochenyo@AOL.com	8/10/2023	Voicemail with no response received to date.
The Ohlone Indian Tribe Desiree Vigil, THPO 1775 Marco Polo Way, Apt. 21 Burlingame, CA, 94010 (650) 290-0245 dirwin0368@yahoo.com	8/10/2023	Voicemail with no response received to date.
Wuksachi Indian Tribe/Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas, CA, 93906 (831) 443-9702 kwood8934@aol.com	8/10/2023	Voicemail box is full so no message was left.

Later, the County determined that AB 52 applies to the project. AB 52 consultation is by law government-to-government conducted by the lead agency with those tribal governments which express interest in the project.

Michael Baker International assisted the AB 52 consultation and compiled the results of consultation. On April 16, 2024, a letter prepared by County Principal Civil Engineer Mark Chow, P.E., was sent to each of the tribal contacts listed in the NAHC contact list via email. A physical copy of the letter was sent via the United States Postal Service (USPS) on April 17, 2024. The results of consultation are summarized in **Table 4** and in the paragraphs below. All correspondence is presented in **Attachment 4**.

As of the date of this memo, two responses have been received as a result of the invitation to consultation, as summarized in the table and detailed in the paragraphs below.

Table 4: Native American Consultation Log

Tribal Representative and Contact Information	Important Dates	Consultation
Irene Zwierlein Chairperson Amah Mutsun Tribal Band of Mission San Juan Bautista 3030 Soda Bay Road Lakeport, CA 95453 650-851-7489 amahmutsuntribal@gmail.com	04/16/2024; 04/17/2024; 04/18/2024	Sent an invitation to consultation via email and USPS. Chairperson Zwierlein responded with a form letter sent via email on 4/18/2024. The form letter recommended the project applicant request a Sacred Lands File search and a CHRIS records search to determine the sensitivity of the project area. "If you have received any positive cultural or historic sensitivity within 1 mile of the project area," then the Band recommends worker sensitivity training, archaeological monitoring, and Native American monitoring. A rate sheet was provided indicating the cost of these services.
Tony Cerda Chairperson Costanoan Rumsen Carmel Tribe 244 E. 1st Street Pomona, CA 91766 909- 629-6081 rumsen@aol.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. Letter to physical address returned undeliverable. No response received to date.
Kanyon Sayers-Roods Most Likely Descendant Indian Canyon Mutsun Band of Costanoan 1615 Pearson Court San Jose, CA 95122 408-673-0626 kanyon@kanyonkonsulting.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. Letter to physical address returned undeliverable. No response received to date.
Ann Marie Sayers Chairperson Indian Canyon Mutsun Band of Costanoan P.O. Box 28 Hollister, CA 95024 831 637-4238 ams@indiancanyon.org	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. Email to ams@indiancanyon.org was undeliverable. No response received to date.

Tribal Representative and Contact Information	Important Dates	Consultation
Monica Arellano Vice Chairwoman Muwekma Ohlone Indian Tribe 20885 Redwood Road, Suite 232 Castro Valley, CA 94546 (408) 205-9714 monicavarellano@gmail.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. No response received to date.
Johnathan Wasaka Costillas, Tribal Historic Preservation Officer Tamien Nation 10721 Pingree Road Clearlake Oaks, CA 94523 925-336-5359 thpo@tamien.org	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. No response received to date.
Quirina Luna Geary Chairperson Tamien Nation PO Box 8053 San Jose, CA 95155 707-295-4011 qgeary@tamien.org	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. No response received to date.
Lillian Camarena Secretary Tamien Nation 336 Percy Street Madera, CA 93638 Secretary (559) 363-5914 Lcamarena@tamien.org	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. No response received to date.
Vincent Medina Tribal Consultant The Ohlone Indian Tribe 17365 Via Del Rey San Lorenzo CA, 94580 510- 610-7587 vincent.d.medina@gmail.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and USPS. Letter to physical address returned undeliverable. No response received to date.

Tribal Representative and Contact Information	Important Dates	Consultation
Andrew Galvan Chairperson The Ohlone Indian Tribe P.O. Box 3388 Fremont CA, 94539 510- 882-0527 chochenyo@AOL.com	04/16/2024; 04/17/2024; 04/26/2024; 04/29/2024	Sent an invitation to consultation via email and USPS. Chairperson Galvan responded via email 4/26/24 requesting a copy of the Sacred Lands File search results (with all attachments but specifically the contact list). Chairperson Galvan also requested a copy of the archaeological resources report, when available. The requested documents, including Sacred Lands File search results with contact list and the draft archaeological memorandum dated September 8, 2023 (including all data, conclusions, and recommendations, except the results of AB 52 consultation), was sent to Chairperson Galvan on 4/29/24. Chairperson Galvan responded on 4/29/24 asking that future outreach be via email. He provided no further comments.
Desiree Vigil Tribal Historic Preservation Officer The Ohlone Indian Tribe 1775 Marco Polo Way Apt. 21 Burlingame CA, 94010 650-290-0245 dirwin0368@yahoo.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and mail. No response received to date.
Kenneth Woodrow Chairperson Wuksachi Indian Tribe/Eshom Valley Band, 831- 443-9702 kwood8934@aol.com	04/16/2024; 04/17/2024	Sent an invitation to consultation via email and mail. No response received to date.

Chairperson Andrew Galvan, The Ohlone Indian Tribe, requested the results of the Sacred Lands File search as well as the results of the archaeological study. The requested information, including a draft archaeological memorandum dated September 8, 2023, that documented the CHRIS NWIC records search results, Sacred Lands File search results, literature review, buried site sensitivity

analysis, conclusions, and recommendations, excepting only the results of AB 52 consultation, was transmitted to him via email.

Chairperson Irene Zwierlein, Amah Mutsun Tribal Band of Mission San Juan Bautista, responded with a form letter which recommended the project applicant request a Sacred Lands File search and a CHRIS records search to determine the sensitivity of the project area. "If you have received any positive cultural or historic sensitivity within 1 mile of the project area," then the Band recommends worker sensitivity training, archaeological monitoring, and Native American monitoring. A rate sheet was provided indicating the cost of these services. As documented within this memo, the NWIC CHRIS search was conducted for the project site and a 0.5-mile radius, and a Sacred Lands File search was conducted for the project vicinity with positive results, requiring input from Native American governments. No information was received from the records searches or from the invitation to tribal consultation that indicates a heightened archaeological sensitivity within the project site.

None of the tribal contacts provided information indicating the presence of tribal cultural resources, or a heightened sensitivity for buried tribal cultural resources, within the project site.

None of the tribes invited to consult requested additional consultation regarding the project.

BURIED ARCHAEOLOGICAL SITE SENSITIVITY ANALYSIS

Sensitivity for buried archaeological resources within the project site is low. The soils within the project site are mapped by the US Department of Agriculture, and consist entirely of Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes (NCRS 2022). Urban land soils consist of relatively recent fill, which conforms with the map research indicating that the project site is reclaimed swampland. In addition, the project site has been subject to considerable disturbance from the twentieth century to the present, including railroad and interstate construction, building construction, and especially the installation of the existing sewer, all of which would be expected to have impacted the underlying soils to a considerable depth. Therefore, based on soils, previous disturbance, and lack of previously identified resources in the area, the project site's buried site sensitivity is low.

SUMMARY OF FINDINGS AND CODE COMPLIANCE

The NWIC records search, historical society consultation, literature and map review, NAHC Sacred Lands File search, and Native American outreach and consultation did not identify any historical resources within the project site. Additionally, a buried archaeological sensitivity assessment determined low sensitivity for buried archaeological resources within the project site.

While research suggests that archaeological sensitivity is low within the project site, there is the potential to identify resources during earth-moving activities. Impacts to archaeological resources and human remains will be avoided through implementation of existing laws.

In the event that any subsurface cultural resources are encountered during earth-moving activities, excavations within 50 feet should be halted until an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology can evaluate the findings and make recommendations. Prehistoric materials can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, or quartzite toolmaking debris; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash, and charcoal, shellfish remains, and cultural materials); and stone milling equipment (e.g., mortars, pestles, handstones). Historical materials might include wood, stone, or concrete footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, metal, glass, ceramics, and other refuse. The archaeologist may evaluate the find in accordance with federal, state, and local guidelines, including those set forth in the California Public Resources Code Section 21083.2, to assess the significance of the find and identify avoidance or other measures as appropriate.

If human remains are found, excavations shall stop within 50 feet of the find, and State of California Health and Safety Code Sections 7050.5-7055 will be followed. The contractor shall notify the County immediately. The County will notify the San Mateo County coroner. If the coroner determines the remains are human and archaeological, in compliance with Section 5097.98 of the California Public Resources Code, the coroner shall notify the Native American Heritage Commission, who will identify the legal most likely descendant (MLD). If avoidance is not feasible, then the qualified archaeologist, in consultation with the MLD, shall prepare and execute a plan of treatment with the advice and consent of the County. Treatment is anticipated to include respectful excavation of the remains and repatriation and reburial.

PREPARER QUALIFICATIONS

This memorandum was prepared by Michael Baker International Senior Archaeologist Marc A. Beherec, PhD, RPA. Archaeologist Elise Blindauer, BA, conducted the NWIC records search, and Archaeologist Marcel Young, BA, conducted Native American outreach and contributed to the memorandum. Archaeologist Rachel Garcia, MA, facilitated Native American consultation. The memorandum was reviewed for quality control by Senior Cultural Resources Manager Margo Nayyar.

Marc A. Beherec, PhD, RPA, Principal Investigator/Senior Archaeologist, has more than 20 years of experience in prehistoric and historical archaeology and cultural resources management. His experience includes writing technical reports, including National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and CEQA compliance documents. He has supervised and managed all phases of archaeological fieldwork, including survey, Phase II testing and evaluations and Phase III data recovery, and monitoring at sites throughout Southern California. He meets the Secretary of the Interior's Professional Qualification Standards for prehistory and historical archaeology.

Marcel Young, BA, Archaeologist, has worked in various capacities in cultural resource management since 2013. He is experienced in surveying and conducting recordings and

evaluations of historic and prehistoric archaeological sites in California. Mr. Young is versed in conducting fieldwork within frameworks of Section 106 of the NHPA, NEPA, and CEQA. He has participated in projects in several phases of archaeology: Phase I pedestrian, Extended Phase I testing, and shovel test surveys, buried site testing, Phase III data recovery, and construction monitoring. He also conducts Native American outreach and facilitates consultation.

Elise Blindauer, BA, Archaeologist, has experience in all phases of archaeology including Phase I pedestrian surveys, Phase II testing and evaluations, Phase III data recovery, and construction monitoring under CEQA and Section 106 of the NHPA. Her experience includes but is not limited to tribal collaboration, oral history, interpretive displays, information center records searches, technical report writing, and excavation of human remains. She is also trained in artifact analysis and identification including but not limited to ceramics, lithics, glass, and XRF soil analysis. She is familiar with GIS programs such as ArcMap and ArcGIS Pro. She is currently pursuing her MA in Cultural Resource Management at Sonoma State University, where her thesis research examines the process of collaborative interpretative project development in cultural resource management.

Rachel Garcia, MA, Archaeologist, has experience in all phases of archaeology including Phase I pedestrian surveys, Phase II testing and evaluations, Phase III data recovery, and construction monitoring under CEQA. A trained historian with an MA from California State University, East Bay, she is involved in research endeavors such as the National Science Foundation-Funded Turley's Mill Research Project, the New Mexico Archaeology Project, and the Seminole Foodways Project. With the Seminole Foodways Project, she is coauthor of the forthcoming research paper, "Seminole Health: Indigenous Health, Healing, and Foodways in South Florida, 1855 to 1917."

Margo Nayyar, Senior Cultural Resources Manager, is a senior architectural historian with 13 years of cultural management experience in California, Nevada, Arizona, Texas, Idaho, Alaska, New Mexico, and Mississippi. Her experience includes built environment surveys, evaluation of historic-era resources using guidelines outlined in the National and California Registers, and preparation of cultural resources technical studies pursuant to CEQA and NHPA Section 106, including identification studies, finding of effect documents, memorandum of agreements, programmatic agreements, and Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey mitigation documentation. She prepares cultural resources sections for CEQA environmental documents, including infill checklists, initial studies, and environmental impact reports, as well as NEPA environmental documents, including environmental impact statements and environmental assessments. She also specializes in municipal preservation planning, historic preservation ordinance updates, Native American consultation, and provision of Certified Local Government training to interested local governments. She develops Survey 123 and Esri Collector applications for large-scale historic resources surveys, and authors National Register nomination packets. She meets the Secretary of the Interior's Professional Qualification Standards for history and architectural history.

Sincerely,

Marc Beherec, PhD, RPA
Senior Archaeologist

Attachments:

Attachment 1 – Figures

Attachment 2 – Northwest Information Center Records Search Results

Attachment 3 – Historical Society Consultation

Attachment 4 – Native American Consultation

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———. 1902. Santa Cruz, California 1:125,000 scale topographic quadrangle.

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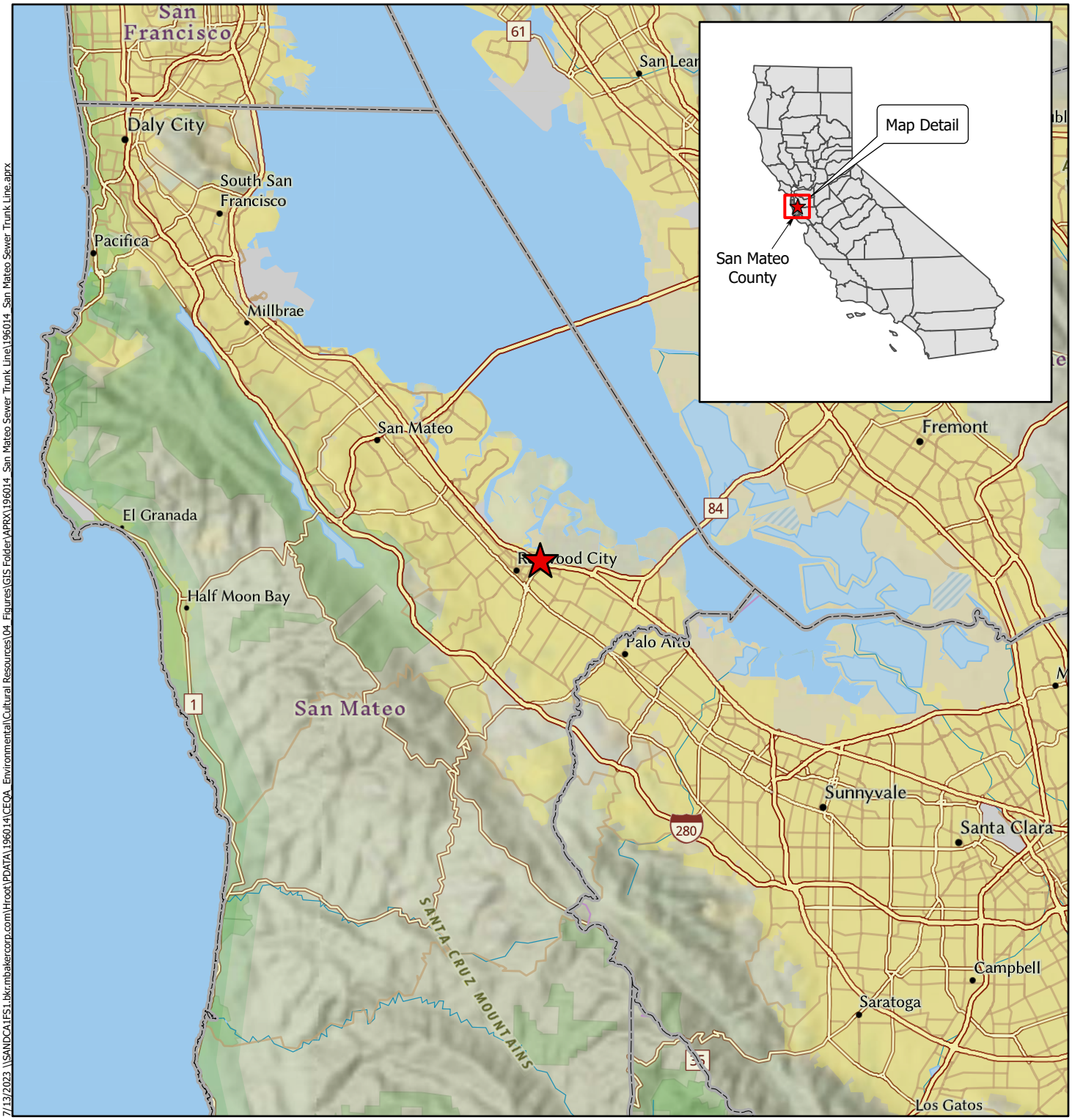
———. 1961a. Palo Alto, California, 1:24,000 scale topographic quadrangle.

———. 1961b. Palo Alto, California, 1:62,500 scale topographic quadrangle.

Attachment 1

Figures



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Legend

★ Project Location

Michael Baker INTERNATIONAL

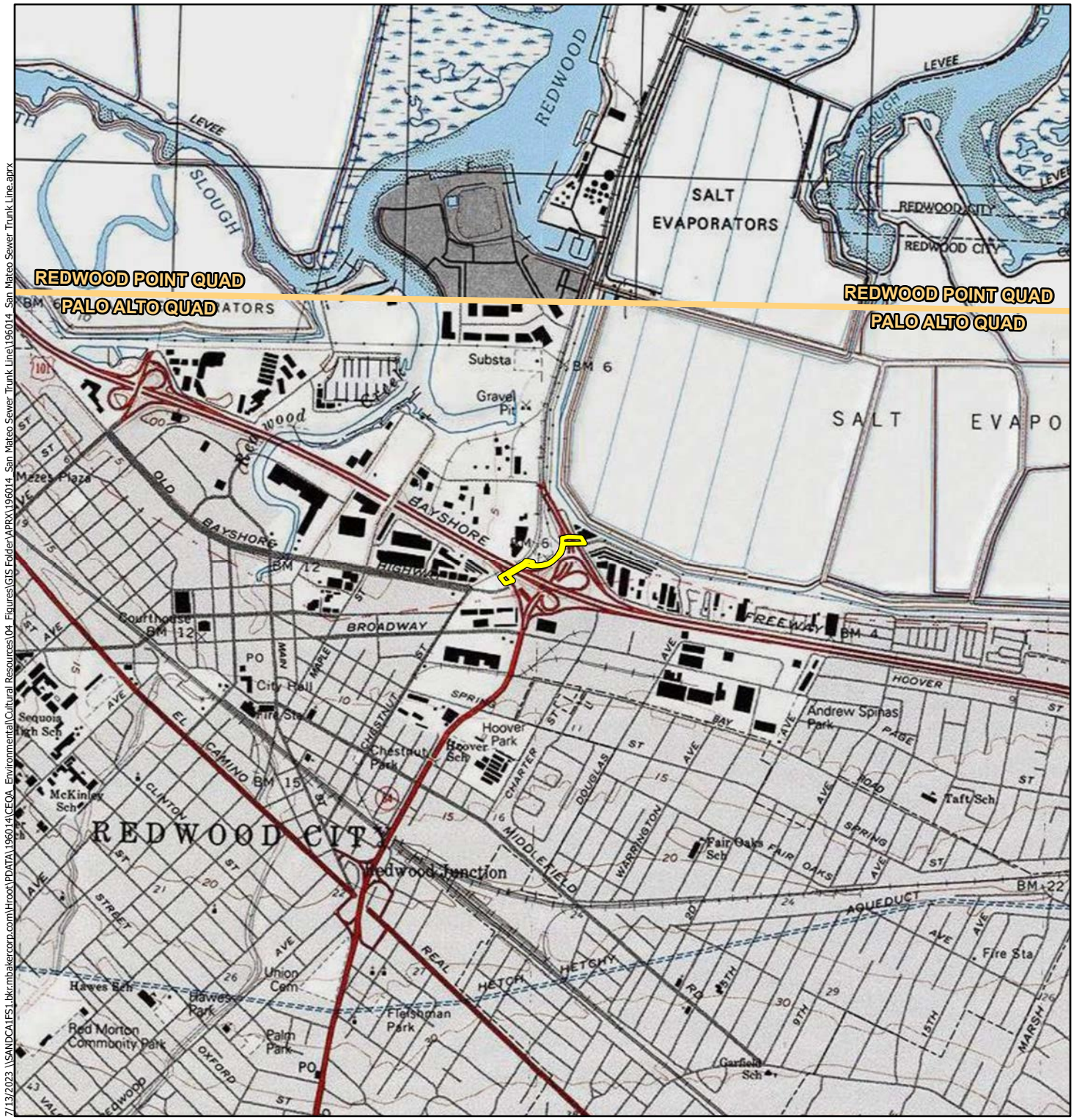
0 2.5 5 Miles

Source: Esri, ArcGIS Online, National Geographic World Map: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Regional Vicinity

Figure 1



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Legend

Project Site

Michael Baker INTERNATIONAL

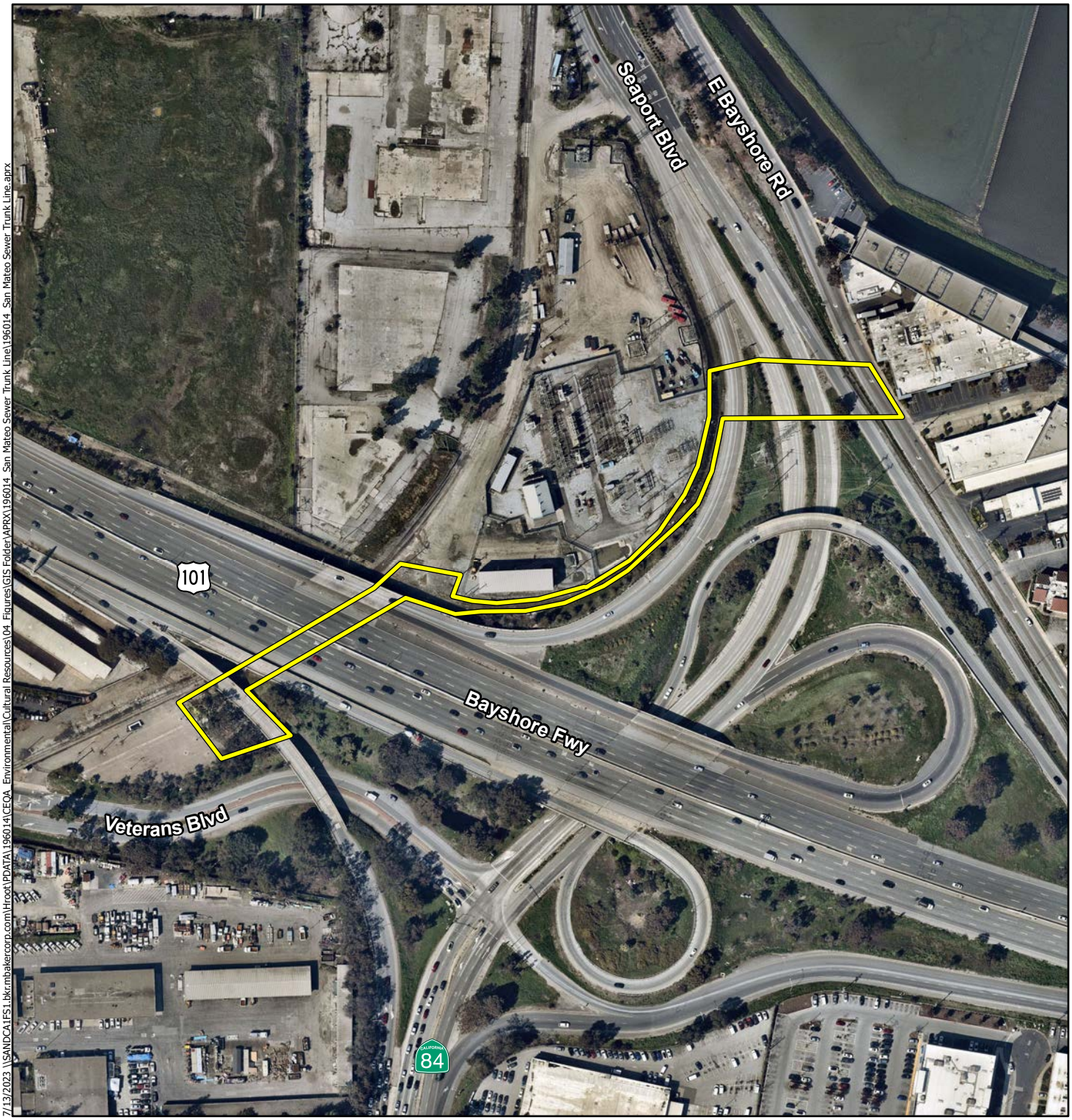
0 0.25 0.5 Miles

Source: Esri, ArcGIS Online, Palo Alto USGS 7.5-Minute topographic quadrangle maps: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Project Vicinity

Figure 2



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Legend

Project Site

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Project Site

Figure 3

Attachment 2

Northwest Information Center Records Search Results

ReportNum	DocAddlCitLetter	Status	OtherIDs	Xrefs	Authors	CitYear	CitMonth
S-025081					John Holson	2002	Jan
S-029527					Earth Touch, LLC	2001	Jul
S-029869					Wayne H. Bonner	2005	Aug
S-038684			Submitter - LSA Project #KHA0804	See also S-038063	Stacy Kozakavich and Alexandra Merritt-Smith	2008	Oct
S-049066			Submitter - EA 04-235360; Submitter - EFIS 0414000032; Submitter - SR 84 PM 25.3-25.7; Submitter - US 101 PM 4.6-6.5		Kathleen Kubal	2015	Aug
S-049066	a				Chandra Miller and Christopher McMorris	2015	Aug
S-049066	b				Karin G. Beck	2015	Aug
S-049066	c				Jay Rehor and Kathleen Kubal	2015	Aug
S-049125			Caltrans - EA 04-1J560; Caltrans - E-FIS 0413000206; OHP PRN - FHWA_2017_0508_001		Michael Meloy and Kathleen Kubal	2017	Apr
S-049125	a				Michael Meloy	2017	Apr
S-049125	b				Karin G. Beck, Kathleen Kubal, and Jay Rehor	2017	Apr

S-049125	c				Julianne Polanco	2017	Jun

CitTitle	CitPublisher	CitPages	CitMaps
Archaeological Survey for 101/Seaport, 8211.30 (PI 1004-08) (letter report)	Pacific Legacy, Inc.		
Nextel Communications (On-Air), CA-1180A/Redwood Junction, 1711 East Bayshore Road, Redwood City, California.	Earth Touch, LLC		
Cultural Resource Records Search Results and Site Visit for Cingular Telecommunications Facility Candidate PN-604-01 (American Tower Monopole #91528), 1100 Broadway Street, Redwood City, San Mateo, San Mateo County, California (letter report)	Michael Brandman Associates		
A Cultural Resources Study for the San Mateo County SMART Corridors Project, San Mateo County, California	LSA Associates, Inc.		
Historic Property Survey Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project, Project Approval/Environment Document Phase	URS Corporation		
Historical Resources Evaluation Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project, Project Approval/Environmental Document Phase	JRP Historical Consulting, LLC		
Archaeological Survey Report: US 101/SR 84 (Woodside Road) Interchange Improveme Project Approval & Environmental Document Phase	URS Corporation		
Extended Phase I Report: US 101/SR 84 (Woodside Road) Interchange Improvement Project Project Approval/Environmental Document Phase	URS Corporation		
Historic Property Survey Report for the US 101 Managed Lanes Project, EA 04-1J560	California Department of Transportation, District 4; AECOM		
Historic Resources Evaluation Report for the US 101 Managed Lanes Project, EA 04-1J560	California Department of Transportation, District 4		
Archaeological Survey Report and Extended Phase I Study, US 101 High-Occupancy Vehicle/Express (Managed) Lanes Project, San Francisco, San Mateo, and Santa Clara Counties, California, EA 04-1J5600	AECOM		

FHWA_2017_0508_001, Determinations of Eligibility for the Proposed Creation of Approximately 22 Miles of Managed Lanes along United States Highway 101, San Mateo County, CA	California Office of Historic Preservation

ReportType	InventorySize	InventoryDisclosure	InventoryCollections	InventoryNotes	Resources
Archaeological, Field study	c 1 ac	Not for publication	No		
Archaeological, Field study	c 0.25 ac	Not for publication			
Archaeological, Field study	c 0.25 ac	Not for publication			
Archaeological, Management/planning, Other research		Not for publication	No	Informal resources: C-764, C-134, C-155, C-765, C-758, C-432, C-760, C-759, C-808, C-809, C-770, C-769, Winchester Grove, Lindenwood Gates, Mezesville/Centenial Historic District, Downtown San Mateo Historic District, & the South Idaho Street Historic District	41-000009, 41-000011, 41-000037, 41-000105, 41-000233, 41-000244, 41-000258, 41-000273, 41-000308, 41-000309, 41-000310, 41-000311, 41-000316, 41-000498, 41-002207
Architectural/historical, Management/planning		Not for publication	No		41-000238, 41-000461, 41-000506, 41-002592, 41-002593, 41-002594, 41-002595, 41-002596, 41-002597, 41-002598
Architectural/historical, Evaluation, Field study		Not for publication	No		
Archaeological, Field study		Not for publication	No		
Archaeological, Excavation		Not for publication	No		
Archaeological, Architectural/historical, Management/planning, Other research	c 22 li mi	Not for publication	No	The APE spans San Mateo and Santa Clara counties.	41-000039, 41-000045, 41-000047, 41-000273, 41-000321, 41-002619, 41-002620, 41-002621, 41-002622, 41-002623, 41-002624, 41-002625, 41-002626, 41-002627, 41-002628, 41-002629, 41-002630, 41-002631, 41-002632, 41-002633, 41-002634, 41-002635, 41-002636, 41-002637, 41-002638, 41-002639, 41-002640
Architectural/historical, Field study		Not for publication	No		
Archaeological, Excavation, Field study		Not for publication	No		

OHP Correspondence		Not for publication	No		

ResourceCount	HasInformals	Counties	Maps	Address	PLSS
0	No	San Mateo	Palo Alto		
0	No	San Mateo	Palo Alto		
0	No	San Mateo	Palo Alto	1100 Broadway Street Redwood City	
15	Yes	San Mateo	Montara Mtn, Palo Alto, Redwood Point, San Francisco South, San Mateo		
10	No	San Mateo	Palo Alto	US Highway 101 Redwood City, State Road 84	
27	No	San Mateo, Santa Clara	Montara Mtn, Mountain View, Palo Alto, Redwood Point, San Francisco South, San Mateo	US Highway 101	

PrimaryString	TrinomialString	ResourceName	Status	OtherIDs	Xrefs
P-41-000238	CA-SMA-000240	AC-50		Resource Name - AC-50	
P-41-000487		923 Stambaugh Street, Redwood City		Resource Name - 923 Stambaugh Street, Redwood City; Other - 29; Voided - P-41-000530	Subsumes 41-000530
P-41-000488		611, 619, & 627 Manzanita St & 1025 Stambaugh St		Resource Name - 611, 619, & 627 Manzanita St & 1025 Stambaugh St; Other - 10; Voided - P-41-000515	Subsumes 41-000515
P-41-000774		Hanson Residence		Resource Name - Hanson Residence; OHP Property Number - 005404; OHP PRN - 4063-0039-0000; OTIS Resource Number - 408376	
P-41-002393		Frank's Tannery Sheet Scatter		Resource Name - Frank's Tannery Sheet Scatter; Other - S.H. Frank and Company Tannery, Frank's Tannery	
P-41-002592		Redwood City Harbor Company spur / Union Pacific Railroad		Resource Name - Redwood City Harbor Company spur / Union Pacific Railroad; Other - Map Reference #1	
P-41-002593		PG&E Redwood City Substation		Resource Name - PG&E Redwood City Substation; Other - Map Reference #2	
P-41-002594		City of Redwood City Municipal Service Center		Resource Name - City of Redwood City Municipal Service Center; Other - Map Reference #3	
P-41-002595		Broadway Pumping Station		Resource Name - Broadway Pumping Station; Other - Map Reference #4	
P-41-002596		U.S. Post Office		Resource Name - U.S. Post Office; Other - Map Reference #5	
P-41-002597		Kliklok Corporation Building		Resource Name - Kliklok Corporation Building; Other - Map Reference #6	
P-41-002598		Denny's		Resource Name - Denny's; Other - Map Reference #7	

ResType	Age	InfoBase	Attribs	ResourceDisclosure	ResourceCollections	AccessionNo
Site	Prehistoric	Survey, Testing	AP15	Not for publication	No	
Building	Historic	Other	HP02	Unrestricted	No	
Building	Historic	Other	HP03	Unrestricted	No	
Building	Historic	Survey	HP02	Unrestricted	No	
Site	Historic	Survey, Other	AH04	Not for publication	Unknown	
Structure	Historic	Survey	HP39	Unrestricted	No	
Building	Historic	Survey	HP09	Unrestricted	No	
Building	Historic	Survey	HP14	Unrestricted	No	
Building	Historic	Survey	HP09	Unrestricted	No	
Building	Historic	Survey	HP14	Unrestricted	No	
Building	Historic	Survey	HP08	Unrestricted	No	
Building	Historic	Survey	HP06	Unrestricted	No	

CollectionsFacility	ResourceNotes	RecordingEvents	Reports	CountyName	Maps
	The area had been bulldozed at the time of recording. "Site destroyed."	1982 (Suzanne Baker, [none]); 2012 (Neal Kaptain, LSA)	S-005744, S-022478, S-049066, S-049095, S-049116	San Mateo	Palo Alto
		1999 (Tracy Bakic, PAR Environmental Services, Inc.)	S-022478, S-027930	San Mateo	Palo Alto
		1999 (Tracy Bakic, PAR Environmental Services, Inc.)	S-022478	San Mateo	Palo Alto
		1976 (Jeffrey D. Rhoads, Redwood City Planning Department)		San Mateo	Palo Alto
		2015 (Sunshine Psota, Holman & Associates)	S-046213, S-048096	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2017 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto
		2014 (Chandra Miller; Heather Miller, JRP Historical Consulting)	S-049066	San Mateo	Palo Alto

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-41-002592
HRI # _____
Trinomial _____
NRHP Status Code 6Z
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 ***Resource Name or #:** Map Reference #1

P1. Other Identifier: Redwood City Harbor Company spur / Union Pacific Railroad
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Mateo
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Palo Alto **Date** 1997 **T** 5S; **R** 3W; ___ ¼ **of Sec** ____; M.D. **B.M.**
c. Address: _____ City: Redwood City Zip: 94063
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
See Linear Feature Records

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

This form inventories a portion of the former Redwood City Harbor Company spur, now the Union Pacific Railroad (UPRR), located in Redwood City paralleling Seaport Boulevard. The railroad line recorded (three points) consists of single tracks with rails, which are all at grade. No railroad service buildings (e.g., stations, line shacks, or towers) are located along this stretch of tracks. Portions of the original rails were replaced in 1948, 1959, 1963 and 1992.

***P3b. Resource Attributes:** (List attributes and codes) HP39. Railroad grade
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

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

P5b. Description of Photo: (View, date, accession #) **Photograph 1:** Redwood City Harbor Company spur / UPRR west of Point 2, camera facing southeast, December 16, 2014

***P6. Date Constructed/Age and Sources:**
☐Prehistoric
1913 / Josselyn

***P7. Owner and Address:**
Union Pacific Railroad
1400 Douglas Street
Omaha, NE 68179

***P8. Recorded by:** (Name, affiliation, and address)
Chandra Miller & Heather Miller
JRP Historical Consulting, LLC
5825 Spafford Street
Davis, CA 95618

***P9. Date Recorded:** December 16, 2014

***P10. Survey Type:** Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") JRP Historical Consulting, LLC, "Historical Resources Evaluation Report: US 101/SR84 (Woodside Road) Interchange Improvement Project, Redwood City, San Mateo County, California, 2015."

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

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z

***Resource Name or #** (Assigned by recorder) Map Reference #1

B1. Historic Name: Redwood City Harbor Company (RCHC) spur

B2. Common Name: Union Pacific Railroad (UPRR)

B3. Original Use: Railroad B4. Present Use: Railroad

***B5. Architectural Style:** None

***B6. Construction History:** (Construction date, alterations, and date of alterations) Built in 1913; 1948, 1959, 1963 and 1992 replacement tracks observed in areas recorded on this form.

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9a. Architect: n/a b. Builder: Redwood City Harbor Company.

***B10. Significance: Theme** Railroad/Port Development **Area** Redwood City

Period of Significance n/a **Property Type** Railroad **Applicable Criteria** n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The portion of the former Redwood City Harbor Company spur (now Union Pacific Railroad [UPRR]) evaluated on this form does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) because it does not have historical significance and it does not retain integrity to any potential period of significance. This form does not record or evaluate the entire UPRR lines in Redwood City or on the San Francisco Peninsula; instead, for the purposes of the proposed project cited in field P11, it records and evaluates only a portion of the line in Redwood City. This segment of railroad track under evaluation in this form does not appear to have the potential to be a contributor to any larger historic property, nor does the segment appear to meet the criteria for eligibility as an individual property. This property has also been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and is not a historical resource for the purposes of CEQA. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) _____

***B12. References:** Michael Josselyn, PhD PWS, "Early History of Redwood City Salt Plant Site" (San Francisco, CA: WRA, Inc., February 27, 2012); John R. Signor, *Southern Pacific's Coast Line* (Wilton, CA: Signature Press, 1994); Louis Richard Miller, "The History of the San Francisco and San Jose Railroad" (M.A. thesis, University of California, 1947); Alan Hynding, *From Frontier to Suburb* (Belmont, CA: Star Publishing Company, 1982); Donovan L. Hofsommer, *The Southern Pacific, 1901-1985* (College Station, TX: Texas A&M University Press, 1986); (and see B10 footnotes).

B13. Remarks:

***B14. Evaluator:** Chandra Miller

***Date of Evaluation:** December 2014

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

See Sketch Map.

L1. Historic and/or Common Name: Redwood City Harbor Company spur / Union Pacific Railroad

L2a. Portion Described: ☐ Entire Resource ☐ Segment ☒ Point Observation **Designation:** Point 1

b. Location of point or segment: (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

UTM: Zone 10; 569522 mE/ 4150027.5 mN

L3. Description: (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.)

This point of the Redwood City Harbor Company spur (now UPRR) consists of a single at-grade railroad track and a siding that is associated with the parcel to the west. The track has wood ties and fine gravel ballast. Point #1 is located north of the intersection of Blomquist Street and Seaport Boulevard in Redwood City (**Photograph 2**). The single track and spur is built at-grade level and parallels Seaport Boulevard (**Photograph 3**).

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

L5. Associated Resources:
Rail spur south of Point 1.

L4e. Sketch of Cross-Section (include scale) **Facing:** _____

See Photograph 1.

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.)
This section of the railroad passes through an industrial area with Seaport Boulevard and salt crystallizer ponds to the east.

L7. Integrity Considerations:
Rails replaced in 1975 (as per date stamp on rails).

L8a. Photograph, Map or Drawing

L8b. Description of Photo, Map, or Drawing (View, scale, etc.) **Photograph 2:** At-grade railroad track paralleling Seaport Boulevard at switch north of siding, camera facing south, December 16, 2014.

L9. Remarks:

L10. Form Prepared by: (Name, affiliation, and address)
Chandra Miller & Heather Miller
JRP Historical Consulting, LLC
5825 Spafford Street
Davis, CA 95618

L11. Date: December 16, 2014

L8a. Photograph (continued):

Photograph 3: At-grade railroad track paralleling Seaport Boulevard at switch south of siding, camera facing north, December 16, 2014.

LINEAR FEATURE RECORD

 Resource Name or #: (Assigned by recorder) Map Reference #1

L1. Historic and/or Common Name: Redwood City Harbor Company spur / Union Pacific Railroad

L2a. Portion Described: ☐ Entire Resource ☐ Segment ☒ Point Observation **Designation:** Point 2

b. Location of point or segment: (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

UTM: Zone 10; 569505 mE/ 4149587.2 mN

L3. Description: (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.)

This point of the Redwood City Harbor Company spur (now UPRR) consists of a single track that crosses Stein Am Rhein Court in Redwood City. The track has wood ties, fine gravel ballast, and modern asphalt grade crossing panels installed in the roadway (**Photograph 4**). Crossing signals are located on the north and south side of Stein Am Rhein Court (**Photograph 5**).

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

L5. Associated Resources:
None.

L4e. Sketch of Cross-Section (include scale) **Facing:**

See Photograph 3.

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.)
The line runs through an industrial area.

L7. Integrity Considerations:
Rails replaced in 1948 and 1963 (as per date stamps on rails). Installation of modern asphalt grade crossing panels at unknown date.

L8a. Photograph, Map or Drawing

L8b. Description of Photo, Map, or Drawing (View, scale, etc.) **Photograph 4:** At-grade, railroad tracks on Stein Am Rhein Court, camera facing south, December 16, 2014.

L9. Remarks:

L10. Form Prepared by: (Name, affiliation, and address)
Chandra Miller & Heather Miller
JRP Historical Consulting, LLC
5825 Spafford Street
Davis, CA 95618

L11. Date: December 16, 2014

L8a. Photograph (continued):

Photograph 5: From Point 2 camera facing north, December 16, 2014.

LINEAR FEATURE RECORD

 Resource Name or #: (Assigned by recorder) Map Reference #1

L1. Historic and/or Common Name: Redwood City Harbor Company spur / Union Pacific Railroad

L2a. Portion Described: ☐ Entire Resource ☐ Segment ☒ Point Observation **Designation:** Point 3

b. Location of point or segment: (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

UTM: Zone 10; 569256.6 mE/ 4149395.6 mN

L3. Description: (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.)

This point of the Redwood City Harbor Company spur (now UPRR) consists of a single track that crosses under US 101 overpass toward Veterans Boulevard and travels down the center of Chestnut Street in Redwood City (**Photograph 6**). The track has wood ties, fine gravel ballast, and modern rubber grade crossing panels installed in the roadway (**Photograph 7**). Crossing signals are located on southwest and northeast corners of the intersection.

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

L5. Associated Resources:

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.)

The line runs southwest through an industrial area into a commercial area.

L4e. Sketch of Cross-Section (include scale) **Facing:**

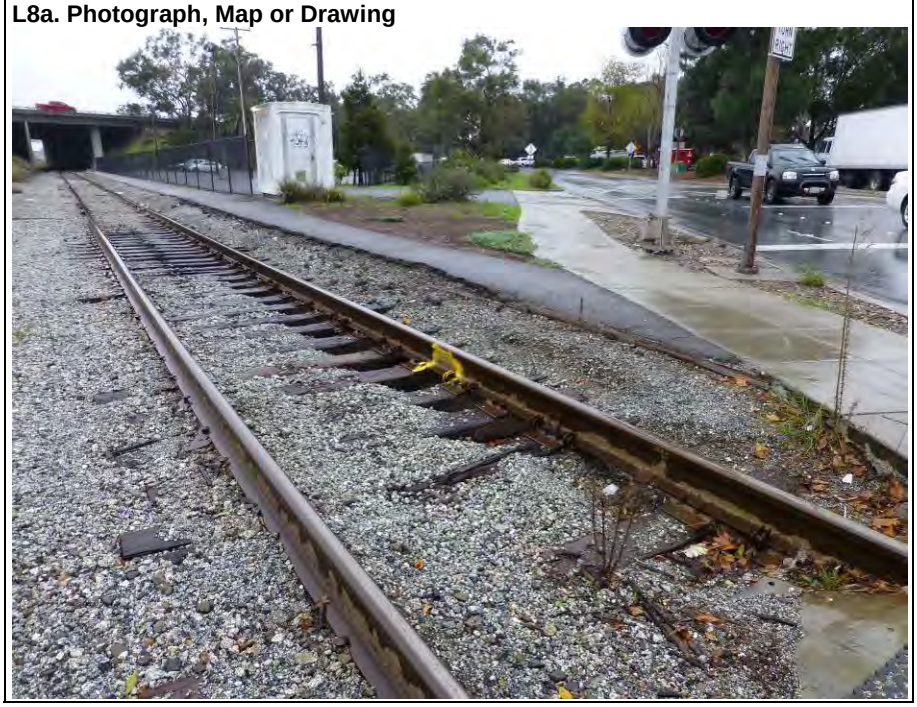
See Photograph 6.

L7. Integrity Considerations:

Installation of rubber grade crossing panels and replacement rails installed after 1992 (as per date stamps on rails).

L8b. Description of Photo, Map, or Drawing (View, scale, etc.) **Photograph 6:** From Point 3, showing crossing signal and Highway 101 overpass, camera facing northeast, December 16, 2014.

L8a. Photograph, Map or Drawing



L9. Remarks:

L10. Form Prepared by: (Name, affiliation, and address)

Chandra Miller & Heather Miller
JRP Historical Consulting, LLC
5825 Spafford Street
Davis, CA 95618

L11. Date: December 16, 2014

L8a. Photograph (continued):

Photograph 7: Track crossing Veterans Boulevard and traveling down the center of Chestnut Street, camera facing southwest, December 16, 2014.

B10. Significance (continued):

Historic Context

This form inventories a portion of a spur rail line that runs near the Port of Redwood City and was originally built in 1913.

Early Settlement of Redwood City

Redwood City is located on the southern San Francisco Peninsula on the shore of San Francisco Bay and has a long history of utilizing the waterfront for commerce dating back to the Rancho period. With the discovery of gold in California in 1848, thousands of Americans and immigrants from around the world streamed into the San Francisco Bay area, most on their way to the gold fields, but some pursuing other endeavors. Business men R. O. Tripp and Matthias Parkhurst saw that the Embarcadero at Redwood Creek was a good shipping point for sending their products to San Francisco and they were soon joined by other entrepreneurs. By 1851 the Embarcadero at the intersection of Main and Broadway (located west of the Area of Potential Effect [APE] for the report cited in P11) was a busy place for shipping shingles, firewood, and fence posts to San Francisco. During this time, the marshes downstream from the Embarcadero and nearer to the bay remained undeveloped.[1]

The development of railroads in Redwood City dates to 1863 when Peter Donahue, Charles Polhemus, and Timothy Phelps built the San Francisco-San Jose Railroad (SFSJ). Work began on the railroad at San Francisquito Creek, which forms the boundary between San Mateo and Santa Clara counties, in May 1861. Track was laid through the hills south of San Francisco, but difficulties in obtaining construction materials from the eastern states because of the Civil War and heavy storms and flooding during the winter of 1861–62 slowed construction. The line between San Francisco and Palo Alto was completed in October 1862 and regular service began in January 1863. The route between San Francisco and San Jose was in service by 1864. The Central Pacific Railroad (later Southern Pacific Railroad) absorbed SFSJ into its railroad system in 1870. The arrival of rail service coupled with continual silting of Redwood Creek started a slow decline in maritime shipping activity from the Embarcadero, although most local products were transported by water through the late nineteenth century.[2]

While the railroad served as a vital transportation link to Redwood City and other towns along the San Francisco Peninsula during the late nineteenth and early twentieth centuries, several developments during the early twentieth century helped the city expand. Displaced San Francisco residents moved to Redwood City in the wake of the 1906 earthquake and fire, leading to the development of large estates west of the downtown region. In 1910, with the city's population up to 2,500, Southern Pacific Railroad (SPRR) built the first bridge over the San Francisco Bay, connecting Alameda County with the SPRR line at Redwood City. The Dumbarton Cutoff, as it was known, helped reduce the commute time between San Francisco and the east side of the bay. Redwood City's marsh side industries all required access to the wharves on the creek, and all profited from the eventual construction of a deep water port farther from downtown and closer to the bay. As the old downtown Embarcadero declined, the US Army Corps of Engineers and the City attempted to deepen, widen, and generally improve the waterway over the years. The Corps oversaw government funded dredging projects in the 1880s, 1890s, 1903, and again in 1911, but the silting could not be controlled and development continued to encroach on the old facilities. The modern deep water port in Redwood City was not created until 1937, after voters approved a bond issue and amended the City Charter to create the Port of

[1] Alan Hynding, *From Frontier to Suburb: The Story of the San Mateo Peninsula* (Belmont, CA: Star Publishing Company), 89-90; Davis, *Seventy-five Years in California*, 172; Archives Committee, *Redwood City: A Hometown History*, 11, 15-16; *History of San Mateo County, California* (San Francisco, California: B.F. Alley, 1883).

[2] John R. Signor, *Southern Pacific's Coast Line* (Wilton, CA: Signature Press, 1994), 3; Louis Richard Miller, "The History of the San Francisco and San Jose Railroad" (M.A. thesis, University of California, 1947), 64-65; Alan Hynding, *From Frontier to Suburb* (Belmont, CA: Star Publishing Company, 1982), 62, 63; Donovan L. Hofsommer, *The Southern Pacific, 1901-1985* (College Station, TX: Texas A&M University Press, 1986), 4; USGS, *Palo Alto* (Washington: USGS, 1899); Sanborn Map Company, *Redwood City, San Mateo County, California* (New York: Sanborn Map Company, 1891); Archives Committee of the Redwood City Public Library, *Redwood City: A Hometown History* (Belmont, CA: Star Publishing Company, 2007), xxiii, 169-171; Redwood City. *Redwood City General Plan October 11, 2010,* BE-202.

Redwood City, which quickly became an important and profitable commercial and military shipping port for Redwood City and the San Francisco Bay Area.[3]

Redwood City Harbor Company

The rail line inventoried on this form (and located in the APE for the report cited in P11) was originally constructed by the Redwood City Harbor Company (RCHC) The RCHC was incorporated as a realty firm in November 1912 by the mayor George A. Merrill and four local businessmen: "of recognized financial standing primarily for the purpose of providing sites on a deep-water harbor for the various business enterprises owned by themselves, secondarily as a real estate venture with the idea of attracting industries to the harbor, thirdly for the benefit of Redwood City."[4]

The following year, RCHC purchased approximately 500 acres of land from the Leslie Salt Company to develop a new port. The RCHC constructed levees around its land holdings and with the Army Corps of Engineers placed dredged material at the site to aid in the construction of port facilities, which allowed the RCHC to construct a railroad spur from the Southern Pacific Railroad main line to the bay. This spur connected Redwood City to the harbor and increased the value of company-owned land along the east side of the slough. The Pacific-Portland Cement Company erected a large cement plant at mouth of Redwood Creek in the 1920s and also benefited from the improved shipping channel that opened in 1937. The harbor improvement bond issue was combined with funds from the federal Public Works Administration, and included a wharf and transit shed, now known as Wharf #1 and Wharf #2, and Port Warehouse #1. The new facility and channel were ready to handle cargo in late 1937 under the management of the newly authorized Port Department.[5]

Alterations to the rail line include the installation of modern asphalt and rubber grade crossing panels, replacement of original rails in 1948, 1959, 1963, and 1992, and installation of modern crossing guards. Ownership of the spur was transferred from Southern Pacific to Union Pacific in 1996.[6]

Previous studies and data regarding railroad resources on the San Francisco Peninsula have not identified a historic property or historic district that encompasses all or a large number of railroad resources in this area. Two studies inventoried the former SPRR line on the San Francisco Peninsula, now used by Caltrain, and neither study identified such a potential historic district. Railroad related buildings and structures such as stations / depots, bridges / underpasses, and tunnels on the San Francisco Peninsula have been found individually eligible for listing in the NRHP. There are also some distinct concentrations of railroad resources on the San Francisco Peninsula that form NRHP historic districts of SPRR buildings and structures, including the depots in Palo Alto, Santa Clara, and San Jose (Cahill, now Diridon), the latter of which includes some track segments. There is also the Southern Pacific Railroad Dumbarton Cutoff Linear Historic District, located just south of Redwood City. This historic district includes the alignment of the cutoff across the San Francisco Bay and two of its bridges. Various segments of

[3] Alan Hynding, *From Frontier to Suburb: The Story of the San Mateo Peninsula* (Belmont, CA: Star Publishing, 1982), 92; Sanborn Map Company, *Redwood City, San Mateo County, California* (New York, NY: Sanborn Map Company, 1907, 1919); California Digital Library, "Historical Census;" Davenport Bromfield, *Map of County of San Mateo* (Redwood City: Davenport Bromfield, 1910).

[4] "Form $125,000 Realty Firm: Redwood City Harbor Company to Have San Francisco Offices," *San Francisco Call*, November 24, 1912; 65th Congress, 2d Session, House of Representatives, Document No. 551, "Redwood City Harbor, Cal. Letter from the Secretary of War Transmitting, with a Letter From the Chief of Engineers, Reports on Preliminary Examination and Survey of Redwood City Harbor," December 11, 1917, 7.

[5] "New Railway to Redwood," *San Francisco Chronicle*, May 17, 1913; "Redwood Finishes Harbor Dredging," *San Francisco Chronicle*, May 27, 1916; Archives Committee, *Redwood City: A Hometown History*, 123-134, 142; Port of Redwood City, "Port of Redwood City History;" USACE, "Hydrographic Survey of Redwood Creek, 1909," *Redwood Creek, Calif.* H. Doc. 307, 61st Cong., 2nd sess.; USACE, "Redwood Creek from Head of Navigation to San Francisco Bay, Cal., 1915." *Redwood City Harbor.* H. Doc. 551, 65th Cong., 2nd sess."; Michael Josselyn, PhD PWS, "Early History of Redwood City Salt Plant Site," (San Francisco, CA: WRA, Inc., February 27, 2012), 6.

[6] Richard J. Orsi, *Sunset Limited The Southern Pacific Railroad and the Development of the American West, 1850-1930* (Berkley, CA: University of California Press, 2005), 407.

railroad track on the San Francisco Peninsula have been formally evaluated and found ineligible for listing in the NRHP. These include SPRR tracks in South San Francisco (built 1864, determined ineligible April 18, 1996, project reference UNTA900828A), the South San Francisco Freight Spur at Dubuque Avenue (built 1948, determined ineligible August 6, 2007, project reference FTA040913A), and a SPRR spur in San Francisco (built 1945, determined ineligible February 6, 2008, project reference FHWA071204A).[7]

Evaluation

The former RCHC spur line in Redwood City does not have important associations with significant historic events, patterns, or trends of development (NRHP Criterion A / CRHR Criterion 1). Points 1 through 3 were built in 1913 off of the Southern Pacific Railroad main line to serve the RCHC company-owned lands along the east side of the slough and to serve other companies near the Redwood City Port. The spur line segment is associated with the industrial development of this area in the early twentieth century. Industrial growth along the spur line was modest, occurring over multiple decades, and it did not become a large or important industrial district, compared to other larger industrial complexes such the Leslie Salt Company. Rather, the area had a mixture of light industrial/commercial buildings. This railroad spur, therefore, is not associated with the development of an important industrial area and is not significant under this criterion.

This railroad spur is not significant for an association with the lives of persons important to history (NRHP Criterion B/CRHR Criterion 2). Research did not reveal that any individual associated with this property has made demonstrably important contributions to history at the local, state, or national level.

Under NRHP Criterion C / CRHR Criterion 3, this railroad spur is not significant as an important example of a type, period, or method of construction. This railroad spur segment is a standard gauge railroad of typical design and materials laid on a standard railroad bed. It is a common and ubiquitous type of structure and is not significant under this criterion.

This property is not a significant or likely source of important information about historic construction materials or technologies (NRHP Criterion D / CRHR Criterion 4).

With regard to its potential as a contributor to a potential historic district, this segment of railroad track under evaluation in this form does not appear to have the potential to be a contributor to any larger historic property, nor does the segment appear to meet the criteria for eligibility as an individual property. The NRHP guidelines define a historic district as a "significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development." A historic district must be a unified entity of interrelated resources which can "convey a visual sense of the overall historic environment or be an arrangement of historically or functionally related properties." Like other resources, to be eligible for the National Register a historic district must satisfy the criteria for both significance and integrity. NRHP guidelines specifically address the issue of historic district integrity stating that "the majority of the components that make up the district's historic character must possess integrity even if they are individually undistinguished." A district is not eligible if its elements are so

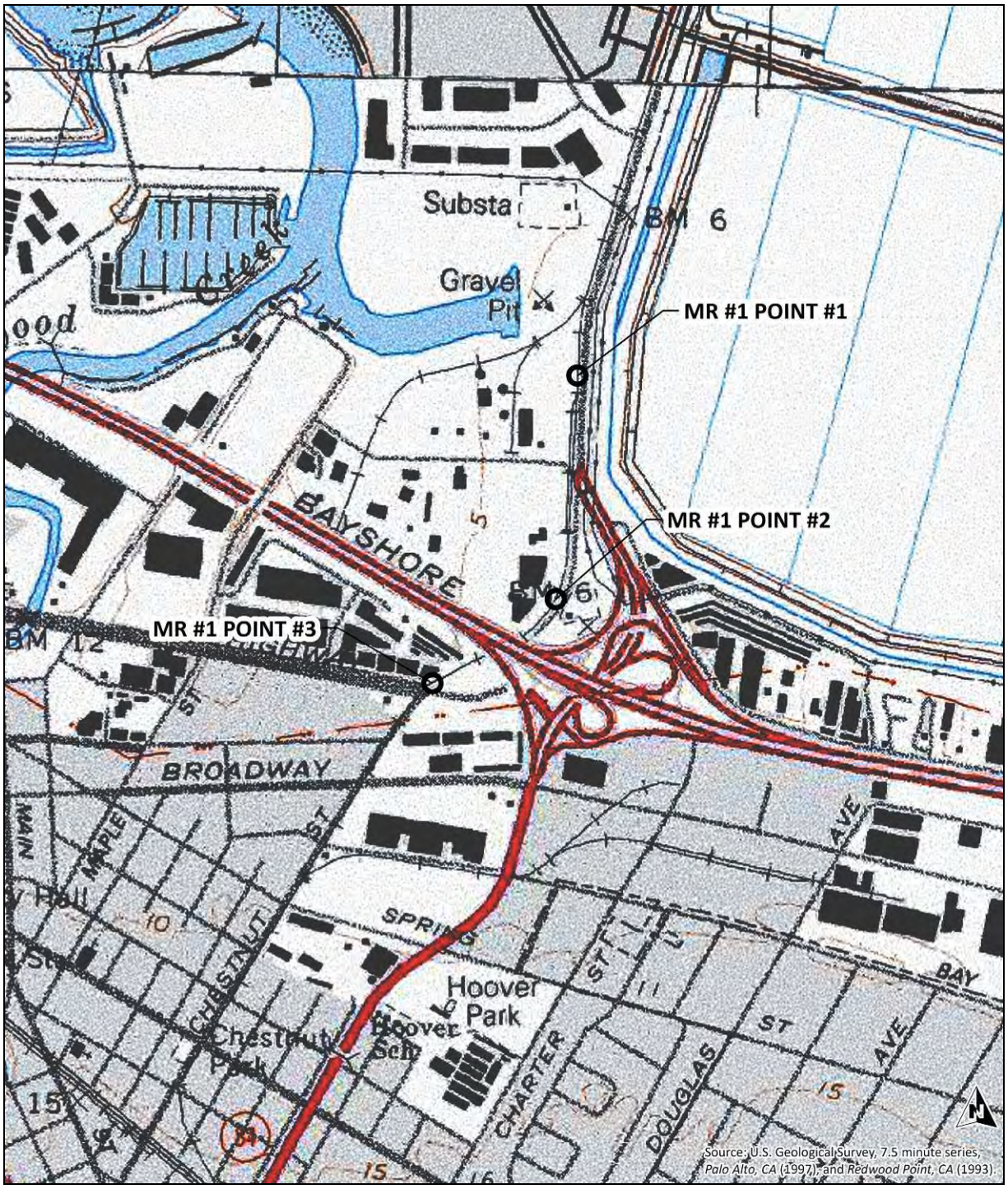
[7] Caltrans, *Historic Property Survey Report For the Joint Powers Board Acquisition of Southern Pacific Right-of-Way: San Francisco to San Jose Peninsula Commute*, prepared for the Peninsula Corridor Joint Power Board, November 1991; Caltrans, *Historic Property Survey Report For the Joint Powers Board Acquisition of Southern Pacific Right-of-Way: San Francisco to San Jose Peninsula Commute, Addendum No. 1,* prepared for the Peninsula Corridor Joint Power Board, December 1991; Federal Transit Administration, *Finding of Effect for the Transfer of the Peninsula Commute Service (Caltrain) Stations from the California Department of Transportation to the Peninsula Corridor Joint Powers Board*, E.A. 635001, April 1992; JRP Historical Consulting Services, *Inventory and Evaluation of Historic Resources, Caltrain Electrification Program, San Francisco to Gilroy*, prepared for the Peninsula Corridor Joint Powers Board, 2001 (SHPO concurrence December 9, 2002, project reference FTA021021A); Office of Historic Preservation, *Directory of Properties in the Historic Property Data File for San Mateo County*, April 5, 2012; Office of Historic Preservation, *Directory of Properties in the Historic Property Data File for San Francisco County*, April 5, 2012. Office of Historic Preservation, *Directory of Properties in the Historic Property Data File for Santa Clara County*, April 5, 2012; JRP Historical Consulting, LLC, "Historic Resources Inventory and Evaluation Report, Dumbarton Rail Corridor Project," 2012. The SPRR station in Redwood City at 1 Winklebleck Street (built 1909) was found eligible during a historic resource survey, but the evaluation does not have SHPO concurrence.

altered and it contains so many new intrusions that it no longer conveys its potential period of significance.[8] In the area of the US 101/Woodside Road interchange there are many commercial/light industrial buildings, none of which are associated with the early development of the RCHC. Most of the buildings in the area were built in the 1950s and 1960s after the construction of the interchange. The area lacks continuity and a concentration of buildings and does not convey a sense of history related to the 1910s and 1920s development of the bay for port facilities. The buildings from the late 1950s-early 1960s era are dispersed, lack a unifying architectural style, and are not united by a common historical use or development. In addition, there are many recently constructed buildings and large vacant lots with new construction among the 1950s-1960s buildings that have the effect of diminishing the historic character and sense of a historic built environment near the US interchange. The US 101/Woodside Road interchange commercial/light industrial area, therefore, lacks the qualifications to be considered a historic district.

In addition to lacking historical significance and not meeting the criteria necessary for eligibility for listing in either the NRHP or CRHR, the installation of asphalt and modern rubber grade crossing panels, replacement of original rails in 1948, 1959, 1963 and 1992, installation of modern crossing guards, and the installation of low concrete curbs and modern rubber grade crossing panels at the segment of spur line at Chestnut and Spring streets south of has diminished the integrity of this property.

[8] National Park Service, *Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: U.S. Dept. of the Interior, National Park Service, 1997), 5, 46.

***Drawn by:** JRP Historical Consulting, LLC ***Date of map:** Base: *Palo Alto* 1997 & *Redwood Point* 1993



State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-41-002593
HRI # _____
Trinomial _____
NRHP Status Code 6Z
Other Listings _____
Review Code _____ Reviewer _____ Date _____

***Resource Name or #** (Assigned by recorder) Map Reference #2

P1. Other Identifier: PG&E Redwood City Substation

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** San Mateo

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Palo Alto **Date** 1997 **T** 5S; **R** 3W; ___ ¼ **of Sec** ___; M.D. **B.M.**

c. Address 10 Seaport Boulevard City Redwood City Zip 94063

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

Assessor Parcel Number (APN): 052-392-999

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

This irregular shaped parcel is located northwest of the US 101/Woodside Road interchange, bordered by Seaport Boulevard on the west side, and surrounded by a chain-link fence (**Photograph 1**). This Pacific Gas & Electric (PG&E) facility is a collection of switches, transformers, circuit breakers, regulators, and busses that are used to receive, step down, and distribute voltages for commercial and industrial use. Steel-frame transmission towers bringing power into the substation are located near the southeast side of the parcel. A gable-roof control house is located near the southwest corner of the lot. The building has a tall, poured concrete base and the roof and exterior are sheathed in corrugated metal siding (**Photograph 2**). Entry doors are located on the north, south, and east sides. The northern entry is a roll-up garage door and the southern entry is metal double-door with a 12-light transom above (**Photographs 2 & 3**). The eastern door is a multi-light glazed wood door with an eight-light transom above (**Photograph 4**). (See Continuation Sheet.)

***P3b. Resource Attributes:** (List attributes and codes) HP9. Public Utility Building

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

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

P5b. Description of Photo: (View, date, accession #) **Photograph 1:** Substation parcel, camera facing north, December 16, 2014

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1926-1927 / *Pacific Service Magazine*

***P7. Owner and Address:**
Pacific Gas & Electric Co.
PO Box 770000
San Francisco, CA 94177-0001

***P8. Recorded by:** (Name, affiliation, address)
Chandra Miller & Heather Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

***P9. Date Recorded:** December 16, 2014

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") JRP Historical Consulting, LLC, "Historical Resources Evaluation Report: US 101/SR84 (Woodside Road) Interchange Improvement Project, Redwood City, San Mateo County, California, 2015."

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) Map Reference #2

B1. Historic Name: PG&E Redwood City Substation
B2. Common Name: PG&E Redwood City Substation
B3. Original Use: Electrical substation B4. Present Use: Electrical substation
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alteration, and date of alterations) Substation control house built 1926; site modified circa 1958 with interchange construction; southern entry doors replaced at unknown date, roof vents added at unknown date; additional equipment added to the site over time; blast wall and new equipment were being installed at time of field recordation on December 16, 2014.

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____
***B8. Related Features:** _____

B9. Architect: _____ b. Builder: _____
***B10. Significance: Theme** Electrical distribution **Area** Redwood City
Period of Significance n/a **Property Type** Electrical Substation **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The PG&E Redwood City Substation does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) because it does not have historical significance. This property has also been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and is not a historical resource for the purposes of CEQA. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) _____

***B12. References:** Ivan C. Frickstad, "Some Sub-Stations of the Pacific Gas & Electric Co.," *The Architect and Engineer* (November 1915): 55-68; Ivan C. Frickstad, "Characteristic Building Features of San Francisco Substations," *Pacific Service Magazine* (May 1924): 373-377; "$25,000,000 is Cost of P.G.&E. Program For 1926," *Berkeley Daily Gazette,* January 9, 1926; Google Earth, Redwood City [aerial photograph], September 25, 1948; US Geological Survey, *Palo Alto,* 7.5-minute map (Washington, DC: USGS, 1961); (and see B10 footnotes).

B13. Remarks:

***B14. Evaluator:** Chandra Miller

***Date of Evaluation:** December 2014

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

P3a. Description (continued):

Fenestration consists of 20-light industrial windows with four-light central hopper windows throughout. Four vents line the roof ridge and small vents are located in the gable ends. A small portable metal shed with a low-pitched gable roof is situated southwest from the control house (**Photograph 5**).

At the time of recordation, a new transformer was being installed just north of the control house (**see Photograph 2**). PG&E employees at the site stated that a blast wall is being constructed between the new transformer and the control house.[1]

B10. Significance (continued):

Historic Context

The San Francisco Bay Area experienced rapid growth through the early twentieth century. Displaced San Francisco residents moved to Redwood City in the wake of the 1906 earthquake and fire, leading to the development of large estates west of the downtown region and by 1910 the city's population was up to 2,500. As the population grew, so did the demand for electricity by industry and for home use. Circa 1911 PG&E constructed an electrical substation on Jefferson Avenue (northwest of the APE) and a gas storage tank was built adjacent to it in 1914.[2] PG&E's growing market throughout the state was steadily requiring more power. In 1919 the company acquired Northern California Power Company and all rights to construct a major power system on the Pit River in Shasta County. PG&E intended the complex of powerhouses to transmit power at 220,000 volts, a new high for the company. The 202 mile-long line terminated at the Vaca-Dixon Substation outside of Vacaville. PG&E needed the new Vacaville substation to convert voltage levels for transmission into the Bay Area. [3]

Starting in the 1910s, PG&E established a consistent architectural theme for many buildings in their system utilizing Beaux Art and other classical styles to convey pleasing aesthetics to their utility buildings while being free from extravagance with economic use of company funds.[4] This architectural theme continued to be used for new PG&E buildings throughout their system through the mid-1920s, particularly for prominently situated facilities. While some facilities were built using a utilitarian design, the substations constructed in cities were largely windowless concrete plastered structures with Classical and Romanesque ornamentation above entryways that fully enclosed the substation equipment. PG&E Substation "J" built in San Francisco in 1908, 1914, and 1923 and designed by Frederick H. Meyer, is listed on the NRHP under Criterion A and C as "an outstanding example of consistent architectural theme throughout the PG&E system which fulfills the mechanical requirements as well as the function of utility…[in such a way] that the appearance…should be pleasing and capable of inspiring confidence in the company's strength and ability to deliver perfect service in the fullest sense."[5]

The Redwood City substation built by PG&E circa 1926 is of utilitarian design and materials and not of the monumental concrete construction and design used previously by PG&E for substations. With the location of the Redwood Substation along the bay outside of the city center, there was no need to build an enclosed substation to muffle equipment operating sounds. This is the second PG&E substation constructed in Redwood City. This substation site was constructed in 1926 for

[1] Al Alqueseda, PG&E employee, interview with JRP Staff Historian Chandra Miller, December 16, 2014.
[2] "Arrangement of Fire Fighting Apparatus," *Pacific Gas and Electric Magazine* (June 1911): 84; "A Gas Holder As a Civic Adornment," *Pacific Service Magazine* (June 1916): 226-227; Pacific Gas & Electric, "Former Redwood City Gas Holder" http://www.pge.com/en/about/environment/taking-responsibility/mgp/redwood-city.page (accessed December 2014).
[3] Charles M. Coleman, *PG and E of California* (New York: McGraw-Hill, 1952) 286-287; "Substations for Local Distribution – Important Work in Bay Counties," *Pacific Service Magazine* 16, no.8 (April 1926): 246.
[4] Ivan C. Frickstad, "Some Sub-Stations of the Pacific Gas & Electric Co.," *The Architect and Engineer* (November 1915): 55-68; Ivan C. Frickstad, "Characteristic Building Features of San Francisco Substations," *Pacific Service Magazine* (May 1924): 373-377.
[5] Fredric C. Divine Associate Architects, "Pacific Gas and Electric Company Substation J National Register Nomination," July 1986, Section 8, National Register of Historic Places Database, http://pdfhost.focus.nps.gov/docs/NRHP/Text/86003514.pdf (accessed December 2014).

$170,000 in response to the industrial growth along the Redwood City waterfront.[6] The site was altered with the construction of the Bayshore Freeway through Redwood City in 1958. The US 101/ Woodside Road interchange was built along the east and south sides of the substation, enclosing the site into its current configuration (see **Sketch Map**). Over time changes have occurred to the site including the installation of additional equipment to meeting the increasing power demands of the growing city, reconfiguration of transmission towers, and alterations to the control house. Based on a historic photograph the south side doors have since been replaced, additional roof venting added, and signage has been removed (**see Plates 1 and 2**).[7]

Plate 1: South side of Redwood City Substation control house, 1936.[8]

[6] "$25,000,000 is Cost of P.G.&E. Program For 1926," *Berkeley Daily Gazette,* January 9, 1926.
[7] Google Earth, Redwood City [aerial photograph], September 25, 1948; US Geological Survey, *Palo Alto,* 7.5-minute map (Washington, DC: USGS, 1961.
[8] South San Francisco Public Library, Redwood City Public Library, and San Mateo County Historical Association, "Pacific Gas & Electric Substation," *Bit of History: Exploring San Mateo County Historical Photographs* http://bitsofhistory.plsinfo.org/thumbnailtext.asp?offset=180&id=105 (accessed December 2014).

Plate 2: 2014 photograph of south side of Redwood City Substation control house (JRP).

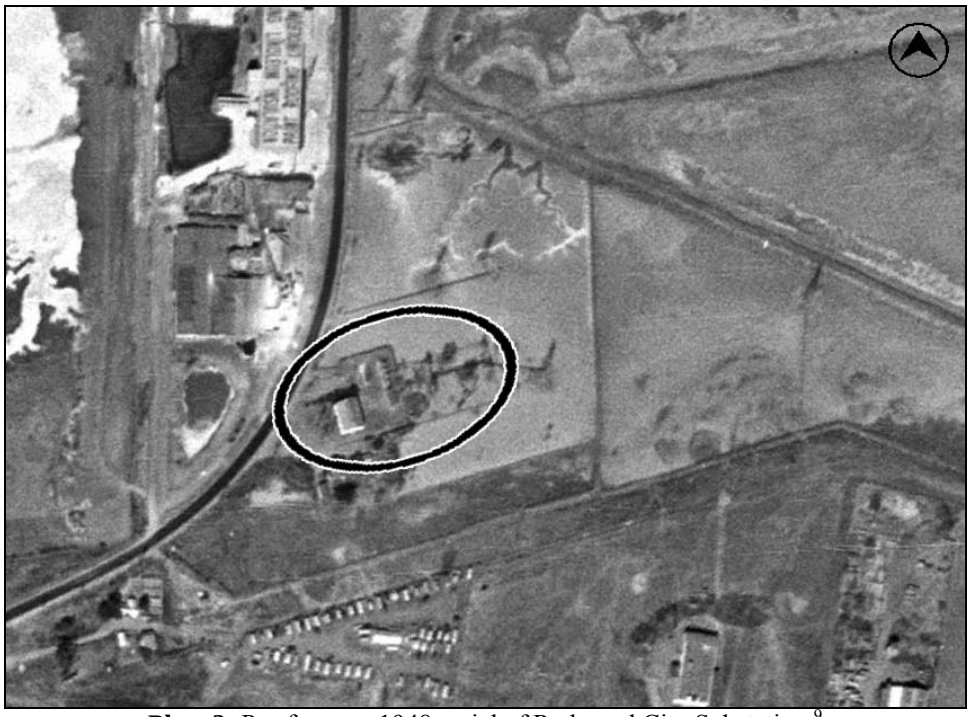


Plate 3: Pre-freeway 1948 aerial of Redwood City Substation.[9]

[9] Google Earth, Redwood City [aerial photograph], September 25, 1948.

Plate 4: Substation site after 1958 freeway intersection construction circled (base: *Palo Alto* 7.5-minute 1961).

Evaluation

Under NRHP Criterion A or CRHR Criterion 1, the substation is not significant for its association with the development of Redwood City or PG&E. Substations are required to distribute power and are inherently important to the communities they serve. However, to be eligible for listing in the CRHR or NRHP under Criterion 1 or A, a substation must have significance directly related to important historic events and trends. In most cases, distribution substations are not significant within the context of the electrification of an area. This was the second PG&E substation built in Redwood City, the first built circa 1911. The substation was installed to meet the continuing growth of the area, but does not appear to be significant for influencing the development of the economy and industry of the region. Additionally, much of the equipment in the switch yard has been replaced and updated in the subsequent years and is not associated with the original development of the substation.

Under NRHP Criterion B or CRHR Criterion 2, the substation is not associated with a significant individual. The PG&E Redwood City Substation is a construct of a large company and not associated with a single person.

Under NRHP Criterion C or CRHR Criterion 3, the substation is not significant because it is not an important example of a type, period, or method of construction. The substation was constructed using standard equipment and general layout for substations at the periods of construction. The control house is constructed of common materials and utilitarian architectural elements and it is not important within this context. The utilitarian design of the substation control house deviates from the PG&E use of classical architecture throughout their system, such as Station "J" in San Francisco which is listed in the NRHP under Criterion C. The other structures and equipment within the substation yard are modern and are not important within the field of electrical substation technology.

Under NRHP Criterion D or CRHR Criterion 4, the substation is not significant as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historic construction materials or electric utility technologies.

The integrity of location, design, materials, setting, workmanship, materials, have been negatively affected from alterations to the site including reconfiguration of the site with the construction of the intersection in 1958, the addition of equipment to the site, and alterations to the building. Feeling and association as an electrical substation remain intact, however, it does not meet any of the significance criteria necessary for eligibility for listing in either the NRHP or CRHR.

Photographs (continued):

Photograph 2: North and west side of control house, camera facing southeast, December 16, 2014. Note installation of new transformer.

Photograph 3: South and west side of control house, camera facing northeast, December 16, 2014.

Photograph 4: South and east side of control house, camera facing northeast, December 16, 2014.

Photograph 5: West side of control house, and shed, camera facing east, December 16, 2014.

Attachment 3

Historical Society Consultation

Beherec, Marc

From: Young, Marcel
Sent: Tuesday, July 25, 2023 10:05 AM
To: info@historysmc.org
Subject: NORTH FAIR OAKS SEWER TRUNK LINE REALIGNMENT PROJECT
Attachments: SanMateo_Historical Society letter_SanMateoSewer.pdf; Fig 03 Project Area.pdf

Good Morning,

Please find attached a request for information and a map of the project's foot print. We look forward to hearing any details about this location.

Sincerely,

Marcel Young | Archaeologist |
3760 Kilroy Airport Way Suite 270 | Long Beach, CA 90806
Ph 562-200-7165 | Marcel.Young@mbakerintl.com |
www.mbakerintl.com
Michael Baker INTERNATIONAL 80 YEARS Making a Difference

Michael Baker
INTERNATIONAL

We Make a Difference

July 25, 2023

SAN MATEO HISTORICAL ASSOCIATION
2200 BROADWAY
REDWOOD CITY, CALIFORNIA 94063
VIA EMAIL: INFO@HISTORYSMC.ORG

RE: NORTH FAIR OAKS SEWER TRUNK LINE REALIGNMENT PROJECT, REDWOOD CITY, SAN MATEO COUNTY, CALIFORNIA

To Whom It May Concern:

Michael Baker International is conducting a cultural resources study in support of the North Fairoaks Sewer Trunk Line Realignment Project, California.

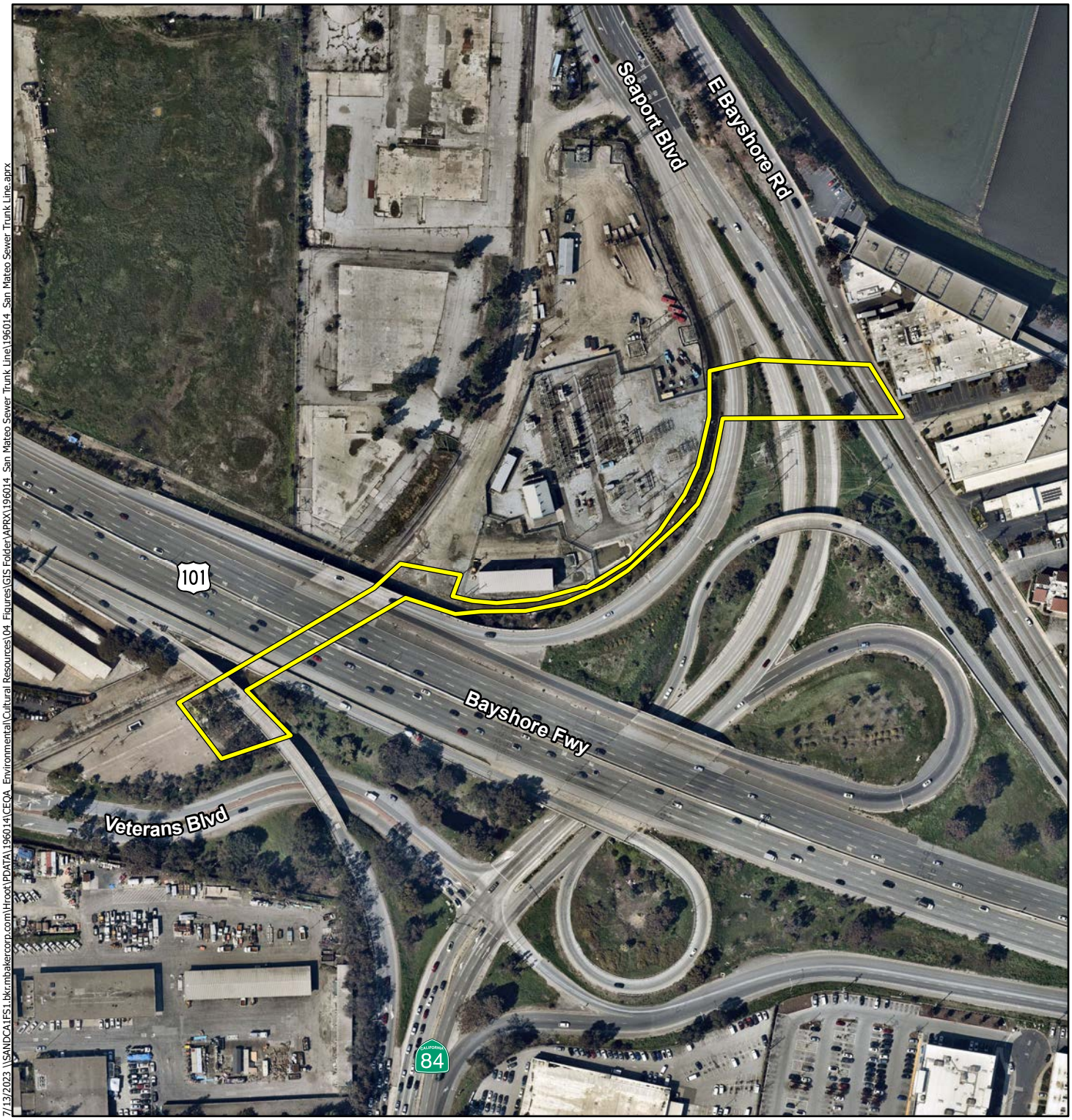
The County of San Mateo needs to address decreased capacity of the 30"-33" trunk sewer between manholes 3612 and 3632 in the vicinity of Woodside Road and Highway 101 in Redwood City. Previous attempts by the County to inspect and clean the existing sewer have been unsuccessful due to heavy and solidified sediment along the invert of the pipe. The County has recommended replacing this section of the trunk sewer system. The planned NFOTS replacement would take place within the existing NFOTS right-of-way, the Redwood City Substation, and the Caltrans right-of-way. Excavation methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The project site consists of the three-dimensional area within which project-related ground disturbance may take place. This includes the maximum extent of ground disturbance associated with the development of the project, including launching and receiving pits, staging areas, and other locations of temporary ground disturbance. The maximum depth of excavation is 14 feet. Therefore, the vertical project site is 14 feet below ground surface to encompass the maximum depth of excavation anticipated. The project site is limited to the area of direct impact (see Attachment 1).

Please notify us if your organization has any information or concerns about historical resources on the project site. This is not a research request; it is solely a request for public input related to any concerns that the San Mateo Historical Association may have. If you have any questions or comments, please contact me at your earliest convenience at marcel.young@mbakerintl.com or 562-200-7165.

Sincerely,

Marcel Young
Archaeologist

Attachments:
Attachment 1 - Figures



7/13/2023 \\SANDCA1FS1.bkr.mbakercorp.com\Hrool\PDATA\196014\CEQA Environmental\Cultural Resources\04 Figures\GIS Folder\APRX\196014 San Mateo Sewer Trunk Line\196014 San Mateo Sewer Trunk Line.aprx

Legend

Project Area

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Project Area

Figure 3

Attachment 4

Native American Consultation

Sacred Lands File & Native American Contacts List Request

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

Information Below is Required for a Sacred Lands File Search

Project: San Mateo Sewer Trunk Line

County: San Mateo

USGS Quadrangle Name: Palo Alto

Township: 5S **Range:** 3W **Section(s):** 17

Company/Firm/Agency: Michael Baker International

Street Address: 3100 Zinfandel Drive, Suite 125

City: Rancho Cordova **Zip:** 95670

Phone: 775-666-5524

Fax:

Email: Marc.Beherec@mbakerintl.com

Project Description: The project proposes to replace reinforced concrete pipe in a section of the Fair Oaks Sewer Maintenance District.

NATIVE AMERICAN HERITAGE COMMISSION

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

July 26, 2023

Marc Beherec
Michael Baker International

Via Email to: Marc.Beherec@mbakerintl.com

Re: San Mateo Sewer Trunk Line Project, San Mateo County

To Whom It May Concern:

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

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

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

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

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address
San Mateo	Amah MutsunTribal Band of Mission San Juan Bautista	N	Irene Zwierlein, Chairperson	3030 Soda Bay Road Lakeport, CA, 95453
	Costanoan Rumsen Carmel Tribe	N	Tony Cerda, Chairperson	244 E. 1st Street Pomona, CA, 91766
	Indian Canyon Mutsun Band of Costanoan	N	Kanyon Sayers-Roods, MLD Contact	1615 Pearson Court San Jose, CA, 95122
	Indian Canyon Mutsun Band of Costanoan	N	Ann Marie Sayers, Chairperson	P.O. Box 28 Hollister, CA, 95024
	Muwekma Ohlone Indian Tribe of the SF Bay Area	N	Monica Arellano, Vice Chairwoman	20885 Redwood Road, Suite 232 Castro Valley, CA, 94546

Tamien Nation	N	Johnathan Wasaka Costillas, THPO	10721 Pingree Road Clearlake Oaks, CA, 94523
Tamien Nation	N	Quirina Luna Geary, Chairperson	PO Box 8053 San Jose, CA, 95155
Tamien Nation	N	Lillian Camarena, Secretary	336 Percy Street Madera, CA, 93638
The Ohlone Indian Tribe	N	Vincent Medina, Tribal Consultant	17365 Via Del Rey San Lorenzo, CA, 94580
The Ohlone Indian Tribe	N	Andrew Galvan, Chairperson	P.O. Box 3388 Fremont, CA, 94539

The Ohlone Indian Tribe	N	Desiree Vigil, THPO	1775 Marco Polo Way, Apt. 21 Burlingame, CA, 94010
Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined

This list is only applicable for contacting local Native Americans with regard to cultural resourc

Phone #	Fax #	Email Address	Cultural Affiliation	Counties
(650) 851-7489	(650) 332-1526	amahmutsuntribal@gmail.com	Costanoan	Alameda,Contra Costa,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz
(909) 629-6081	(909) 524-8041	rumsen@aol.com	Costanoan	Alameda,Monterey,San Francisco,San Mateo
(408) 673-0626		kanyon@kanyonkonsulting.com	Costanoan	Alameda,Contra Costa,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz
(831) 637-4238		ams@indiancanyon.org	Costanoan	Alameda,Contra Costa,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz
(408) 205-9714		monicavarellano@gmail.com	Costanoan	Alameda,Contra Costa,Marin,Merced,Napa,Sacramento,San Francisco,San Joaquin,San Mateo,Santa Clara,Santa Cruz,Solano,Sonoma,Stanislaus

(925) 336-5359		thpo@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus
(707) 295-4011		qgeary@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus
(559) 363-5914		Lcamarena@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus
(510) 610-7587		vincent.d.medina@gmail.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara
Phone: (510) 882-0527	(510) 687-9393	chochenyo@AOL.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara

(650) 290-0245		dirwin0368@yahoo.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara
(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San

d in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

Record
Repor

ces assessment for the proposed San Mateo Sewer Trunk Line Project, San Mateo County.

Last Updated
4/17/2018
7/12/2019

4/11/2023
4/11/2023
4/11/2023
7/24/2023
7/24/2023

8/25/2022

6/19/2023

: PROJ-2023-003710
ᵀt Type: List of Tribes
Counties: San Mateo
NAHC Group: All

Tribe Name and Contact Information	Date Sent/Contacted	Consultation Log
Amah MutsunTribal Band of Mission San Juan Bautista, Irene Zwierlein, Chairperson (650) 851-7489 amahmutsuntribal@gmail.com	8/10/2023	8-10-23 Consultation phone call conducted, a left voice mail was left
Costanoan Rumsen Carmel Tribe,Tony Cerda, Chairperson (909) 629-6081 rumsen@aol.com	8/10/2023	8-10-23 Consultation phone call conducted, phone number is not in service
Indian Canyon Mutsun Band of Costanoan, Kanyon Sayers-Roods, MLD (408) 673-0626 kanyon@kanyonkonsulting.com	8/10/2023	8-10-23 Consultation phone call conducted, left voice mail
Indian Canyon Mutsun Band of Costanoan, Ann Marie Sayers, Chairperson (831) 637-4238 ams@indiancanyon.org	8/10/2023	8-10-23 Consultation phone call conducted, phone number rings and does not go to voicemail
Muwekma Ohlone Indian Tribe of the SF Bay Area, Monica Arellano, Vice Chairwoman (408) 205-9714 monicavarellano@gmail.com	8/10/2023	8-10-23 Consultation phone call conducted, and voicemail box is full so no message was left
Tamien Nation, Johnathan Wasaka Costillas, THPO (925) 336-5359 thpo@tamien.org	8/10/2023	8-10-23 Consultation phone call conducted, left voice mail
Tamien Nation, Quirina Luna Geary, Chairperson (707) 295-4011 qgeary@tamien.org	8/10/2023	8-10-23 Consultation phone call conducted, and voicemail box is full so no message was left
Tamien Nation, Lillian Camarena, Secretary (559) 363-5914 Lcamarena@tamien.org	8/10/2023	8-10-23 Consultation phone call conducted. Lillian took a message to forward to her Chairperson and asked if we can send her a map of the PA for reference. Chairperson is out of the office until 8-21-23
The Ohlone Indian Tribe, Vincent Medina, Tribal Consultant (510) 610-7587 vincent.d.medina@gmail.com	8/10/2023	8-10-23 Consultation phone call conducted, left voice mail
The Ohlone Indian Tribe, Andrew Galvan, Chairperson (510) 882-0527 chochenyo@AOL.com	8/10/2023	8-10-23 Consultation phone call conducted, left voice mail
The Ohlone Indian Tribe, Desiree Vigil, THPO (650) 290-0245 dirwin0368@yahoo.com	8/10/2023	8-10-23 Consultation phone call conducted, left voice mail
Wuksachi Indian Tribe/Eshom Valley Band, Kenneth Woodrow, Chairperson (831) 443-9702 kwood8934@aol.com	8/10/2023	8-10-23 Consultation phone call conducted, and voicemail box is full so no message was left

My name is Marcel Young and I am an archaeologist with Michael Baker International. We are conducting a due diligence study for the North Fair Oaks Sewer Realignment Project in Redwood City. The project area is located beneath and adjacent to the Redwood City Substation and US 101 at Seaport Boulevard. A Sacred Lands File search for the project was positive. Does your tribe have knowledge of any tribal cultural resources within the project area that may be affected by sewer excavations?

My contact phone is 562-200-7165

Beherec, Marc

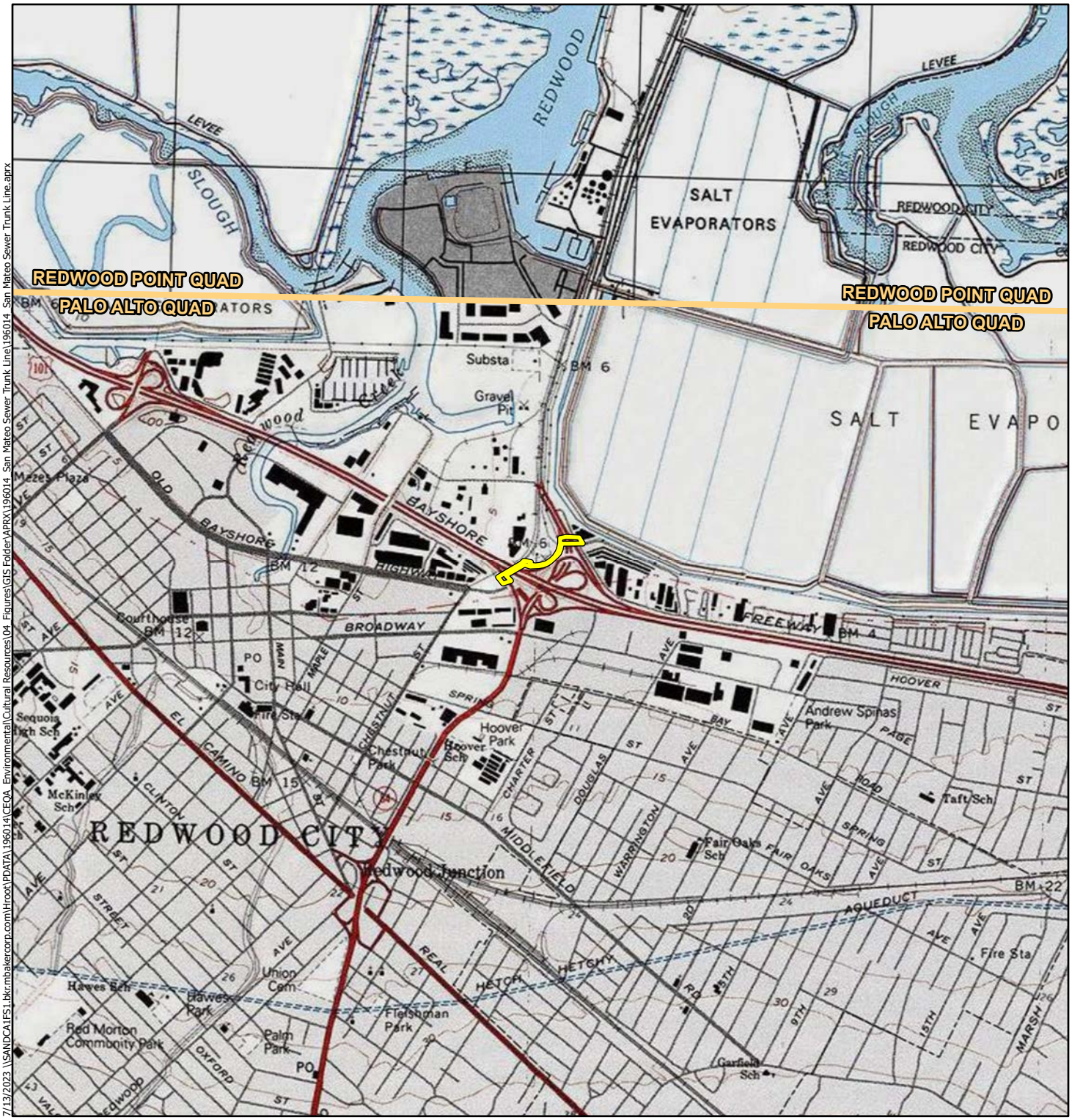
From: Young, Marcel
Sent: Thursday, August 10, 2023 12:24 PM
To: Lcamarena@tamien.org; qgeary@tamien.org
Subject: North Fair Oaks Sewer Realignment Project
Attachments: Fig 03 Project Area.pdf; Fig 02 Project Vicinity.pdf

Good Afternoon Lillian and Chairperson Quirina,

Here are the maps which you requested of the project area and vicinity for the North Fair Oaks Sewer Realignment Project. We look forward to hearing about any Tribal Cultural Resources in the project area. Please call or email me for further information we will do our best to accommodate your inquiries.

Respectfully,

Marcel Young | Archaeologist |
3760 Kilroy Airport Way Suite 270 | Long Beach, CA 90806
Ph 562-200-7165 | Marcel.Young@mbakerintl.com |
www.mbakerintl.com



7/13/2023 \\SANDCA1FS1.bkr.mbakercorp.com\Hroot\PDATA\196014\CEQA Environmental\Cultural Resources\04 Figures\GIS Folder\APRX\196014 San Mateo Sewer Trunk Line\196014 San Mateo Sewer Trunk Line.aprx

Legend

Project Area

Michael Baker INTERNATIONAL

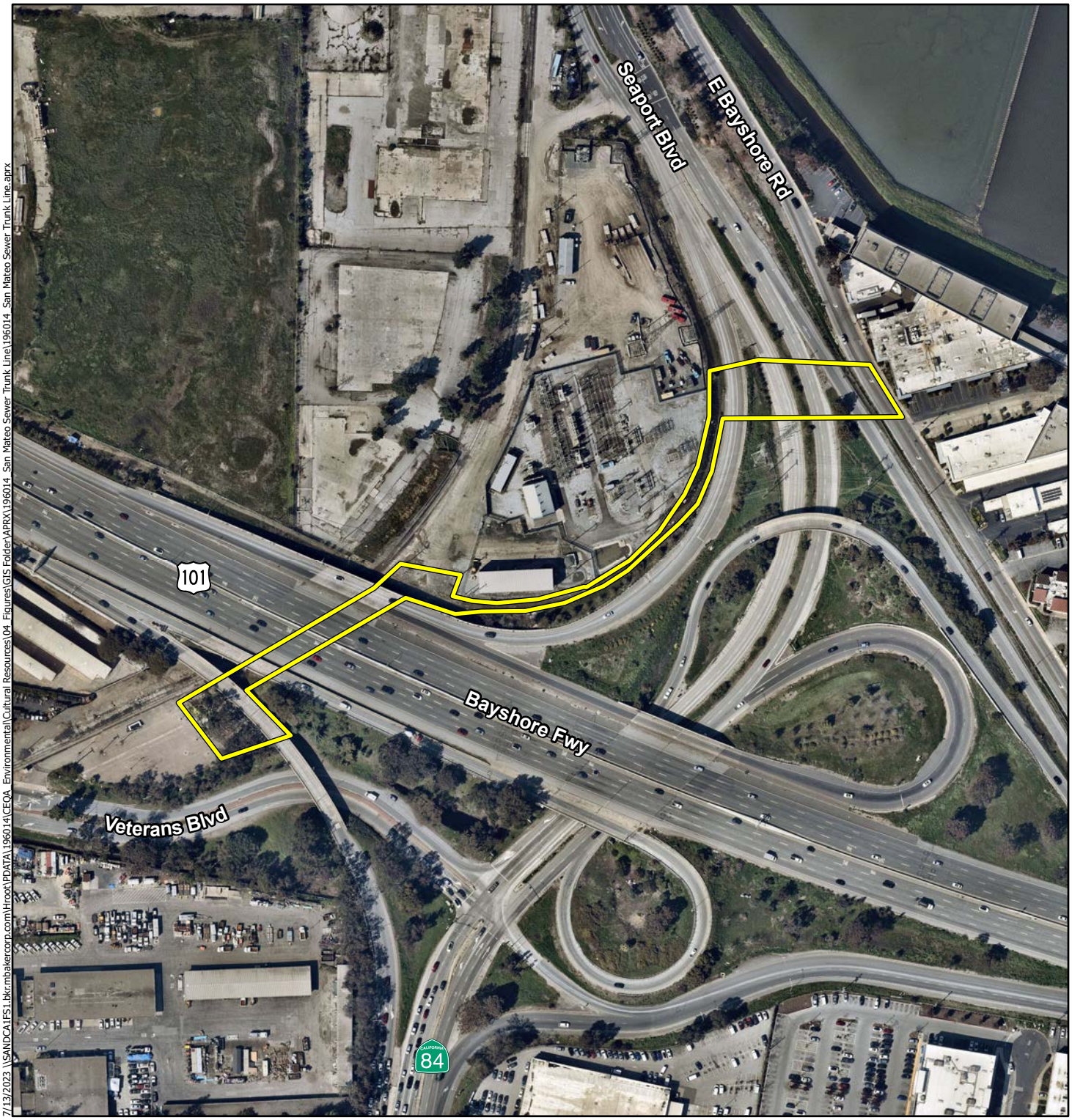
0 0.25 0.5 Miles

Source: Esri, ArcGIS Online, Palo Alto USGS 7.5-Minute topographic quadrangle maps: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Project Vicinity

Figure 2



7/13/2023 \\SANDCA1FS1.bkr.mbakercorp.com\Hrool\PDATA\196014\CEQA Environmental\Cultural Resources\04 Figures\GIS Folder\APRX\196014 San Mateo Sewer Trunk Line\196014 San Mateo Sewer Trunk Line.aprx

Legend

Project Area

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SAN MATEO SEWER TRUNK LINE
REDWOOD CITY, CA

Project Area

Figure 3

From:	Garcia, Rachel
To:	kanyon@kanyonkonsulting.com
Cc:	Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject:	AB52 Consultation Letter
Date:	Wednesday, April 17, 2024 9:10:02 AM
Attachments:	FOSMD Trunk Line_signed notices_Part7.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Kanyon Sayers-Roods, MLD
Indian Canyon Mutsun Band of Costanoan,
1615 Pearson Court San Jose, CA 95122

Via US Mail and Electronic Mail to: kanyon@kanyonkonsulting.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Kanyon Sayers-Roods, MLD:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

The Fair Oaks Sewer Maintenance District (FOSMD or District), which is administered by the County of San Mateo Department of Public Works (County), provides wastewater collection services to an approximate 5-square mile area south of the City of Redwood City. The District serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, portions of the City of Redwood City, and Towns of Atherton and Woodside. The District's system discharges wastewater to the City of Redwood City collection system at Veterans Boulevard, from where it is conveyed to the Silicon Valley Clean Water Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is located in the District property between Veterans Boulevard and Highway 101 (Bayshore Freeway) as shown on Attachment 1.

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maintenance and the risk of exposure in the event of failure is very high within this corridor.

The planned NFOTS replacement would take place within the existing public road right-of-way (City of Redwood City and Caltrans). Construction methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The maximum depth of excavation is approximately 14 feet.

A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

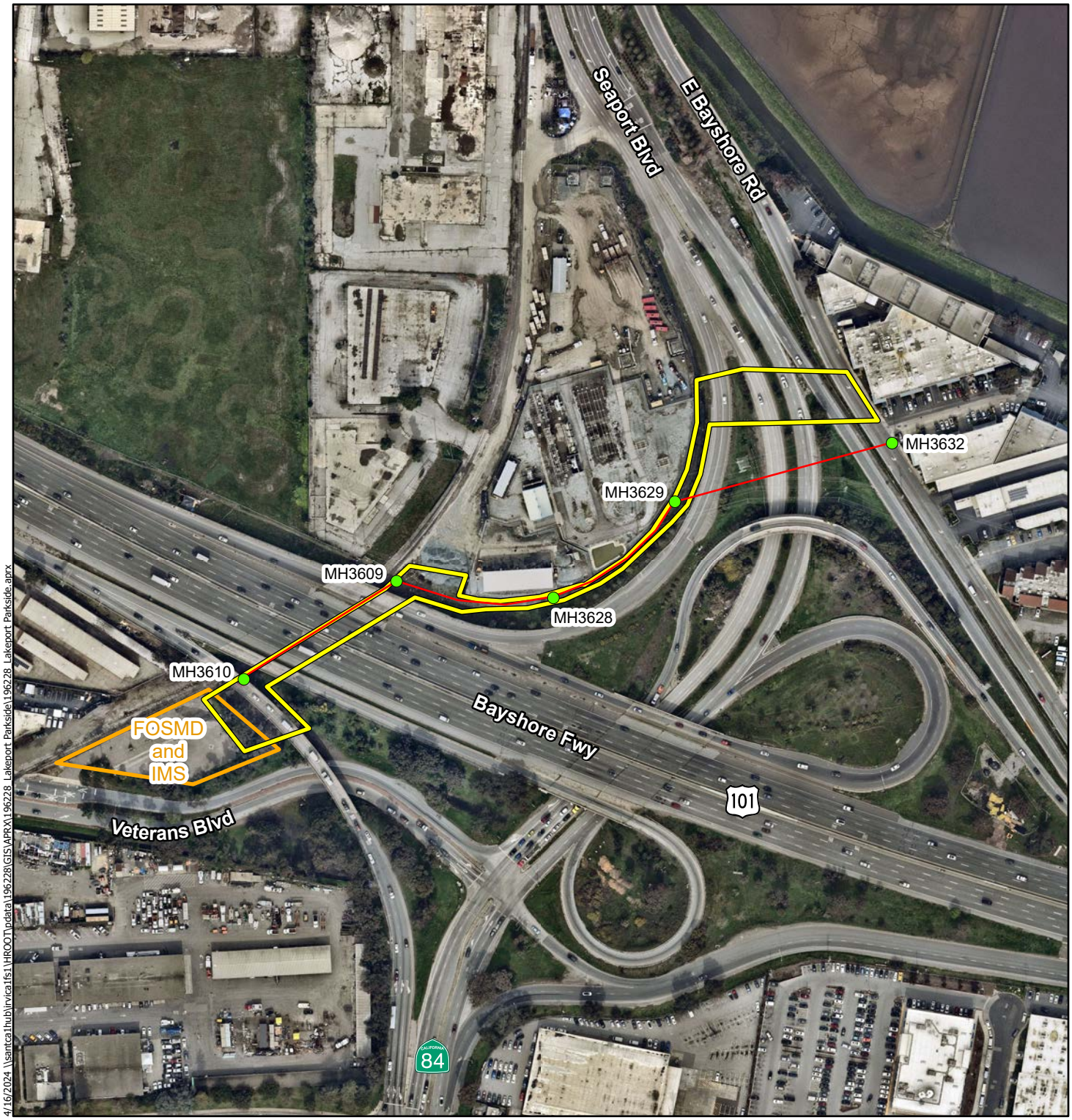
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: monicavarellano@gmail.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:23:44 AM
Attachments: FOSMD Trunk Line_signed notices_Part9.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Monica Arellano, Vice Chairwoman
Muwekma Ohlone Indian Tribe
20885 Redwood Road, Suite 232 Castro Valley, CA 94546

Via US Mail and Electronic Mail to: monicavarellano@gmail.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Monica Arellano, Vice Chairwoman:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

The Fair Oaks Sewer Maintenance District (FOSMD or District), which is administered by the County of San Mateo Department of Public Works (County), provides wastewater collection services to an approximate 5-square mile area south of the City of Redwood City. The District serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, portions of the City of Redwood City, and Towns of Atherton and Woodside. The District's system discharges wastewater to the City of Redwood City collection system at Veterans Boulevard, from where it is conveyed to the Silicon Valley Clean Water Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is located in the District property between Veterans Boulevard and Highway 101 (Bayshore Freeway) as shown on Attachment 1.

A portion of the District's outfall trunk sewer immediately upstream from the IMS, termed the North Fair Oaks Trunk Sewer (NFOTS), requires replacement. The pipe segments are located along the Union Pacific Railroad (UPRR) tracks, under Highway 101, adjacent to Highway 101 and across Woodside Road into East Bayshore Road (see Attachment 1). The NFOTS was installed in the mid 1900's and has reached the end of its useful life. Continual

maintenance and the risk of exposure in the event of failure is very high within this corridor.

The planned NFOTS replacement would take place within the existing public road right-of-way (City of Redwood City and Caltrans). Construction methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The maximum depth of excavation is approximately 14 feet.

A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

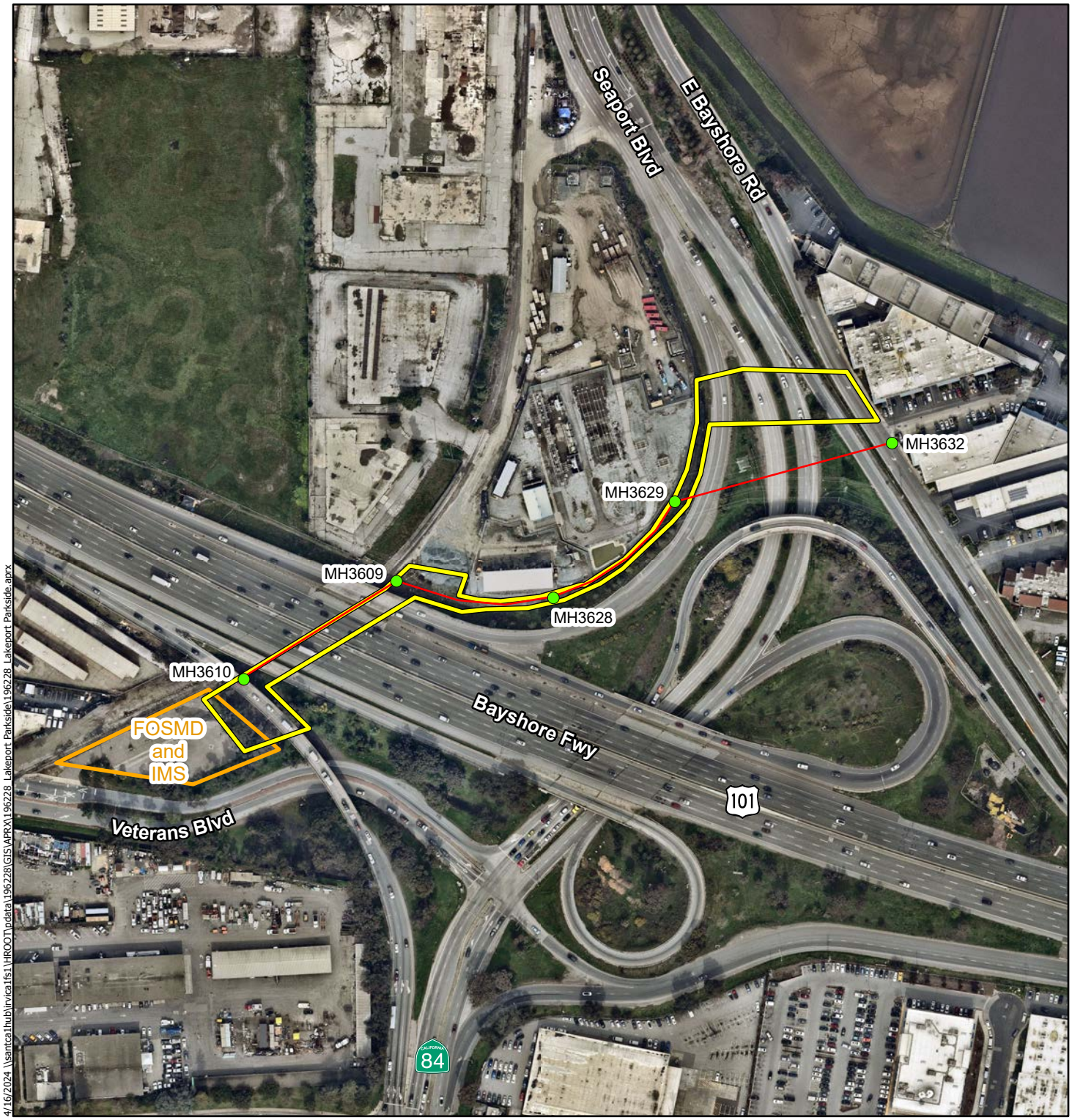
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From:	Garcia, Rachel
To:	amahmutsuntribal@gmail.com
Cc:	Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject:	AB52 Consultation Letter
Date:	Wednesday, April 17, 2024 9:24:56 AM
Attachments:	FOSMD Trunk Line_signed notices_Part2.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
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4/15/2024

Irene Zwierlein, Chairperson
Amah MutsunTribal Band of Mission San Juan Bautista
3030 Soda Bay Road Lakeport, CA 95453

Via US Mail and Electronic Mail to: amahmutsuntribal@gmail.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Irene Zwierlein, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

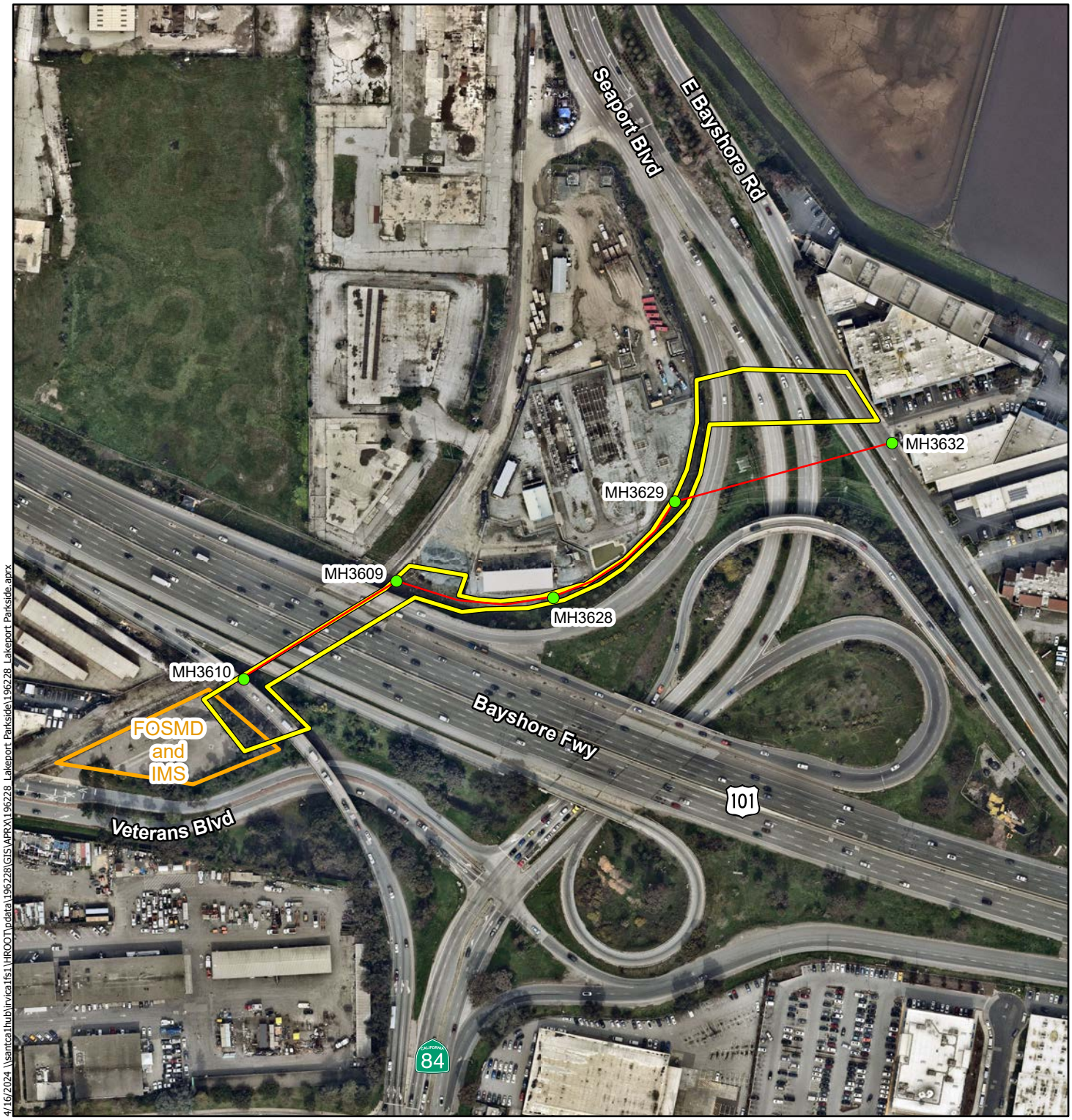
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: vincent.d.medina@gmail.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:27:36 AM
Attachments: FOSMD Trunk Line_signed notices_Part1.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

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4/15/2024

Vincent Medina, Tribal Consultant
The Ohlone Indian Tribe,
17365 Via Del Rey San Lorenzo CA, 94580

Via US Mail and Electronic Mail to: vincent.d.medina@gmail.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Vincent Medina, Tribal Consultant:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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Thank you in advance for your time and involvement in our consultation efforts.

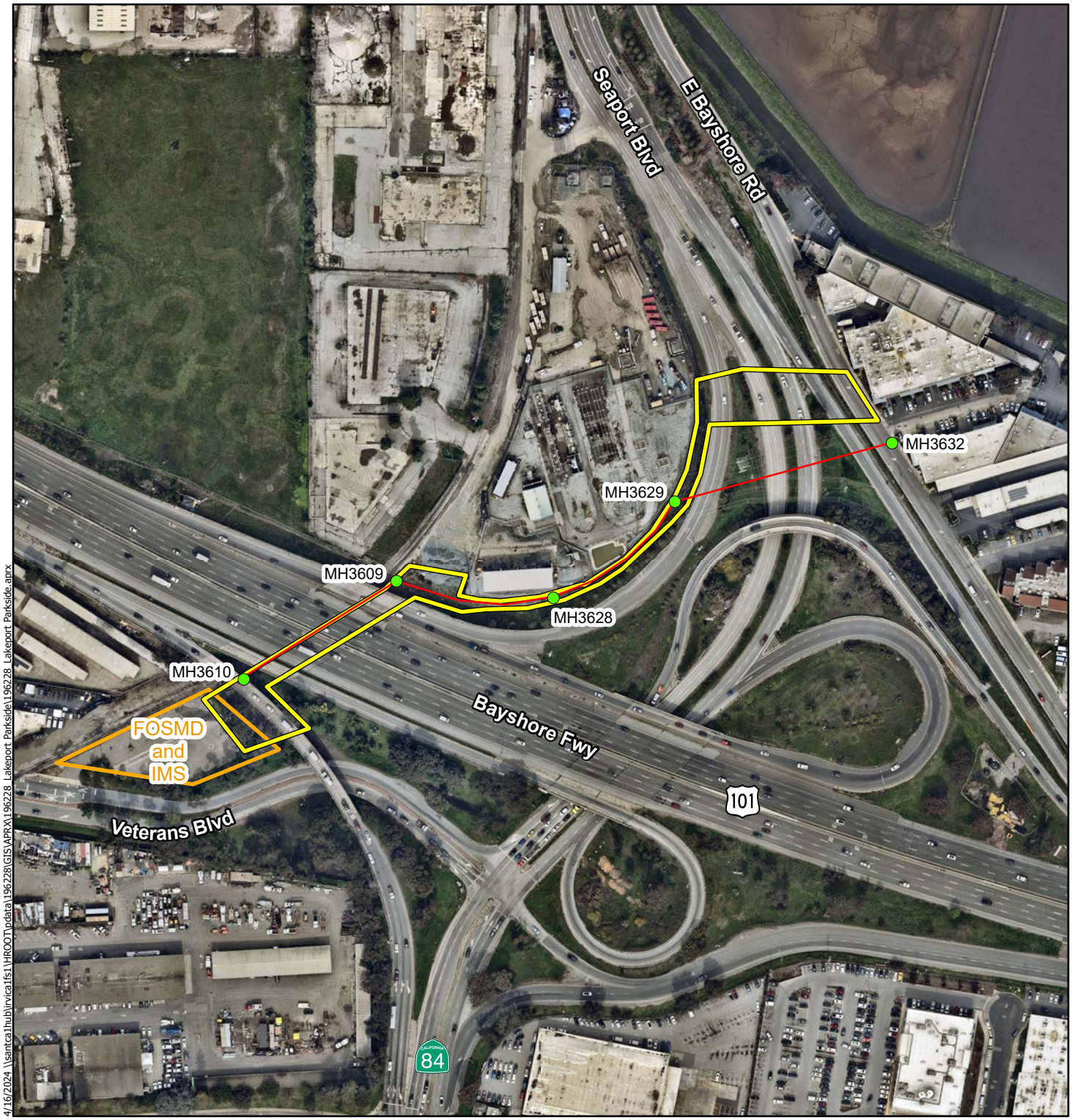
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: ams@indiancanyon.org
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:26:12 AM
Attachments: FOSMD Trunk Line_signed notices_Part8.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
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Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan,
P.O. Box 28 Hollister, CA 95024

Via US Mail and Electronic Mail to: ams@indiancanyon.org

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Ann Marie Sayers, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

The Fair Oaks Sewer Maintenance District (FOSMD or District), which is administered by the County of San Mateo Department of Public Works (County), provides wastewater collection services to an approximate 5-square mile area south of the City of Redwood City. The District serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, portions of the City of Redwood City, and Towns of Atherton and Woodside. The District's system discharges wastewater to the City of Redwood City collection system at Veterans Boulevard, from where it is conveyed to the Silicon Valley Clean Water Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is located in the District property between Veterans Boulevard and Highway 101 (Bayshore Freeway) as shown on Attachment 1.

A portion of the District's outfall trunk sewer immediately upstream from the IMS, termed the North Fair Oaks Trunk Sewer (NFOTS), requires replacement. The pipe segments are located along the Union Pacific Railroad (UPRR) tracks, under Highway 101, adjacent to Highway 101 and across Woodside Road into East Bayshore Road (see Attachment 1). The NFOTS was installed in the mid 1900's and has reached the end of its useful life. Continual

maintenance and the risk of exposure in the event of failure is very high within this corridor.

The planned NFOTS replacement would take place within the existing public road right-of-way (City of Redwood City and Caltrans). Construction methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The maximum depth of excavation is approximately 14 feet.

A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

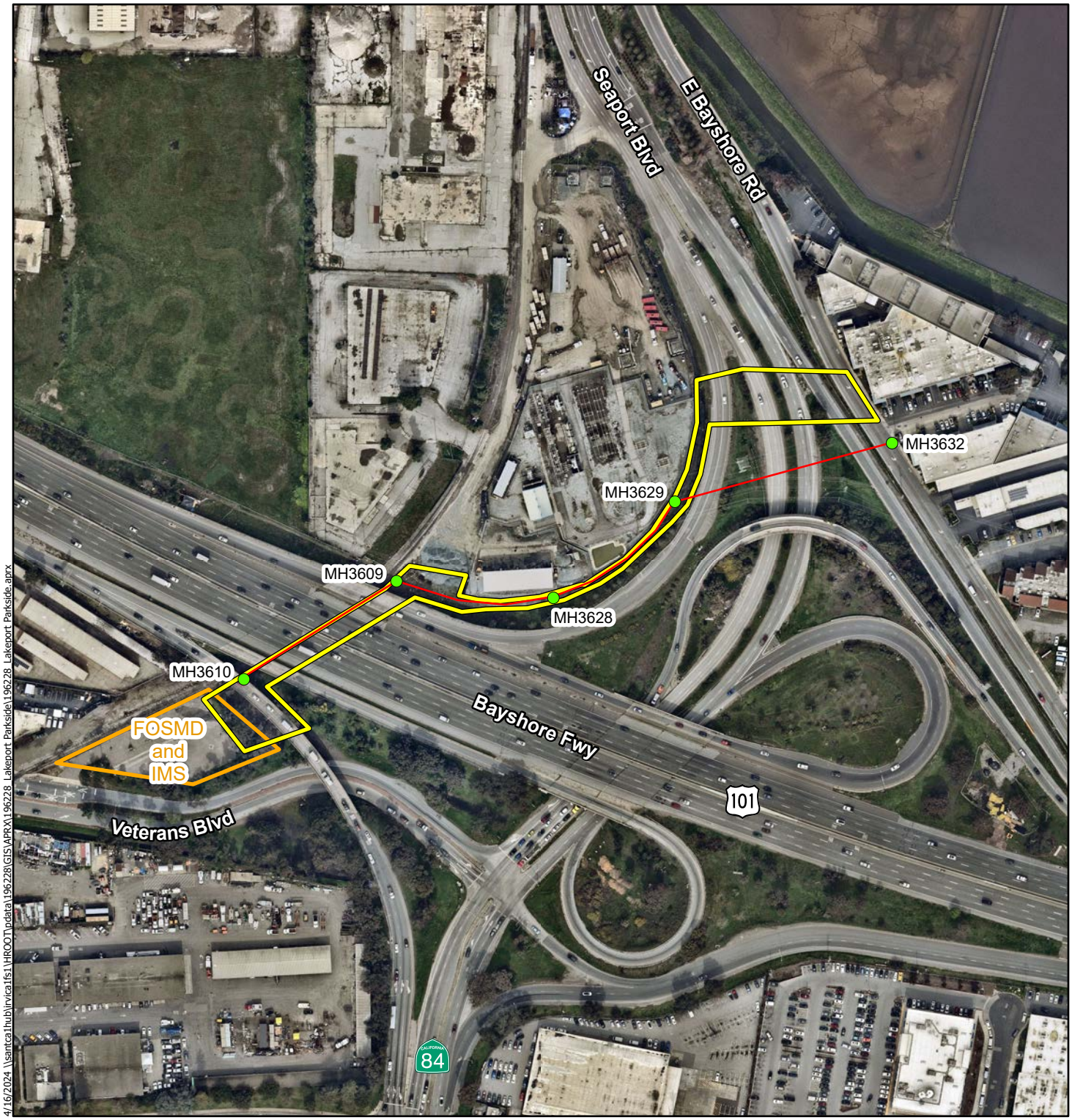
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: chochenyo@AOL.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:22:24 AM
Attachments: FOSMD Trunk Line_signed notices_Part3.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Andrew Galvan, Chairperson
The Ohlone Indian Tribe,
P.O. Box 3388 Fremont CA, 94539

Via US Mail and Electronic Mail to: chochenyo@AOL.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Andrew Galvan, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

The Fair Oaks Sewer Maintenance District (FOSMD or District), which is administered by the County of San Mateo Department of Public Works (County), provides wastewater collection services to an approximate 5-square mile area south of the City of Redwood City. The District serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, portions of the City of Redwood City, and Towns of Atherton and Woodside. The District's system discharges wastewater to the City of Redwood City collection system at Veterans Boulevard, from where it is conveyed to the Silicon Valley Clean Water Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is located in the District property between Veterans Boulevard and Highway 101 (Bayshore Freeway) as shown on Attachment 1.

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maintenance and the risk of exposure in the event of failure is very high within this corridor.

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The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

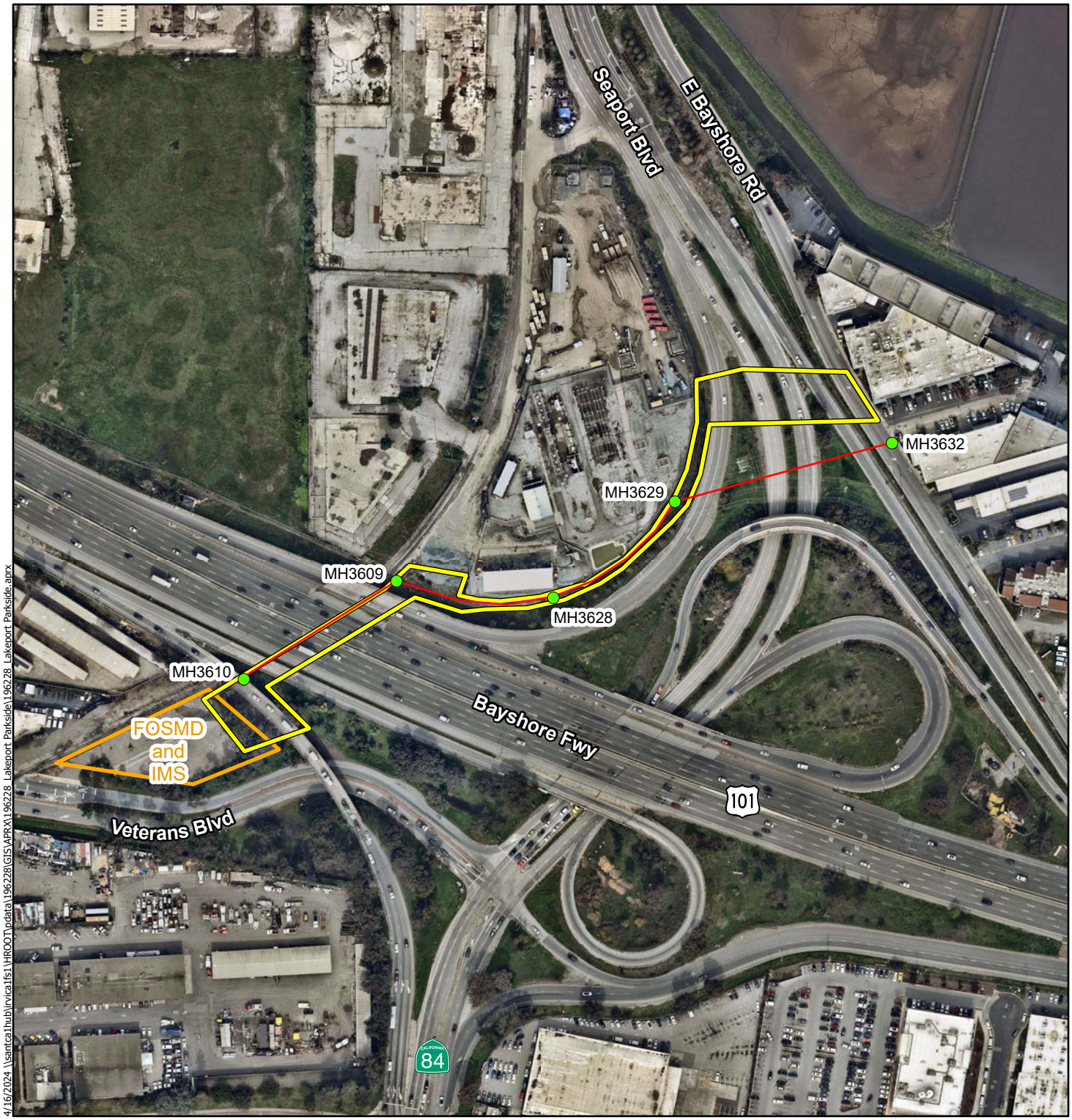
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: thpo@tamien.org
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:21:13 AM
Attachments: FOSMD Trunk Line_signed notices_Part10.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Johnathan Wasaka Costillas, THPO
Tamien Nation
10721 Pingree Road Clearlake Oaks, CA 94523

Via US Mail and Electronic Mail to: thpo@tamien.org

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Johnathan Wasaka Costillas, THPO:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

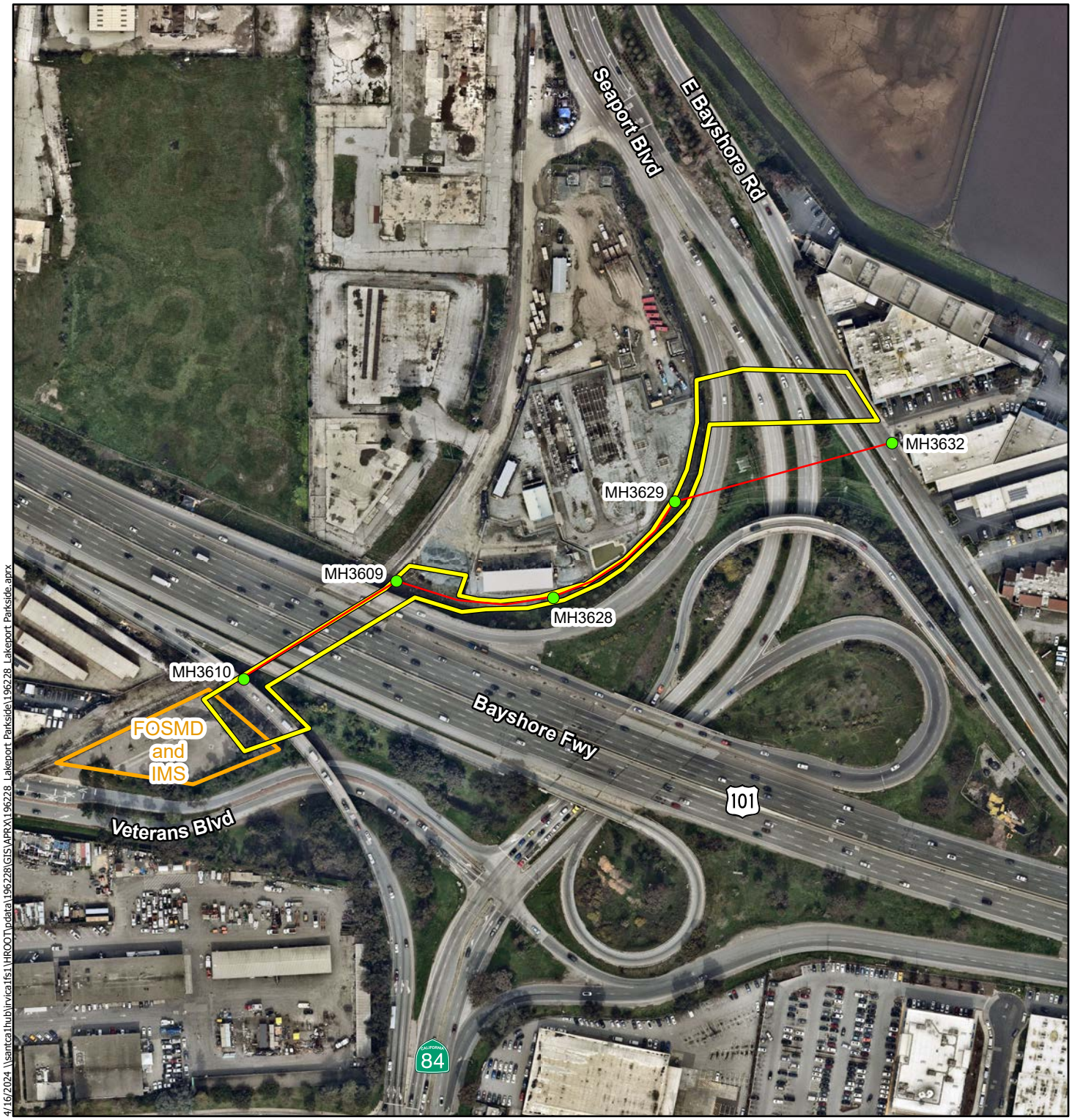
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: kwood8934@aol.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:16:36 AM
Attachments: FOSMD Trunk Line_signed notices_Part5.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Kenneth Woodrow, Chairperson
Wuksachi Indian Tribe/Eshom Valley Band,
1179 Rock Haven Ct. Salinas CA, 93906

Via US Mail and Electronic Mail to: kwood8934@aol.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Kenneth Woodrow, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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maintenance and the risk of exposure in the event of failure is very high within this corridor.

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A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

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Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

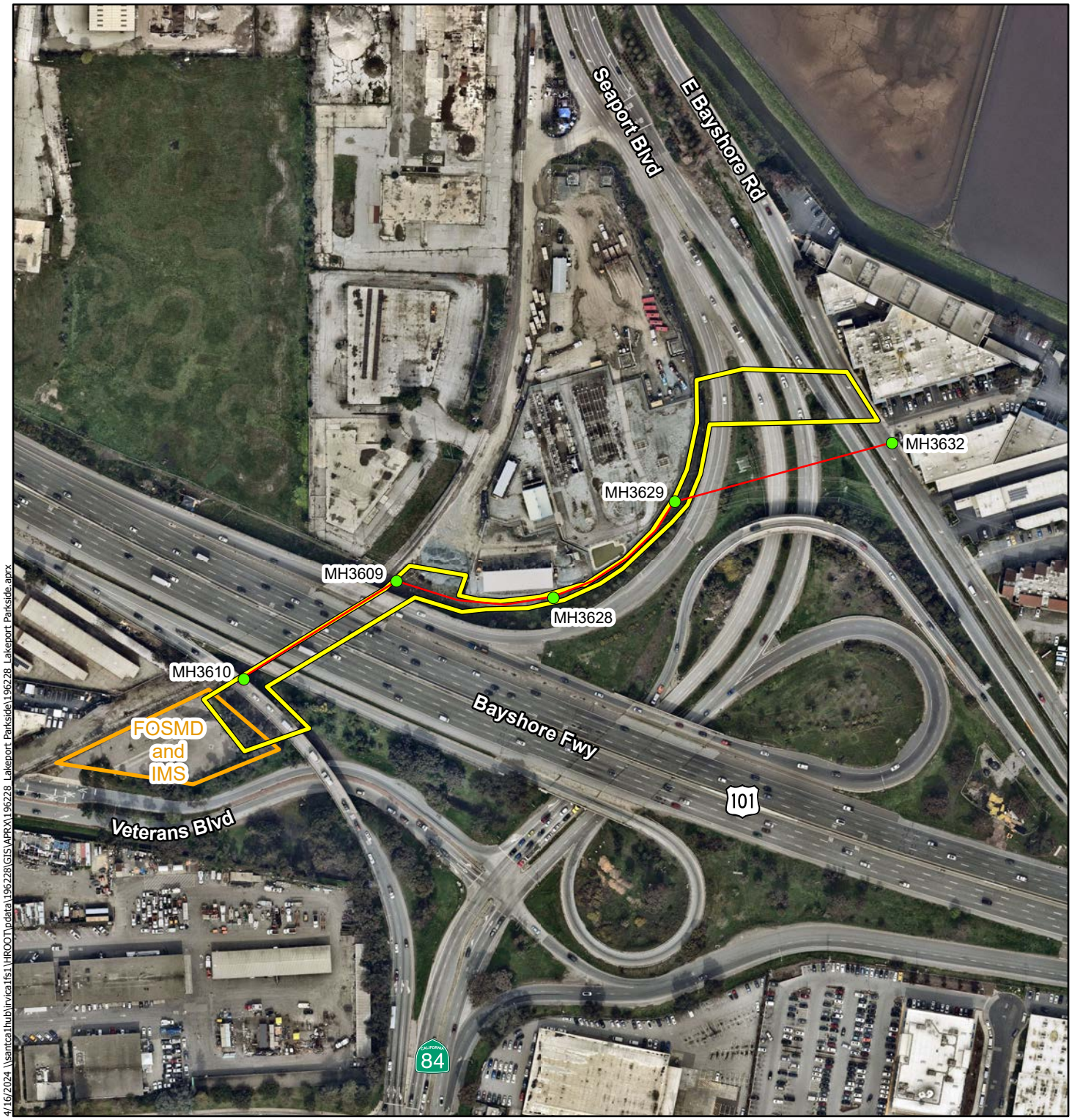
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: qgeary@tamien.org
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:18:08 AM
Attachments: FOSMD Trunk Line_signed notices_Part11.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Quirina Luna Geary, Chairperson
Tamien Nation
PO Box 8053 San Jose, CA 95155

Via US Mail and Electronic Mail to: qgeary@tamien.org

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Quirina Luna Geary, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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Thank you in advance for your time and involvement in our consultation efforts.

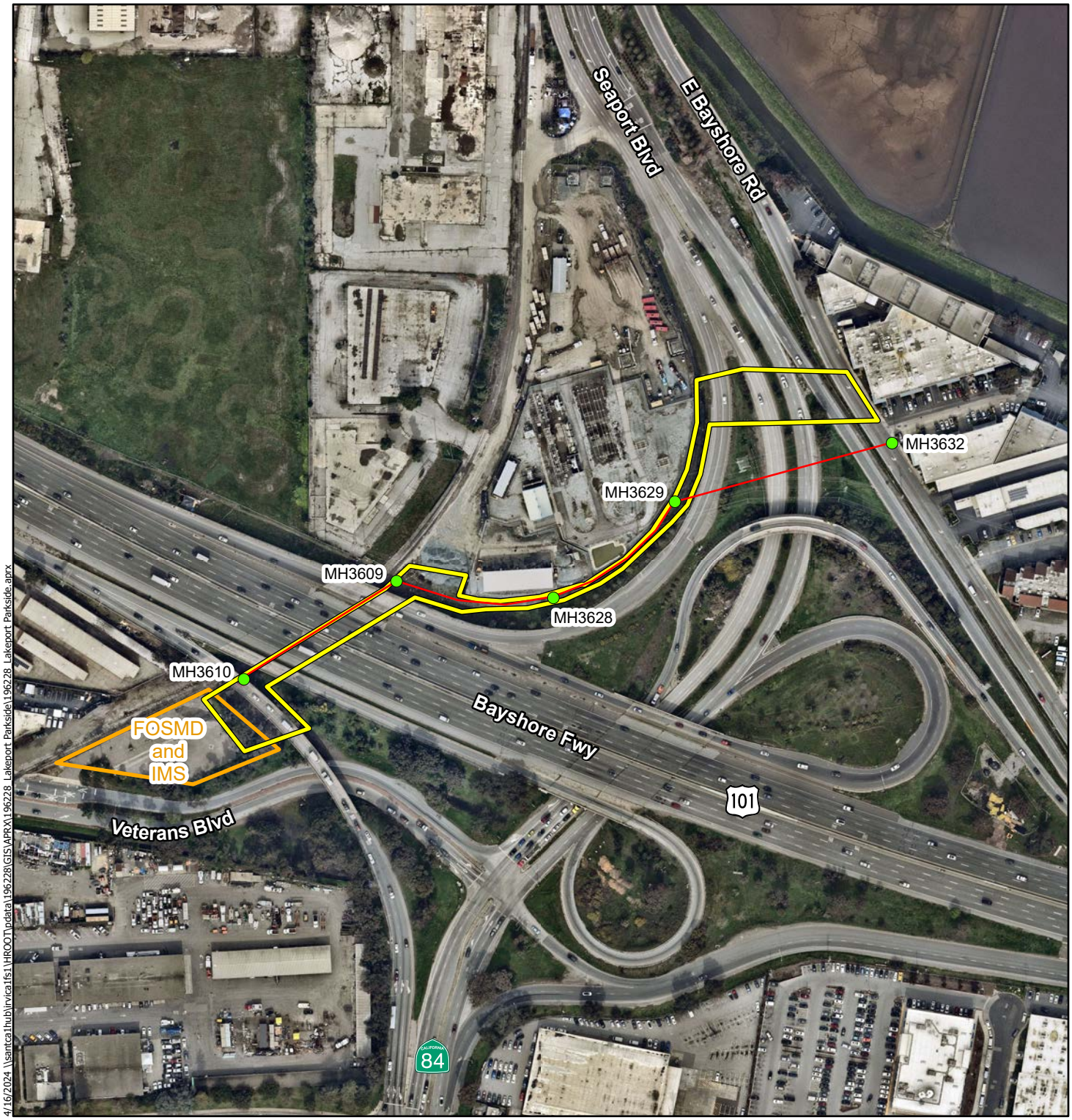
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: rumsen@aol.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:12:42 AM
Attachments: FOSMD Trunk Line_signed notices_Part6.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
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Ann M. Stillman
Director

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555 County Center, 5th Floor
Redwood City, CA 94063
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650-361-8220 F
www.smcgov.org

4/15/2024

Tony Cerda, Chairperson
Costanoan Rumsen Carmel Tribe
244 E. 1st Street Pomona, CA 91766

Via US Mail and Electronic Mail to: rumsen@aol.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Tony Cerda, Chairperson:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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maintenance and the risk of exposure in the event of failure is very high within this corridor.

The planned NFOTS replacement would take place within the existing public road right-of-way (City of Redwood City and Caltrans). Construction methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The maximum depth of excavation is approximately 14 feet.

A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

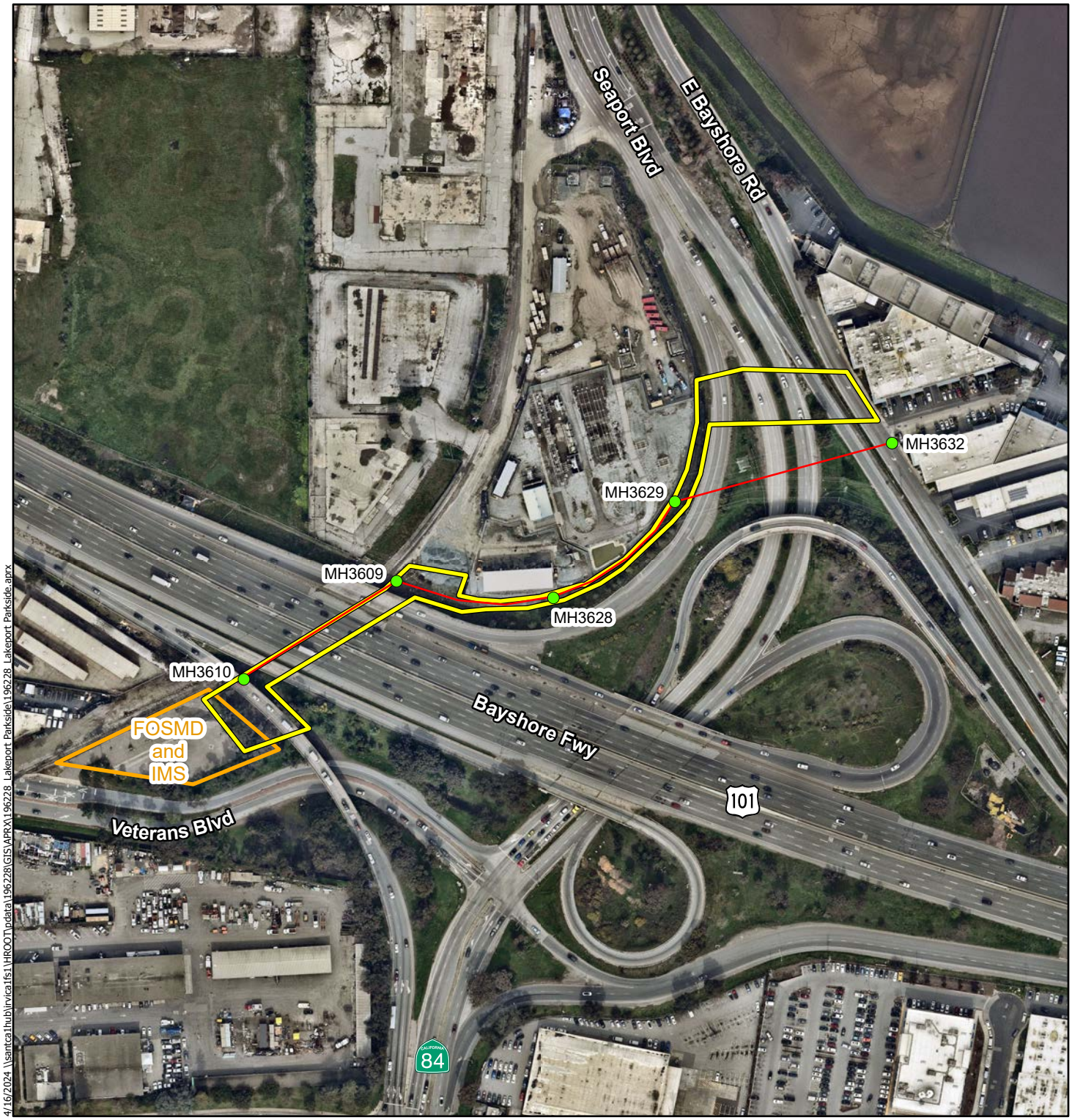
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: dirwin0368@yahoo.com
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:19:41 AM
Attachments: FOSMD Trunk Line_signed notices_Part4.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Desiree Vigil, THPO
The Ohlone Indian Tribe,
1775 Marco Polo Way Apt. 21 Burlingame CA, 94010

Via US Mail and Electronic Mail to: dirwin0368@yahoo.com

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Desiree Vigil, THPO:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

The Fair Oaks Sewer Maintenance District (FOSMD or District), which is administered by the County of San Mateo Department of Public Works (County), provides wastewater collection services to an approximate 5-square mile area south of the City of Redwood City. The District serves approximately 7,200 customers in the unincorporated communities of North Fair Oaks and Sequoia Tract, portions of the City of Redwood City, and Towns of Atherton and Woodside. The District's system discharges wastewater to the City of Redwood City collection system at Veterans Boulevard, from where it is conveyed to the Silicon Valley Clean Water Treatment Plant. An Interceptor Metering Station (IMS) is located at the point of connection to the City's system, which is located in the District property between Veterans Boulevard and Highway 101 (Bayshore Freeway) as shown on Attachment 1.

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maintenance and the risk of exposure in the event of failure is very high within this corridor.

The planned NFOTS replacement would take place within the existing public road right-of-way (City of Redwood City and Caltrans). Construction methods would consist of a combination of open-cut excavation and microtunneling, the latter requiring the excavation of launching and receiving pits on either side of Highway 101. The maximum depth of excavation is approximately 14 feet.

A record search for the project with the Northwest Information Center indicated no prehistoric or archaeological resources of Native American origin were previously recorded in the project site. A record search of the Native American Heritage Commission Sacred Lands File was completed and the results were positive. The NAHC identified your tribe as experts in the region who may have knowledge of and interest in resources located within the project site.

The County would appreciate any input you may provide regarding the presence of sensitive Native American tribal cultural resources within the project location and/or vicinity. Early identification of heritage sites or other concerns will ensure their consideration and protection to the maximum extent feasible.

Michael Baker International has been tasked with conducting the cultural studies for the Project. If you know of any cultural resources that could be impacted by the proposed work please contact Mr. Marc Beherec at marc.beherec@mbakerintl.com or by phone at (951) 296-7561. Also, please do not hesitate to contact Tiffany Deng, Senior Civil Engineer, by email at qdeng@smcgov.org or at (650) 383-4429.

Thank you in advance for your time and involvement in our consultation efforts.

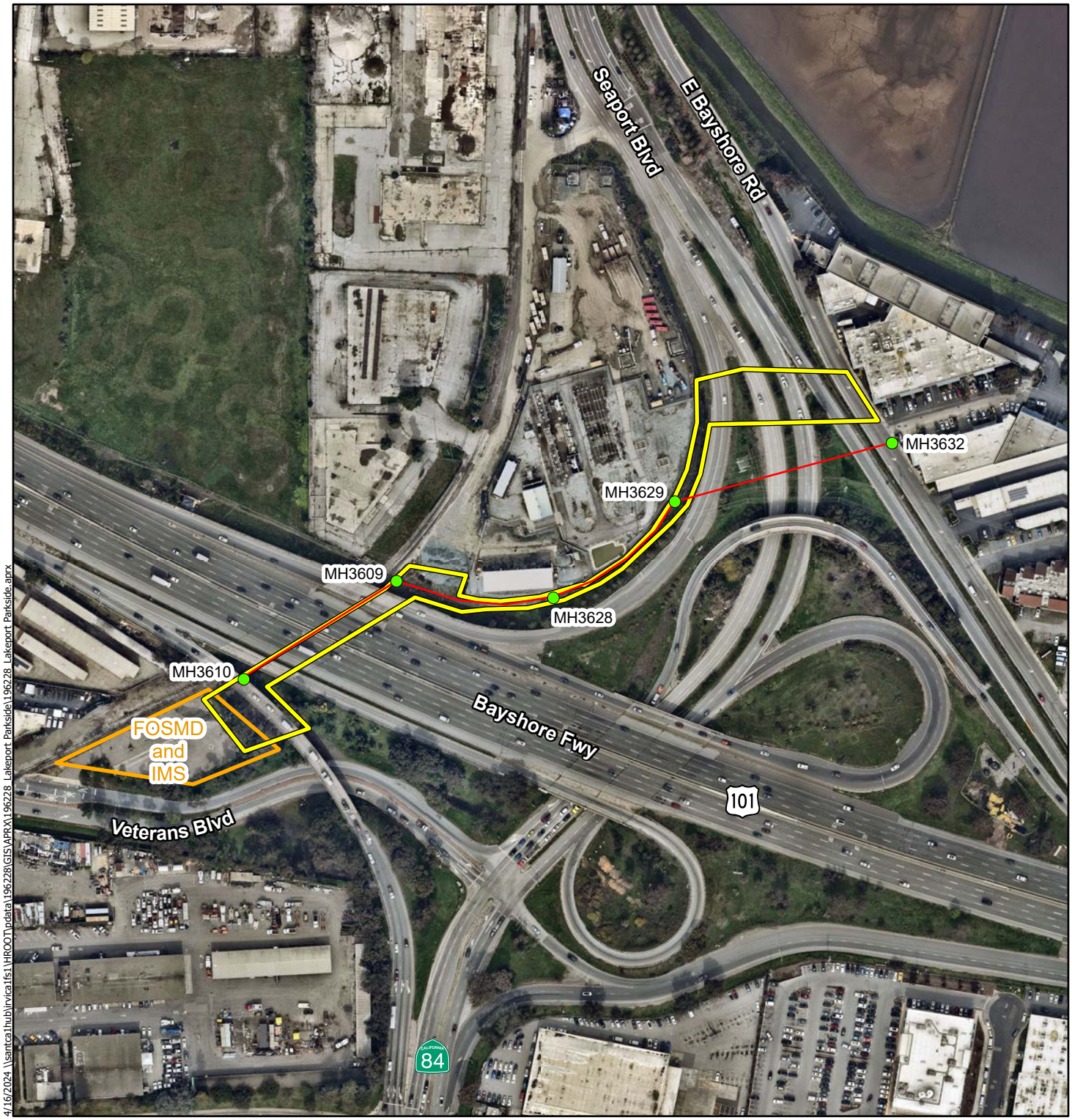
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

From: Garcia, Rachel
To: Lcamarena@tamien.org
Cc: Beherec, Marc; Liska, Shannon; mchow@smcgov.org
Subject: AB52 Consultation Letter
Date: Wednesday, April 17, 2024 9:14:37 AM
Attachments: FOSMD Trunk Line_signed notices_Part12.pdf

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Ann M. Stillman
Director

County Government Center
555 County Center, 5th Floor
Redwood City, CA 94063
650-363-4100 T
650-361-8220 F
www.smcgov.org

4/15/2024

Lillian Camarena, Secretary
Tamien Nation,
336 Percy Street Madera, CA 93638

Via US Mail and Electronic Mail to: Lcamarena@tamien.org

SUBJECT: Tribal Consultation, Fair Oaks Sewer Maintenance District Sanitary Sewer Trunk Line Replacement Project - Phase 1 (Project) (County Project No. SF028, Filing No. E5071)

Dear Lillian Camarena, Secretary:

Pursuant to Public Resources Code (PRC) Section 21080.3.1, and Chapter 532 Statutes of 2014 (i.e., Assembly Bill 52), this letter serves as formal notification of the above-referenced project for tribal consultation purposes. Please respond within 30 days, pursuant to PRC 21080.3.1(d) if you would like to consult on this Project. Please provide a designated lead contact person if you haven't provided that information to us already.

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Thank you in advance for your time and involvement in our consultation efforts.

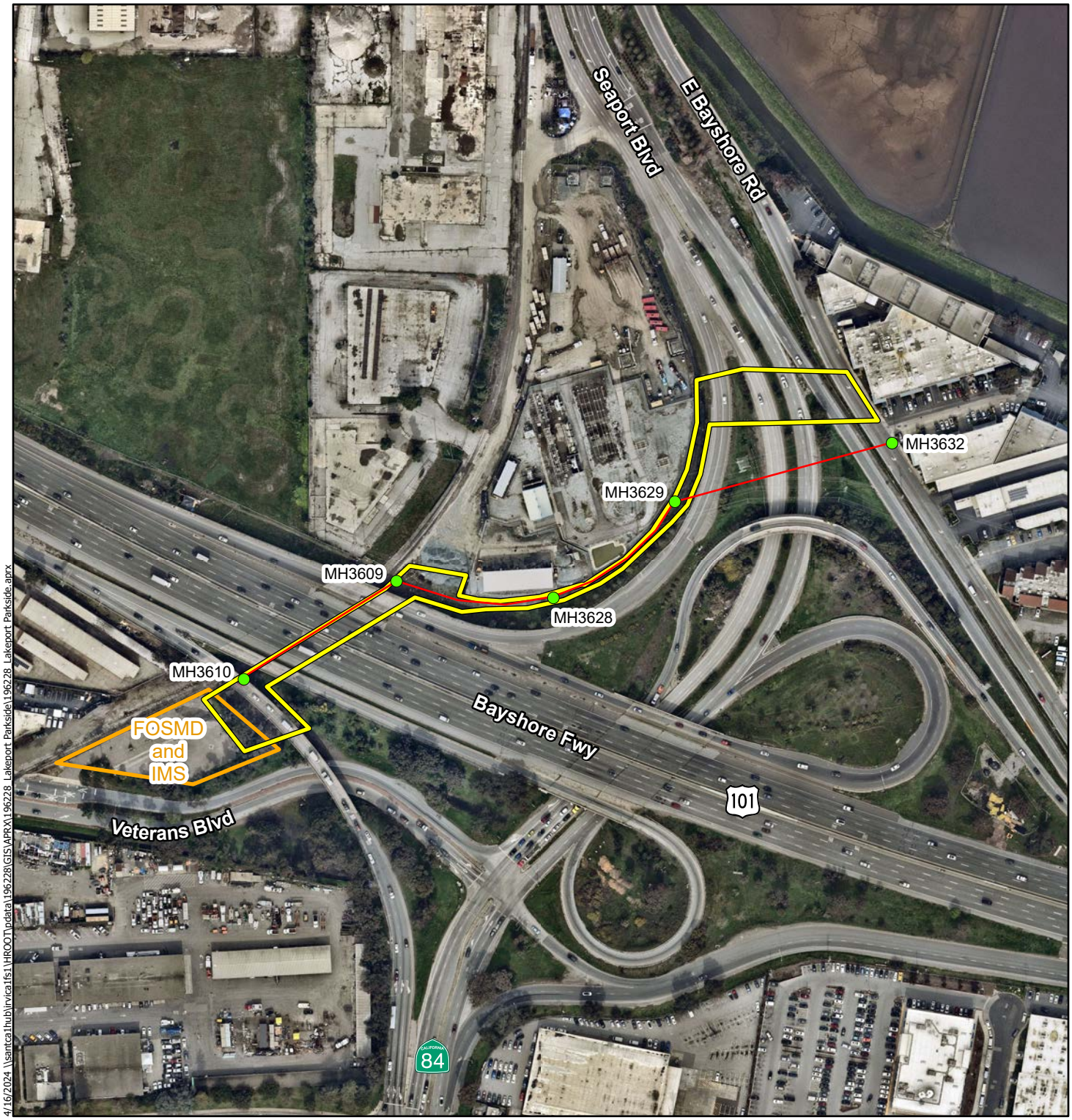
Sincerely,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

Enclosure: Attachment 1

cc: MBI

County



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Legend

- Project Limits
- Manhole
- Sewer Line
- FOSMD and IMS

Michael Baker INTERNATIONAL

0 100 200 Feet

Source: Esri, ArcGIS Online, 2023 Nearmap Imagery: *Redwood City, California*

SANITARY SEWER TRUNK LINE REPLACEMENT PROJECT – PHASE 1
REDWOOD CITY, CA

Project Area

Attachment 1

Michael Baker International
Rachel Garcia, Archaeologist
801 South Grand Avenue Suite 250
Los Angeles, CA 90017

SAN DIEGO CA 920
17 APR 2024 PM 5 L

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA 91

NIXIE 911 DE 1 0004/21/24
RETURN TO SENDER
NO SUCH NUMBER
UNABLE TO FORWARD
BC: 90017472550 *1504-02965-17-40

NSN
9176 9001 7472 25

Michael Baker International
Rachel Garcia, Archaeologist
801 South Grand Avenue Suite 250
Los Angeles, CA 90017

SAN DIEGO CA 920
17 APR 2024 PM 5 L

Indian Canyon Mutsun Band of Costanoan,
Kanyon Sayers-Roods, MLD
1615 Pearson Court
San Jose, CA 951

* 910 NDE 1 623I7204/18/24
RETURN TO SENDER
SAYERS ROODS 'KANYON
MOVED LEFT NO ADDRESS
UNABLE TO FORWARD
RETURN TO SENDER
BC: 90017472550 *1504-03023-17-40

INT
9512 9001 7472 25

Michael Baker International
Rachel Garcia, Archaeologist
801 South Grand Avenue Suite 250
Los Angeles, CA 90017

SAN DIEGO CA 920
17 APR 2024 PM 5 L

Tamien Nation
Johnathan Wasaka Costillas, THPO
10721 Pingree Road
Clearlake Oaks, C

NIXIE 958 DE 1 0004/25/24
RETURN TO SENDER
VACANT
UNABLE TO FORWARD
BC: 90017472550 *1504-03373-17-40

VAC
95423 90017 32725

Beherec, Marc

From: andrew galvan <chochenyo@aol.com>
Sent: Monday, April 29, 2024 5:17 PM
To: Garcia, Rachel; Beherec, Marc
Cc: Liska, Shannon; mchow@smcgov.org; Tiffany Deng; Heyman, Barbara; Hope, John
Subject: Re: EXTERNAL: Re: AB52 Consultation Letter & The Ohlone Indian Tribe

Hi there,

in the furure could you and would you kindly email me - leaving "just" a voice message is unacceptable outreach.

Thank you,

Andrew Galvan
An Ohlone Man
The Ohlone Indian Tribe

On Monday, April 29, 2024 at 03:42:37 PM PDT, Beherec, Marc <marc.beherec@mbakerintl.com> wrote:

Dear Chairman Galvan,

Thank you for your interest in the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project.

Attached, please find the Sacred Lands File search results you requested.

An archaeological constraints study was conducted previously for this project. It is currently being revised, and will be updated with the results of AB 52 consultation. That memo is also attached.

Please feel free to contact me or the County with any information requests, or with concerns about the project.

Marc

Marc Beherec, Ph.D., RPA | Archaeology Group Leader
801 South Grand Avenue, Suite 250 | Los Angeles, CA 90017 | [C] 951-296-7561
marc.beherec@mbakerintl.com | www.mbakerintl.com

Michael Baker | We Make a D

From: andrew galvan <chochenyo@aol.com>
Sent: Thursday, April 25, 2024 6:43 PM
To: Garcia, Rachel <Rachel.Garcia@mbakerintl.com>
Cc: Beherec, Marc <Marc.Beherec@mbakerintl.com>; Liska, Shannon <Shannon.Liska@mbakerintl.com>; mchow@smcgov.org
Subject: EXTERNAL: Re: AB52 Consultation Letter & The Ohlone Indian Tribe

EXTERNAL EMAIL

Hi there,

May I have a copy of the results the Sacred Land Search undertaken by the Native American Heritage Commission including all attachments? specifically The Contact List.

Finally, could you send me a copy of the archaeological report when it is completed.

Thank you,

Andrew Galvan

An Ohlone Man

The Ohlone Indian Tribe

On Wednesday, April 17, 2024 at 09:22:33 AM PDT, Garcia, Rachel <rachel.garcia@mbakerintl.com> wrote:

Greetings,

I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.

Thank you for your attention to this matter.

Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Beherec, Marc

From: Garcia, Rachel
Sent: Friday, April 19, 2024 8:20 AM
To: Beherec, Marc
Cc: Liska, Shannon; mchow@smcgov.org
Subject: FW: EXTERNAL: Re: AB52 Consultation Letter
Attachments: Letter of Response 2024 (3).pdf

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Michael Baker | We Make a D

From: Amah Mutsun <amahmutsuntribal@gmail.com>
Sent: Thursday, April 18, 2024 9:26 AM
To: Garcia, Rachel <Rachel.Garcia@mbakerintl.com>
Subject: EXTERNAL: Re: AB52 Consultation Letter

EXTERNAL EMAIL

Thank you, and please see attached.

On Wed, Apr 17, 2024 at 9:25 AM Garcia, Rachel <Rachel.Garcia@mbakerintl.com> wrote:

> Greetings,
>
> I hope this email finds you well. I am sending this today on behalf of the Fair Oaks Sewer Maintenance District to invite you to consulting regarding the Fair Oaks Sewer Maintenance District Sanitary Sewer Truck Line Replacement Project. Attached, you will find a letter detailing the project's intentions and a map of the project location.
>
> Thank you for your attention to this matter.
>
> Warm Regards,

Rachel Garcia | Archaeologist
801 South Grand Avenue Suite 250 | Los Angeles, CA 90017 | [O] 213-372-1028
rachel.garcia@mbakerintl.com | www.mbakerintl.com

Michael Baker | We Make a D

The Amah Mutsun Tribal Band of San Juan Bautista
&
A.M.T.B. Inc.

Letter of Response

To whom it may concern:

It is our pride and privilege to be of service for any Native American Cultural Resource Monitoring, Consulting and/ or Sensitivity Training you may need or require. We take our Heritage and History seriously and are diligent about preserving as much of it as we can. Construction is a constant in the Bay Area and with that new discoveries are bound to happen. If you choose our services, we will gladly guide all personnel through proper procedures to safely protect and preserve: Culture, Heritage, and History.

It is highly recommended, if not previously done, to search through Sacred Lands Files (SLF) and California Historical Resource Information Systems (CHRIS) as well as reaching out to the Native American Heritage Commission (NAHC) In order to determine whether you are working in a Cultural and/ or Historic sensitivity.

If you have received any positive cultural or historic sensitivity within 1 mile of the project area here are A.M.T.B Inc's and Amah Mutsun Tribal Band of San Juan Bautista's recommendations:

- All Crews, Individuals and Personnel who will be moving any earth be Cultural Sensitivity Trained.
- A Qualified California Trained Archaeological Monitor is present during any earth movement.
- A Qualified Native American Monitor is present during any earth movement.

If further Consultation, Monitoring or Sensitivity Training is needed please feel free to contact A.M.T.B. Inc. or Myself Directly. A.M.T.B. Inc. 650 851 7747

Irenne Zwierlein

Irenne Zwierlein

3030 Soda Bay Road, Lakeport
CA 95453
amtbinc21@gmail.com
(650)851-7447

Amah Mutsun Tribal Band of San Juan Bautista
&
AMTB Inc.

3030 Soda Bay Road Lakeport, CA 95453

Our rates for 2024 are

$275.00 per hour.

4 hours minimum

Cancellations not 48 hours (about 2 days) prior will be charged as a 4-hour minimum. There is a round trip mileage charge if canceled after they have traveled to site.

Anything over 8 hours a day is charged as time and a half.

Weekends are charged at time and a half.

Holidays are charged at double the time.

For fiscal year (FY) 2024, standard per diem rate of $412. ($333. lodging, $79 M&IE).

M&IE Breakdown FY 2023

M&IE Total[1]	Continental Breakfast/ Breakfast[2]	Lunch[2]	Dinner[2]	Incidental Expenses	First & Last Day of Travel[3]
$79.00	$18.00	$20.00	$36.00	$5.00	$59.25

Beginning 2024, the standard mileage rates for the use of a car round trip (also vans, pickups or panel trucks) will be: $.67 cents per mile driven for business use or what the current federal standard is at the time.

Our Payment terms are 5 days from date on invoice.

Our Monitors are Members of the Amah Mutsun Tribal Band of Mission San Juan Bautista.

If you have any questions, please feel free to contact the A.M.T.B. Inc. at the below contact information.

Sincerely,

Irenne Zwierlein

Irenne Zwierlein

3030 Soda Bay Rd, Lakeport
CA 95453
amtbinc21@gmail.com
(650)851-7747

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/29/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Allied Brokers 591 Lytton Avenue Palo Alto CA 94301	PHONE (A/C, No, Ext): (650) 328-1000	FAX (A/C, No): (650) 324-1142
	E-MAIL ADDRESS: BusinessVIP@alliedbrokers.com	

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A :	Scottsdale Insurance Company	41297
INSURER B :	United States Liability Insurance Company	25895
INSURER C :		
INSURER D :		
INSURER E :		
INSURER F :		

INSURED
Amah Mutsun Tribal Band Consulting & Monitoring, LLC
330 Soda Bay Rd
Lakeport CA 95453

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☒ POLICY ☐ PRO-JECT ☐ LOC ☐ OTHER:			CPS7829150	07/09/2023	07/09/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 1,000,000
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ $ $ $
	☐ UMBRELLA LIAB ☐ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☐ RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ N / A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						☐ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ $ $
B	Professional Liability			SP1573468C	06/21/2023	06/21/2024	Each Claim Aggregate	$1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Proof of Coverage

CERTIFICATE HOLDER

FOR YOUR INFORMATION

CANCELLATION

SHOULD ANY OF THE ABOVE-DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Mimi Watson

Michael Baker
INTERNATIONAL

Appendix D:
Geotechnical Evaluation

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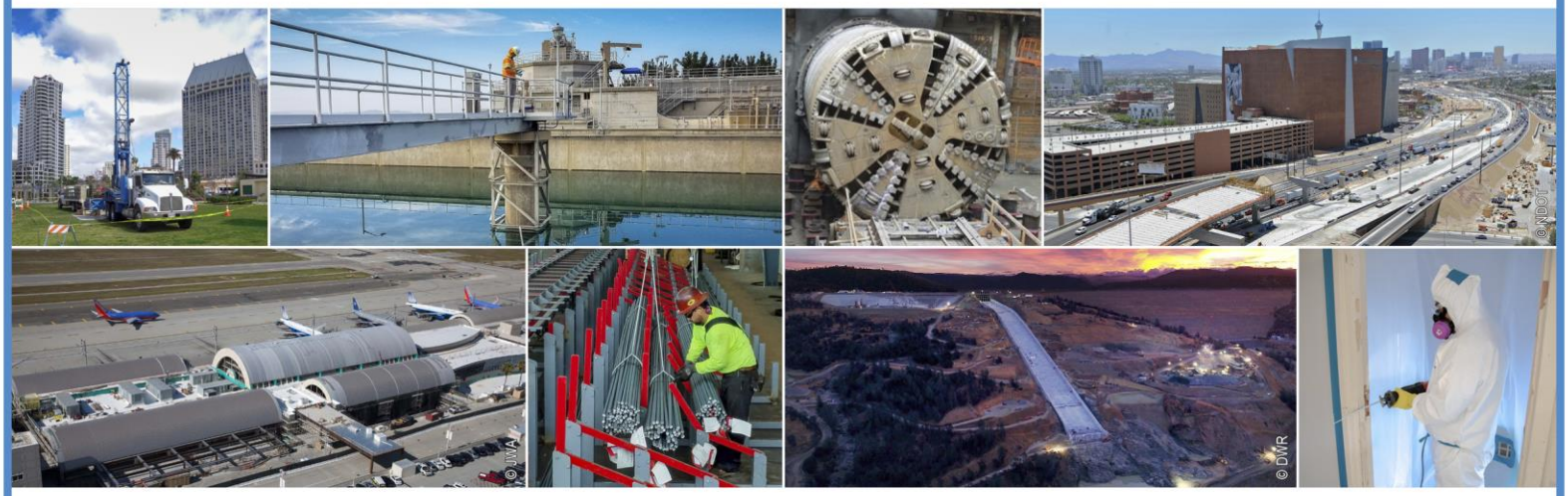
Geotechnical Evaluation
North Fair Oaks
Trunk Sewer Re-Alignment
Redwood City, California

Michael Baker International
9755 Clairemont Mesa Boulevard, Suite 100 | San Diego, California 92124

October 27, 2023 | Project No. 404619001



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

Geotechnical Evaluation
North Fair Oaks
Trunk Sewer Re-Alignment
Redwood City, California

Mr. John H. Harris, PE
Michael Baker International
9755 Clairemont Mesa Boulevard, Suite 100 | San Diego, California 92124

October 27, 2023 | Project No. 404619001

REGISTERED PROFESSIONAL ENGINEER
PETER C. CONNOLLY
GE2707
GEO TECHNICAL
STATE OF CALIFORNIA

Rathna P. Mothkuri, PMP
Project Engineer

Peter C. Connolly, PE, GE
Principal Engineer

RPM/PCC/rk

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1 INTRODUCTION

In accordance with your request, Ninyo & Moore has conducted a geotechnical evaluation for the North Fair Oaks Trunk Sewer Re-alignment project in Redwood City, California (Figure 1). This report presents the findings and conclusions from our evaluation of the subsurface conditions along the proposed alignment, and our geotechnical recommendations for the project.

2 SCOPE OF SERVICES

Our scope of services included the following:

- Review of the technical memorandum for the re-alignment project (MBI, 2022), and readily available background materials including topographic maps, regional fault maps, seismic hazard maps, historic aerial imagery, and geologic maps and reports.
- Geotechnical site reconnaissance to observe the surficial conditions and mark selected boring locations for utility mark-out services.
- Coordination with Underground Service Alert (USA) to locate the underground utilities in the vicinity of the proposed borings.
- Private utility survey by ground penetrating radar and electro-magnetic scanning to check the exploration locations for conflicts with underground utilities.
- Procurement of a boring permit from San Mateo County, and an encroachment permit from Caltrans prior to performing the subsurface evaluation.
- Preparation of traffic control plans for the data collection activities.
- Subsurface exploration consisting of six (6) solid-stem auger borings using a truck-mounted drill rig. A representative of Ninyo & Moore logged the subsurface conditions exposed in the borings and collected soil samples for laboratory testing. The borings were backfilled and patched in accordance with the drilling and encroachment permits. Excess soil cuttings were spread-out around the exploration locations.
- Geotechnical laboratory testing on selected soil samples to evaluate in-situ soil moisture content and dry density, particle size distribution, percent passing the No. 200 sieve, Atterberg limits, direct shear strength, unconfined compressive strength, and unconsolidated-undrained triaxial compressive strength.
- Data compilation and geotechnical analysis of the field and laboratory data.
- Preparation of this report presenting the findings from our subsurface exploration, the results of the laboratory testing, and our geotechnical recommendations for the construction of the project.

3 SITE AND PROJECT DESCRIPTION

The proposed project will replace approximately 1,400 feet of 33-inch diameter reinforced concrete sewer pipeline for the North Fair Oaks Truck Sewer (NFOTS), that was installed in the mid-1970's and has reached end of service life (MBI, 2022), with new 36-inch polyvinyl chloride

(PVC) sewer pipeline. The invert elevation of the new pipe will be consistent with that of the existing pipeline at approximately 7 to 9 feet below mean sea level (MSL). The pipeline under consideration for replacement consists of three adjacent sections.

Section 1 extends from Manhole 3613 to Manhole 3609 along Union Pacific Rail Road (UPRR) tracks, southeast of the right of way, under Highway 101, the northbound on-ramp from Seaport Boulevard, and the southbound off-ramp to Woodside Road and Seaport Boulevard. The structure that carries Highway 101 over the UPRR tracks is supported on pile foundations. The ground elevation along the railroad alignment, is generally consistent with the adjacent grade beyond Highway 101 at about 9 feet above MSL (Google, 2023). The initial 80 feet of the replacement pipeline for Section 1 will be installed by cut and cover. The remainder of the replacement pipeline for Section 1 will be placed in 48-inch steel casing installed by microtunneling approximately 310 feet along a new parallel alignment about 32 feet southeast of the existing pipeline.

Section 2 extends approximately 586 feet between Manhole 3609 and Manhole 3629 along a curved alignment within 20 feet from the toe of the embankment supporting the Highway 101 Northbound on-ramp from Seaport Boulevard. Portions of the embankment toe are supported by a retaining wall. The replacement pipeline will be installed by cut and cover along the existing alignment, possibly within a 48-inch diameter steel casing.

Section 3 extends approximately 427 feet from Manhole 3629, west of the embankment supporting the Highway 101 Northbound on-ramp from Seaport Boulevard, under the on-ramp and Seaport Boulevard to Manhole 3632 near the median of East Bayshore Road. The replacement for Section 3 will be constructed on a modified alignment with the initial 104 feet installed by cut and cover along the toe of the embankment supporting the Highway 101 Northbound on-ramp from Seaport Boulevard to a new manhole. A second segment of replacement pipeline will be placed in 48-inch steel casing installed by microtunneling approximately 456-feet along a new alignment about 25 to 125 feet north of the existing alignment using a central drive pit between southbound Seaport Boulevard and the Highway 101 Northbound on-ramp from Seaport Boulevard to drill west to the new manhole and east to Bayshore Road. A third segment of replacement pipeline about 50 feet in length will be installed by cut and cover under East Bayshore Road to connect the new alignment to the existing sewer pipe.

4 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our field exploration for this study included a site reconnaissance and subsurface exploration consisting of six borings drilled on August 31st, September 1st, and September 5th, 2023. The

approximate locations of the borings are shown on Figure 2. The borings were drilled to depths of up to approximately 31½ feet below ground surface using a Mobile B-24 truck-mounted drill rig equipped with 4-inch diameter solid stem augers. Prior to drilling the borings, Ninyo & Moore marked out the boring locations, notified USA for field marking of the existing utilities, arranged for a private utility survey to check the boring locations for underground utility conflicts, and obtained boring and encroachment permits from San Mateo County and Caltrans, respectively.

Ninyo & Moore logged the subsurface conditions exposed in the borings and collected bulk and relatively undisturbed soil samples from the borings. Soil was field-classified in accordance with the Unified Soil Classification System (USCS) using the visual-manual procedures in Standard D 2488 by the American Society for Testing and Materials (ASTM). Bulk soil samples were collected from the augers and from a split-barrel Standard Penetration Test (SPT) sampler with an external diameter of 2-inch and an unlined internal diameter of 1-3/8 inches. Relatively undisturbed soil samples were collected using a 3-inch external-diameter Modified California split-barrel sampler with stainless steel liners having an inside diameter of approximately 2.4 inches. The split-barrel samplers were driven into the soil at the bottom of the borehole to a depth of 18 inches with a 140-pound safety hammer lifted for 30-inch freefall using a rope and cathead. Sampler penetration resistance, expressed as hammer blows per foot of penetration over the last 12 inches of the 18-inch drive, is recorded on the boring logs. The sampler penetration resistance recorded on the logs has not been corrected for the effects of overburden pressure, sampler size or hammer efficiency. Detailed logs of the borings and sampling procedures are presented in Appendix A along with a description of the sampling procedures utilized. The borings, drilled outside of paved areas, were backfilled with neat cement grout topped with excavated soil on the day the borings were drilled.

Ninyo & Moore performed geotechnical laboratory testing of soil samples recovered from the borings to evaluate in-situ moisture content and dry density, particle size distribution, percent passing the No. 200 sieve, Atterberg limits, direct shear strength, unconfined compressive strength, and unconsolidated-undrained triaxial compressive strength. The results of the in-situ moisture content and dry density tests are presented on the boring logs in Appendix A. The results of the other laboratory tests performed are presented in Appendix B.

5 GEOLOGIC AND SUBSURFACE CONDITIONS

Our findings regarding regional and site geology, subsurface conditions, and groundwater along the project alignment are provided in the following sections.

5.1 Regional Geologic Setting

The project site is located on the western side of the San Francisco Bay in the Coast Ranges Province of California. The Coast Ranges are comprised of several mountain ranges and structural valleys stretching approximately 600 miles from the Oregon border to the Santa Ynez River. They are formed by tectonic processes commonly found around the Circum-Pacific belt. Basement rocks have been sheared, faulted, metamorphosed, and uplifted, and are separated by thick blankets of Cretaceous and Cenozoic sediments that fill structural valleys and line continental margins. The San Francisco Bay Area has several ranges that trend northwest-southeast, parallel to major strike-slip faults such as the San Andreas, Hayward, and Calaveras (Figure 3). Major tectonic activity associated with these and other faults consists primarily of right-lateral strike-slip movement.

5.2 Site Geology

Regional geologic mapping by Dibblee et al. (2007) indicates that the site is underlain by Holocene-age estuarine organic clay and silty clay described as San Francisco Bay Mud (Figure 4). Mapping by Witter et al. (2006) focusing on quaternary geology indicates that the site is underlain by artificial fill over estuarine mud. Historic topographic maps (USGS, 1899) indicate that the project alignment is in an area reclaimed from salt marshes and tidal flats near Redwood Slough.

5.3 Subsurface Conditions

The subsurface exploration for this study encountered fill and marsh deposits. Generalized descriptions of the units encountered are provided in the subsequent sections. Detailed descriptions are presented on the boring logs in Appendix A.

5.3.1 Fill

Fill was encountered in the borings from the ground surface to a depth of approximately 2 feet in Boring B-3 and to a depth of approximately 5 feet below the ground surface in the other borings. As encountered, the fill generally consisted of brown to dark brown, moist, firm to very stiff, lean clay and sandy clay, and loose to medium dense clayey gravel.

5.3.2 Marsh Deposits

Marsh deposits were encountered in the borings below the fill to the depths explored of approximately 30 to 31½ feet below the ground surface. The marsh deposits, as encountered, generally consisted of brown, gray, grayish black, and yellow; moist to wet; firm to very stiff lean and fat clay with sand; and loose to medium dense sand, clayey sand, and clayey gravel.

5.4 Groundwater

Groundwater was encountered in the borings during the field exploration for this study at depths ranging between approximately 10 feet and 15 feet below the ground surface corresponding to elevations between approximately 1 and 6 feet below MSL. Groundwater may rise to a higher elevation than was encountered in the borings due to the relatively slow seepage rate in clay and the short time available for seepage of water into the borings. Regional groundwater records in the seismic hazard zone report for the Palo Alto 7.5-minute USGS quadrangle prepared by the California Geological Survey (CGS, 2006a), indicate that the historic high groundwater level at the site is less than 10 feet below the ground surface.

Variations or fluctuations in the groundwater level across the site and over time may occur due to seasonal precipitation, spatial variations in topography or subsurface hydrogeologic conditions, or as a result of changes to nearby irrigation practices or groundwater pumping. In addition, seeps may be encountered at elevations above the observed groundwater levels due to perched groundwater conditions, leaking pipes, preferential drainage, or other factors not evident at the time of our exploration.

Groundwater may be encountered at depths within and beyond the ranges observed during the subsurface exploration. Piezometers can be installed to further evaluate the depth to groundwater in the study area and fluctuation in groundwater levels over time.

5.5 Seismic Hazards

The project alignment is located within a seismically active region and may experience a relatively high degree of ground shaking following a significant seismic event on a nearby fault. The alignment is not located within an Earthquake Fault Zone established by the state geologist (CGS, 1974) and formerly known as Alquist-Priolo Special Studies Zones to delineate regions of potential ground surface rupture adjacent to active faults. The potential for ground surface fault rupture to impact the project is therefore considered to be low.

Earthquake ground shaking can dynamically compact loose granular soil, leading to ground settlement, and can trigger a rapid loss of shear strength in saturated, loose, granular soils of low plasticity (liquefaction) or in wet, sensitive, cohesive soils (cyclic softening). Liquefaction and cyclic softening can result in a loss of foundation bearing capacity or lateral spreading of sloping or unconfined ground. Liquefaction can also generate sand boils leading to subsidence at the ground surface.

The site is located within a seismic hazard zone for liquefaction as mapped by the California Geological Survey (2006). Regional studies of liquefaction susceptibility (Witter et al., 2006; Knudsen et al., 2000) indicate that the site is in an area considered to be moderately to very highly susceptible to liquefaction. However, since dynamic settlement and liquefaction-related impacts to the proposed pipeline replacement pose negligible hazard to human life, repairing or reconstructing the pipeline following a significant earthquake is expected to be preferable to mitigating the potential for damage by ground improvement or deep foundations.

5.6 Excavation Characteristics

We anticipate that the proposed project will include excavations of up to approximately 18 feet deep for cut and cover pipeline installation and at jacking/receiving pits for microtunneling. The geologic units encountered during our subsurface exploration over this depth interval included fill and marsh deposits that generally consisted of firm to very stiff lean and fat clay with sand, and loose to medium dense sand, clayey sand, and clayey gravel. We anticipate that conventional earthmoving equipment in good working condition should be able to make the proposed excavations. Excavations in the fill may encounter obstructions consisting of cobbles, debris, rubble, utilities, or over-sized materials that may require special handling or demolition equipment for removal. Pre-drilling with sand backfill to facilitate installation of sheet piles past obstructions may be needed if sheet piles are used for shoring.

Near-vertical cuts in these deposits may not be stable particularly if the excavation is exposed to rainfall/runoff, encounters seepage or cohesionless soil, or extends below groundwater. Groundwater was encountered at depths between approximately 10 feet and 15 feet below the ground surface during subsurface exploration for this study. Variations in groundwater levels within and outside this range should be anticipated. Dewatering measures may be needed to provide a dry excavation in which to work. Excavations that extend near or below the water table may experience “quick” conditions or bottom instability. Recommendations for dewatering and excavation stabilization are presented in Sections 7.3 and 7.1, respectively. Excavated materials may also need to be dried out before reuse as fill.

6 CONCLUSIONS

Based on our review of the referenced documents, field reconnaissance, subsurface evaluation, and laboratory testing, it is our opinion that the proposed pipeline replacement project is geotechnically feasible. Key findings from our geotechnical evaluation and subsurface exploration include the following:

- The subsurface exploration for this study encountered fill over marsh deposits. The fill, as encountered, generally consisted of firm to very stiff, lean clay and sandy clay, and loose to medium dense clayey gravel. The marsh deposits, as encountered, generally consisted of firm to very stiff lean and fat clay with sand; and loose to medium dense sand, clayey sand, and clayey gravel.

- Groundwater was encountered in the borings during the field exploration for this study at depths ranging between approximately 10 feet and 15 feet below the ground surface corresponding to an elevation between approximately 1 and 6 feet below MSL. Based on regional mapping (CGS, 2006a), the historic high ground water level in the area is less than 10 feet below the ground surface. Variation and fluctuation in groundwater levels should be anticipated as discussed in Section 5.4.

- The proposed replacement pipeline alignment will extend below the groundwater level encountered in our exploratory borings. Recommendations for dewatering to create a dry excavation for installation are provided in Section 7.3.

- Excavations in the fill material may encounter cobbles, debris, rubble, oversize material, underground utilities, buried objects, or other potential obstructions.

- Due to the shallow groundwater and granular soils encountered, excavations are likely to be unstable and prone to sloughing. Recommendations for excavation stabilization are presented in Sections 7.1 and 7.2.

7 RECOMMENDATIONS

7.1 Excavation Stabilization and Temporary Slopes

Excavations should be stabilized in accordance with the Excavation Rules and Regulations (29 Code of Federal Regulations, Part 1926) developed by the Occupational Safety and Health Administration. In general, stabilization may consist of shoring sidewalls or laying slopes back. Site soil above groundwater may be considered an OSHA Type C material with an allowable temporary slope gradient of 1½:1 (horizontal to vertical). Dewatering should be performed as-needed to depress groundwater levels below the bottom of excavations. Excavations near railroad tracks may be stabilized by laying slopes back within Zone B but not within Zone A as defined in the Guidelines for Temporary Shoring (UPRR/BNSF, 2021). Zone A is the area more than 15 lateral feet from track centerline and below a plane offset 15½ feet laterally from track centerline and 1¾ feet below top of tie elevation where the plane extends down and away from the track at a 2:1 (horizontal to vertical) slope. Zone B is the area above the 2:1 plane offset 15½ feet laterally from track centerline and 1¾ feet below top of tie elevation. The OSHA material type classifications presented and corresponding allowable temporary slope layback inclinations are based on the limited subsurface data provided by the exploratory borings and reflect the influence of the environmental conditions that existed at the time of the exploration. Excavation stability, material classifications, and allowable slopes should be re-evaluated and revised, as-needed, by

the contractor during construction. Excavations should be evaluated daily by a competent person for indications of possible instability or collapse.

7.2 Excavation Shoring

In general, excavations may be stabilized with vertical shoring. Excavations near railroad tracks within Zone A should be stabilized by shoring. As defined by the Guidelines for Temporary Shoring (UPRR/BNSF, 2021), Zone A is the area more than 15 lateral feet from track centerline and below a plane offset 15½ feet laterally from track centerline and 1¾ feet below top of tie elevation where the plane extends down and away from the track at a 2:1 (horizontal to vertical) slope.

Excavation shoring should be designed by a suitably qualified professional engineer. The designer should estimate shoring wall deflection and ground settlement, and adjust the design as needed so that horizontal wall deflection is not more than 1 percent of excavation depth for shoring more than 25 feet from sensitive improvements, or not more than ½ inch for shoring between 18 and 25 feet from railroad tracks, existing structures, or other sensitive improvements; and the horizontal and vertical rail movement due to ground settlement is not more than ¼-inch. The degree of wall deflection and ground settlement is influenced by the type of shoring system, soil conditions, and the sequencing of excavation and installation of lateral support. Potential causes of settlement that should be considered include loss of lateral support following excavation, vibration during the installation of shoring elements installed by vibratory or percussive methods, other construction induced vibrations, dewatering, and removal of the support system. Shoring should be sufficiently tight to reduce washout from behind the shoring. Ground settlement due to shoring wall movement may be considered equivalent to wall deflection adjacent to the wall with proportional reduction to negligible values at a lateral distance from the wall equivalent to 300 percent of the excavation depth.

Sheet piles may be used as continuous vertical shoring for the proposed excavations. Vertical shoring systems with discontinuous support below the bottom of excavation, such as soldier piles with lagging or slide rails with panels, may be used for excavations above groundwater or where dewatering is performed to depress groundwater levels outside the excavation to 2 feet below the bottom of the excavation. Cantilever shoring systems may be designed for active lateral earth pressures. Alternatively, cantilever shoring systems may be designed for at-rest lateral earth pressures to reduce the horizontal movement of the shoring wall. To reduce at-rest lateral earth pressures to the active condition, a horizontal wall movement equivalent to 1 percent of the retained soil height may be assumed for design. Internally-braced shoring systems, with one or more levels of lateral support installed, should be designed for apparent lateral earth pressures above the bottom of the excavation and active or at-rest lateral earth pressures on shoring

elements below the bottom of the excavation. Internally-braced shoring systems, with one level of lateral support, may be designed for active lateral earth pressures above the bottom of the excavation in lieu of apparent lateral earth pressures where the wall movement is sufficient to mobilize the active condition as described above.

Cantilever sheet pile walls should not be used for vertical shoring where the excavation depth (or height of retained soil) exceeds 10 feet in Zone A or 12 feet in Zone B. Cantilever solider pile walls with lagging, or other discontinuous vertical shoring, should not be used where the excavation depth (or height of retained soil) exceeds 8 feet in Zone A or 12 feet in Zone B.

Passive lateral earth pressure may be considered when evaluating the lateral resistance of vertical shoring systems that extend below the bottom of the excavation. Passive lateral earth pressure should be neglected to a depth of 1 foot below the bottom of the excavation for continuous sheet pile shoring systems. For soldier piles, slide rails, or other vertical shoring systems with discontinuous elements below lagging or panels, passive lateral earth pressure should be neglected to a depth below bottom of excavation equivalent to 150 percent of the nominal element width with an effective element width for passive pressure equivalent to the product of the nominal element width and an arching factor of two. The nominal element width is the width of the embedded pile/rail or the diameter of the drilled hole where the element is installed in a drilled hole that is backfilled with concrete that develops a compressive strength of 3,000 pounds per square inch (psi) at 28 days and the concrete cover around the element is not less than 3 inches. The effective element width should not exceed the center-to-center spacing of the soldier pile or other discontinuous vertical element. The effective element width for active earth pressures, or at-rest earth pressures where considered, on soldier piles or other discontinuous vertical elements below lagging is the nominal element width as described above (i.e. the arching factor for active or at-rest earth pressures is one).

Recommended lateral earth pressures for excavation shoring above groundwater are provided in Table 1. Earth pressure diagrams for continuous sheet pile shoring that extends below groundwater are presented on Figure 6 for cantilever shoring and on Figure 7 for braced excavation shoring. For soldier pile walls with lagging or other discontinuous shoring where dewatering is performed, as needed, to lower the groundwater level outside the excavation to 2 feet below the bottom of the excavation, hydrostatic pressures may be neglected but passive and active or at-rest equivalent fluid lateral earth pressures should be reduced by 50 percent below the assumed groundwater level.

Table 1 – Lateral Earth Pressures for Excavation Shoring Above Groundwater				
Backfill or Ground Slope (H:V)	Active Lateral Earth Pressure[1] (psf/foot depth)	At-Rest Lateral Earth Pressure [2] (psf/foot depth)	Passive Lateral Earth Pressure[3] (psf/foot depth)	Apparent Lateral Earth Pressure[4] (psf)
Level	47	67	205	31·H

1 Equivalent fluid active lateral earth pressure computed by Rankine earth pressure theory for effective friction angle of 26 degrees and backfill unit weight of 120 pounds per cubic foot (pcf).
2 Equivalent fluid at-rest lateral earth pressure computed for effective friction angle of 26 degrees, overconsolidation ratio of one, and backfill unit weight of 120 pounds per cubic foot (pcf).
3 Equivalent fluid passive earth pressure computed by Rankine earth pressure theory for effective friction angle of 26 degrees and backfill unit weight of 120 pounds per cubic foot (pcf). Includes Safety Factor of 1.5.
4 Rectangular distribution assumed for apparent lateral earth pressure. “H” is wall height above excavation line.

Excavation shoring that retains level ground should be designed to resist construction or live load surcharges on the backfill. The uniform lateral earth pressure due to a backfill surcharge of 240 psf equivalent to two feet of stockpiled soil is 94 psf for yielding walls with active earth pressures, or 134 psf for non-yielding walls with at-rest earth pressures, or braced excavation shoring with apparent earth pressures. Excavation shoring near roadways open to traffic should consider lateral earth pressure due to traffic. The lateral earth pressure due to traffic may be evaluated as a strip surcharge of 300 psf. Lateral earth pressure diagrams for a 25-footwide, 300-psf traffic surcharge at various setback distances are presented on Figure 8. The designer may interpolate between the diagrams provided for an intermediate setback distance or use the relationship provided on the figure to evaluate the lateral earth pressure for a revised centerline angle and revised strip width angle (α and β, respectively, as defined on the figure) corresponding to a wider or narrower strip. The earth pressure diagrams presented on the figure may be used where top of shoring elevation is level with top of pavement. Where top of shoring elevation is below top of pavement, the designer may use the relationship provided on the figure to evaluate the lateral earth pressure for revised centerline and strip width angles evaluated at top of shoring elevation for a projected strip width and a reduced surcharge intensity corresponding to the projected strip width. The projected strip width is equivalent to the sum of the strip width at top of pavement and the grade differential between top of shoring and top of pavement.

Excavation shoring near embankments should consider lateral earth pressure due to the embankment surcharge. The lateral earth pressure due to an embankment may be evaluated as a strip surcharge with an intensity equivalent to the product of the average height of fill across the base width of the embankment and a unit weight of 125 pcf. The designer may use the relationship provided on Figure 8 to evaluate the lateral earth pressure due to an equivalent-strip embankment

surcharge for the average intensity described above, a centerline angle evaluated at the midpoint of the embankment base, and a strip width angle evaluated for the embankment base width.

Excavation shoring within Zone A should also be designed to resist a railroad live load surcharge. Lateral earth pressure diagrams for a Cooper E80 live load surcharge at various setback distances are presented on Figure 9. The earth pressure diagrams presented on the figure may be used where top of shoring elevation is approximately level with bottom of tie elevation. Where top of shoring elevation is below bottom of tie elevation, the designer may use the relationship provided on the figure to evaluate the live load lateral earth pressure for revised centerline and strip width angles evaluated at top of shoring elevation for a projected strip width and a reduced surcharge intensity corresponding to the projected strip width. The projected strip width is equivalent to the sum of the tie length and the grade differential between top of shoring and bottom of tie elevation. The reduced surcharge intensity is proportional to the ratio of the tie length to the projected strip width. The lateral earth pressures from the railroad live load surcharge may be assumed to act in a direction perpendicular to the track alignment.

Sheet piles that extend below the mudline may be needed for excavations below the groundwater table to reduce the potential for “quick” conditions or bottom instability. We estimate that an embedment depth below bottom of excavation equivalent to 125 percent of the head differential after dewatering may be needed to provide a suitable factor of safety against piping for an unbalanced head of up to 10 feet and an excavation width of no more than 15 feet.

The shoring parameters presented in this report are preliminary design criteria, and the shoring designer should evaluate the suitability of these parameters and make appropriate modifications for their design.

7.3 Construction Dewatering

Groundwater was encountered during the subsurface exploration along the alignment at depths ranging between approximately 10 feet and 15 feet below the ground surface corresponding to elevations between approximately 1 and 6 feet below MSL. Variation and fluctuation in groundwater levels, within and beyond the range observed, should be anticipated as discussed in Section 5.4. Water intrusion into the excavations may also occur as a result of rainfall and surface runoff. The contractor should be prepared to take appropriate dewatering measures in the event that water intrudes into the excavations. Considerations for construction dewatering should include anticipated drawdown, volume of pumping, potential for settlement, and groundwater discharge. Disposal of groundwater should be performed in accordance with the guidelines of the Regional Water Quality Control Board.

When excavating near or below groundwater, the dewatering system should depress the water level below the bottom of the cut to reduce the potential for subgrade instability and washout from behind sheeting or sloughing of exposed trench walls. The dewatering system should maintain the water level about 2 feet below the bottom of excavation to provide a stable trench bottom when placing and compacting fill. Sump pumps, well points, deep wells, geotextile-geonet composites, perforated underdrains, or stone blankets should be used, as appropriate, to drain water from below the bedding and foundation material. Perforated underdrains and open-graded stone blankets should be wrapped in a suitable geotextile filter to reduce the potential for the removal of fines and subsequent creation of voids in the overlying and adjacent materials. The operation of the dewatering system should continue during and after the installation of the pipe and embedment until sufficient backfill has been placed to balance uplift due to buoyancy.

7.4 Lateral Bearing Pressure for Jacking

An equivalent fluid lateral earth pressure of 205 psf per foot below ground surface or 103 psf per foot below the groundwater level may be assumed for evaluating the lateral support for jacking to drive the micro-tunnel boring machine and install casing. The recommended lateral earth pressures include a safety factor of 1.5.

7.5 Backfill and Compaction

Pipelines installed by cut-and-cover methods should be supported on bedding material that extends from the springline of the pipe to 6 inches below the pipe. The bedding should consist of controlled low strength material (CLSM) where the lateral clearance between the pipe and the edge of the excavation is less than 6 inches or more than 12 inches. CLSM should consist of a mixture of water, Portland cement, fly ash, and sound aggregate that flows without segregation of aggregates and produces an unconfined compressive strength of 50 to 300 pounds per square inch (psi) with a compressive strength of 50 psi developed about 1 hour after placement. Bedding may consist of granular material in lieu of CLSM where the lateral clearance between the pipe and the edge of the excavation is between 6 and 12 inches. The granular bedding material should consist of aggregates ordinarily used for highway base and subbase with 100 percent by dry weight passing the 1 inch sieve, 60 to 90 percent passing the ½-inch sieve, 20 to 40 percent passing the ⅜-inch sieve, 10 to 20 percent passing the No. 4 sieve, and no more than 5 percent passing the No. 200 sieve.

Prior to placement of bedding material, excavation subgrade should be compacted to a firm condition as needed. Debris, organic matter, or other unsuitable material exposed at the bottom of the excavation should be removed and replaced with additional bedding. Where a firm

subgrade condition cannot be achieved by compaction before placement of bedding, the unstable subgrade should be overexcavated to a depth of 12 inches and backfilled with 6 inches of ¾-inch crushed rock that is compacted into the subgrade followed by 6 inches of granular bedding material that is compacted to a firm condition. Granular bedding material placed on firm subgrade or bedding material should be shoveled under pipe haunches, as needed, and compacted to 95 percent of the reference density as evaluated by the American Society for Testing and Materials (ASTM) standard D1557 by manual tampers or mechanical compactors.

Pipeline excavations, including the cut-and-cover trenches and boring/receiving pits may be backfilled, after pipeline and bedding installation, with granular site soil previously excavated for the pipeline installation provided that the excavated soil is screened to remove stones and clods retained on the 1½ inch sieve. Alternatively, the excavations may be backfilled with CLSM or imported granular fill that is well-graded and free of organic material, stones or clods retained on the 1½ inch sieve, frozen lumps, debris, or excessive moisture. Granular fill should be compacted in lifts by manual tampers or mechanical compactors to 95 percent of the reference density as evaluated by ASTM D1557. The allowable uncompacted lift thickness of granular fill or bedding depends on the type of compaction equipment utilized, but generally should not exceed 6 inches in loose thickness. Lift thickness of CLSM should not exceed 3 feet.

7.6 Construction Monitoring and Documentation

Construction monitoring consisting of condition surveys, and monitoring of vibration, ground deformations, and groundwater levels, is recommended to enable the implementation of proactive mitigative action and facilitate the resolution of construction claims, particularly where construction activities will be close to improvements that are sensitive to ground deformation.

7.6.1 Documentation of Existing Conditions

Pre-construction condition surveys should be performed on structures and improvements within approximately 100 feet of the proposed excavations. Pre-construction condition surveys should include video surveys of existing structures, photo documentation and measurement of existing cracks and separations, and the establishment of monitoring points at significant cracks. In addition, interviews should be conducted with utility owners so that existing knowledge about the age, type, and maintenance history of nearby utilities is available prior to construction.

7.6.2 Vibration Monitoring

Seismographs may be used in the early stages of construction to monitor the vibrations from the construction activities. Seismographs, if used, should be located near structures and improvements next to the construction activities. Additional seismographs may be located at various structures and improvements farther from construction activities to monitor vibrations as a function of distance from the sites. Periodic vibration monitoring is recommended during other construction activities. After review of the data obtained, the number of seismographs may be reduced at the discretion of the client and the geotechnical consultant.

7.6.3 Ground Deflection

An array of survey points should be installed on excavation shoring walls, on the ground behind shoring walls to monitor vertical and lateral deflection, on the ground near buildings of concern to check for settlement due to dewatering, and on the ground along the tunneling alignment to check for subsidence during excavation. The survey points should be established before the excavation begins and monitored daily during excavation and periodically thereafter until the temporary shoring is removed and dewatering is completed. The contractor should be responsible for maintaining the total wall deflection and ground settlement within tolerable levels. If the amount of movement reaches 50 percent of the tolerable deflection, the contractor should review the construction methods, modify construction procedures, or implement mitigative action as appropriate.

Consideration should be given to placing survey monitoring points on nearby structures to monitor the performance of the structures. In this way, a record of the performance of the structure will be maintained and available. This information, in conjunction with pre-construction surveys, is helpful in reducing potential claims and expediting resolution of legitimate claims.

7.6.4 Groundwater Levels

Consideration should be given to installing piezometers near improvements sensitive to ground settlement. The piezometers should be monitored before and during construction dewatering to document groundwater levels, check that the drawdown is consistent with the estimated drawdown from the dewatering analysis, and enable the implementation of mitigation measures where the drawdown exceeds tolerable levels.

7.7 Construction Observation and Testing

The recommendations provided in this report are based on subsurface conditions encountered in discrete and widely spaced borings. During construction, the geotechnical engineer-of-record (GEOR) should be retained to check that the subsurface conditions exposed in the excavations are consistent with the conditions encountered in the borings and evaluate if modifications to the recommendations provided are needed. Specifically, the GEOR should be retained to perform the following services during construction:

- Observe excavation subgrade for stability and removal of unsuitable materials.
- Evaluate ground conditions exposed in excavations.
- Review and evaluate data from the construction monitoring program.
- Check and test imported bedding and backfill materials prior to their use as fill.
- Observe excavation backfill and compaction.
- Perform field moisture and density tests to evaluate the moisture content of the backfill and the level of compaction achieved.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of the project. If another geotechnical consultant is selected as the GEOR, we request that the selected consultant provide a letter to Michael Baker International and the owner (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, that they are in full agreement with the recommendations contained in this report and that they are assuming the role and responsibilities of the geotechnical engineer for the project.

8 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area at the time this report was prepared. No warranty, expressed 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 encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation 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. Ninyo & Moore 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 for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

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.

9 REFERENCES

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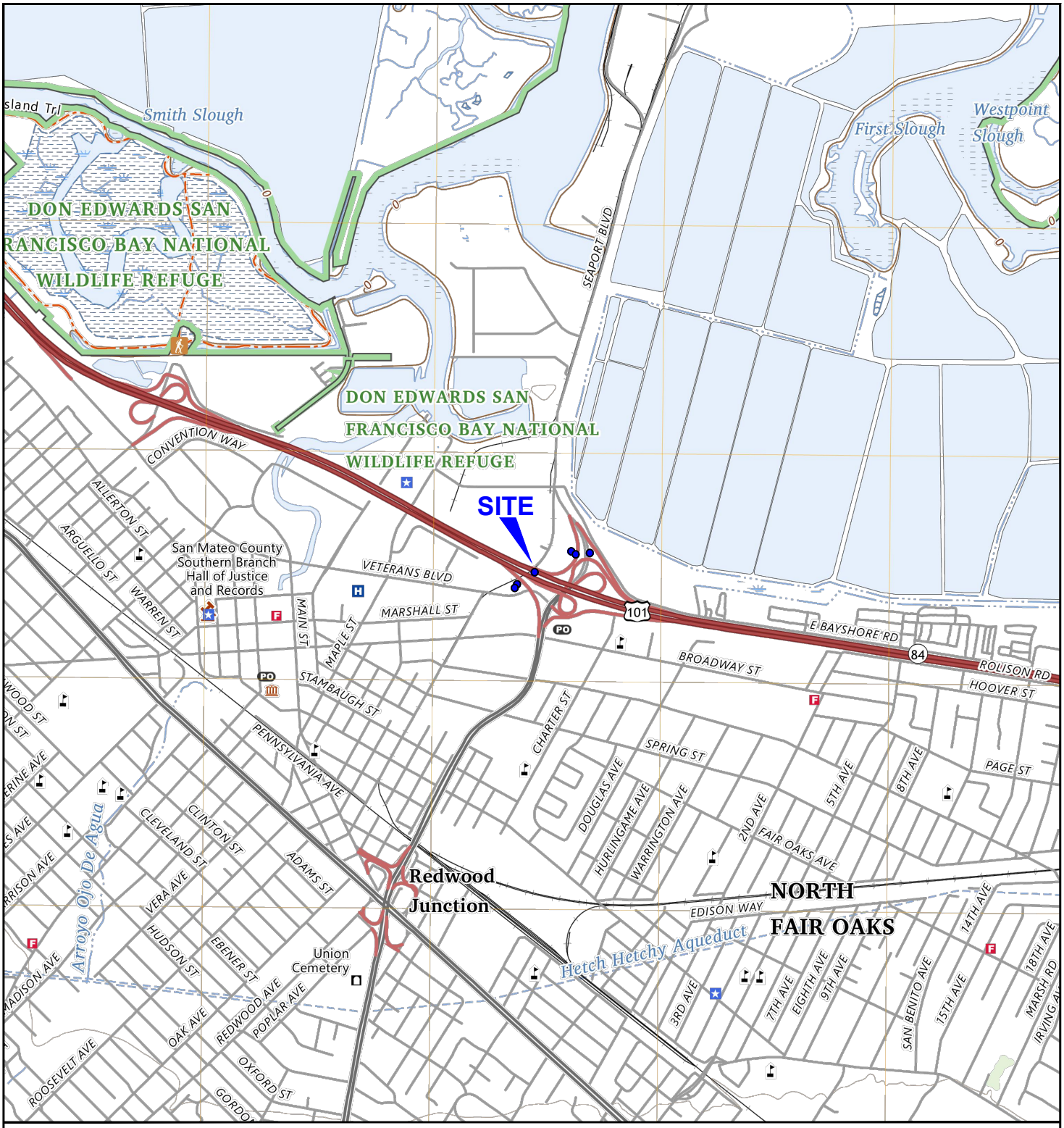
FIGURES



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NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE | REFERENCE: USGS, 2023

N

SCALE (FEET)

0 2,000 4,000

FIGURE 1

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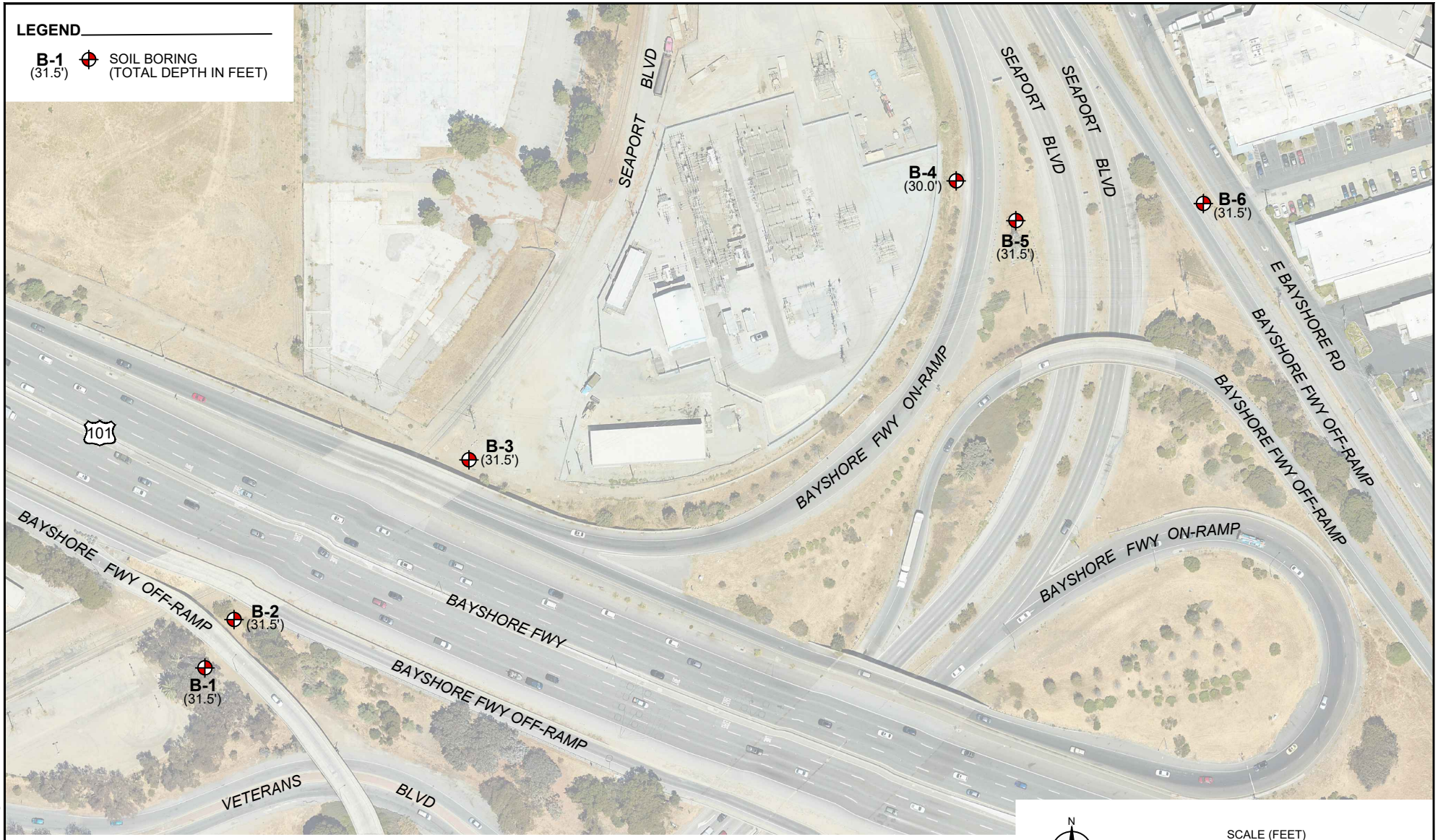
SITE LOCATION

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA
404619001 I 10/23



NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE | REFERENCE: GOOGLE EARTH, 2023

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FIGURE 2

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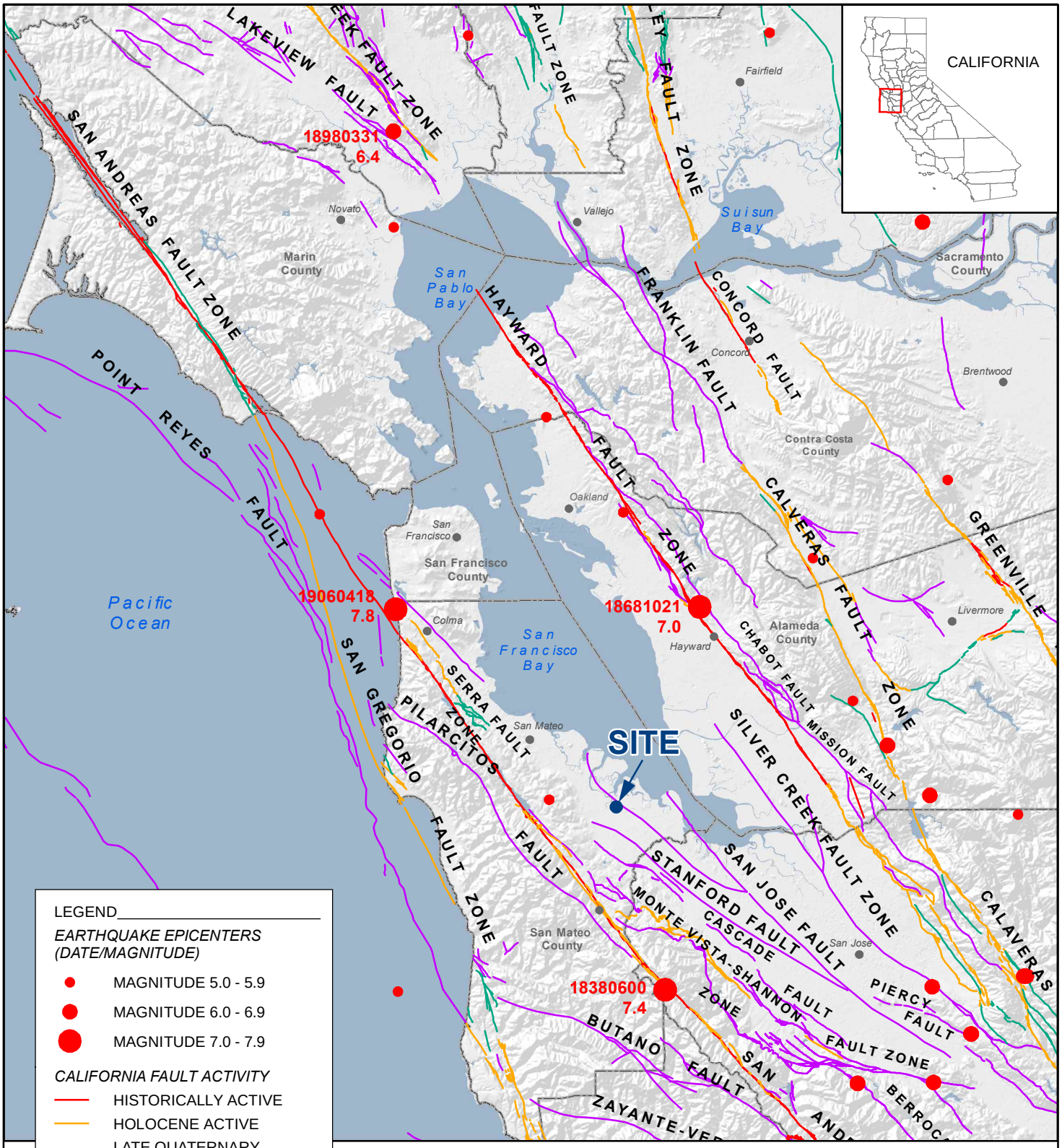
BORING LOCATIONS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA
404619001 I 10/23



SOURCE: CALIFORNIA GEOLOGICAL SURVEY, 2000, MAP SHEET MS 49, RELEASED DECEMBER 14.

NOTE: DIRECTIONS, DIMENSIONS, AND LOCATIONS ARE APPROXIMATE

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FIGURE 3

FAULT LOCATIONS AND EARTHQUAKE EPICENTERS
NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA
404619001 | 10/23

Ninyo & Moore
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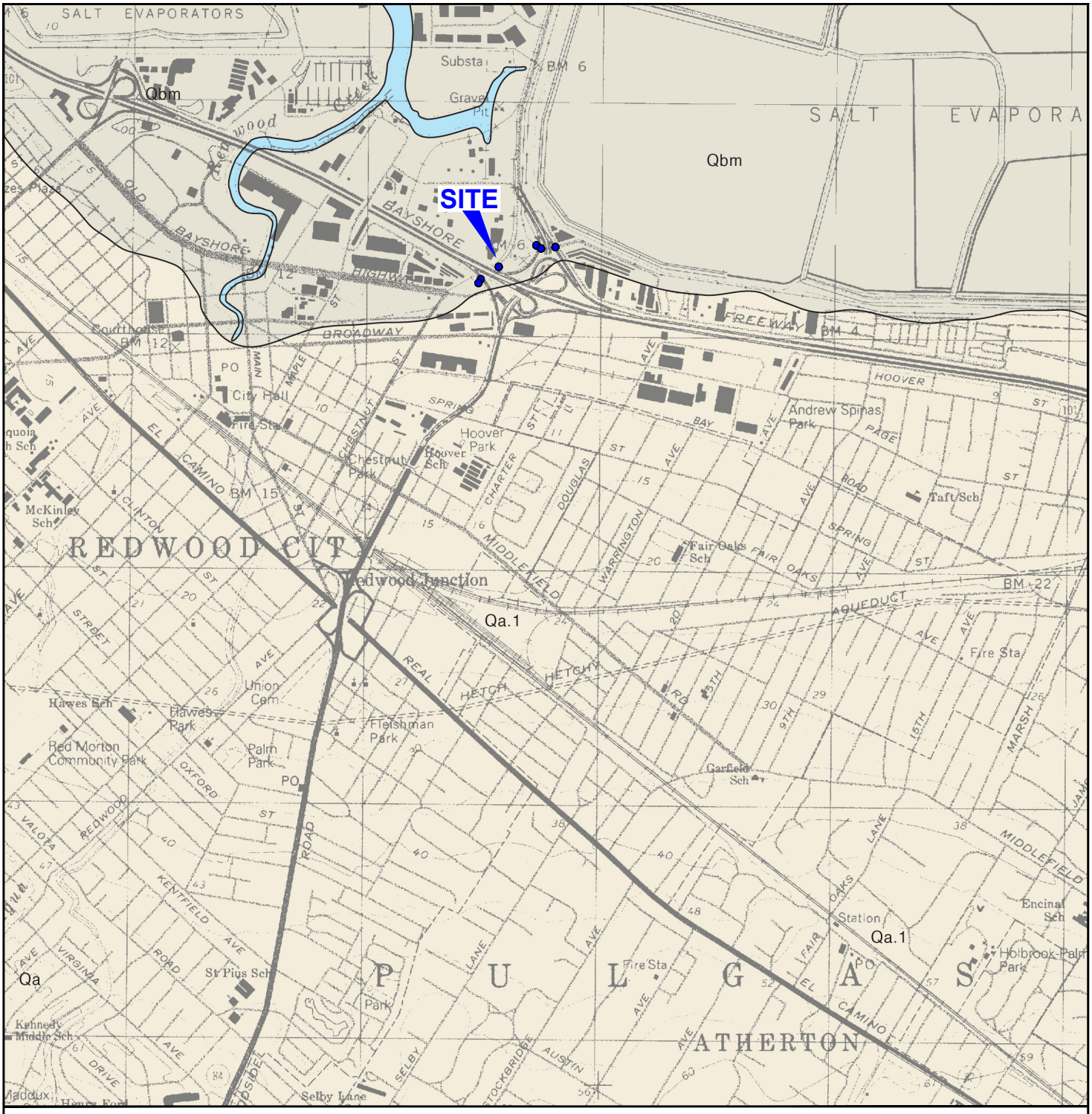

LEGEND

Qa.1	ALLUVIAL SAND, SILT, & GRAVEL (HOLOCENE)	THRUST FAULT	GEOLOGIC CONTACT
Qbm	BAY MUD (HOLOCENE)	FAULT	STRIKE AND DIP OF BEDDING

NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE
REFERENCE: DIBBLEE, 2007

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SCALE (FEET)
0 2,000 4,000

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FIGURE 4

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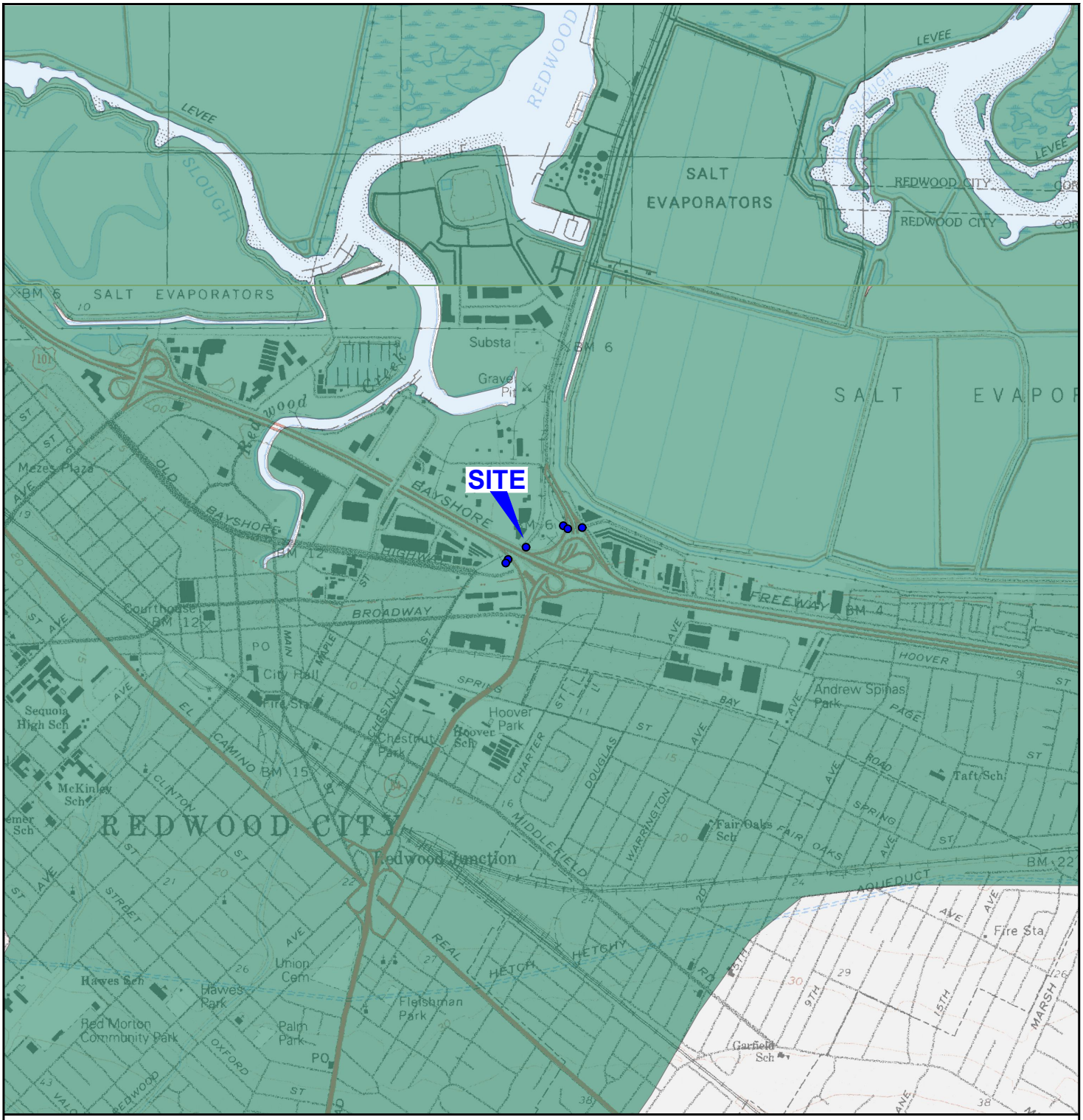
REGIONAL GEOLOGY

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA
404619001 I 10/23



LEGEND

LIQUEFACTION ZONES:
Areas where historic occurrence of liquefaction, or local geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE
REFERENCE: CGS, 1974, 2006, 2018

N

SCALE (FEET)
0 2,000 4,000

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FIGURE 5

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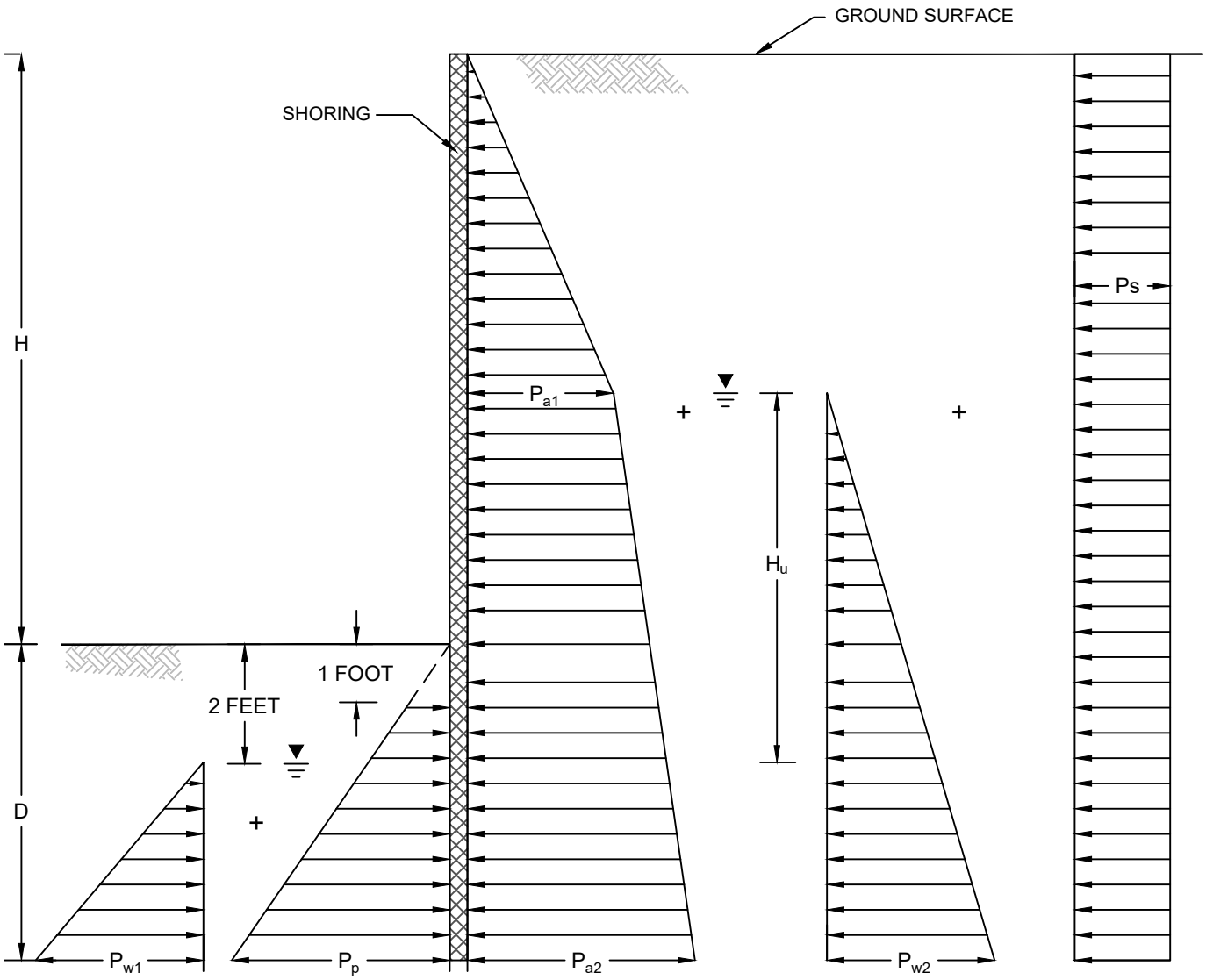
SEISMIC HAZARD ZONES

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA
404619001 I 10/23



NOTES:

1. ACTIVE LATERAL EARTH PRESSURE, P_a
   $P_{a1} = 47\ (H - H_u + 2)$ psf; $P_{a2} = 0.39\ [125\ (H_u - 2 + D) - P_{w2}] + P_{a1}$ psf
2. PASSIVE LATERAL EARTH PRESSURE WITH 1.5 SAFETY FACTOR, P_p
   $P_p = 1.71\ [240 + 125\ (D - 2) - P_{w1}]$ psf
3. NEGLECT PASSIVE LATERAL EARTH PRESSURE FOR 1 FOOT BELOW MUDLINE
4. HYDROSTATIC PRESSURE WITH SEEPAGE
   $P_{w1} = P_{w2} = 124.8\ (H_u + D - 2)(D\text{-}2)/(2D + H_u - 4)$ psf
5. LATERAL EARTH PRESSURE DUE TO CONSTRUCTION OR LIVE LOAD SURCHARGE, $P_s = 94$ psf
6. NEGLECT DYNAMIC EARTH PRESSURES FOR TEMPORARY CONDITION
7. H, H_u, AND D ARE IN FEET
8. GROUNDWATER TABLE

NOTE: NOT TO SCALE

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FIGURE 6

LATERAL EARTH PRESSURES FOR CANTILEVERED SHORING

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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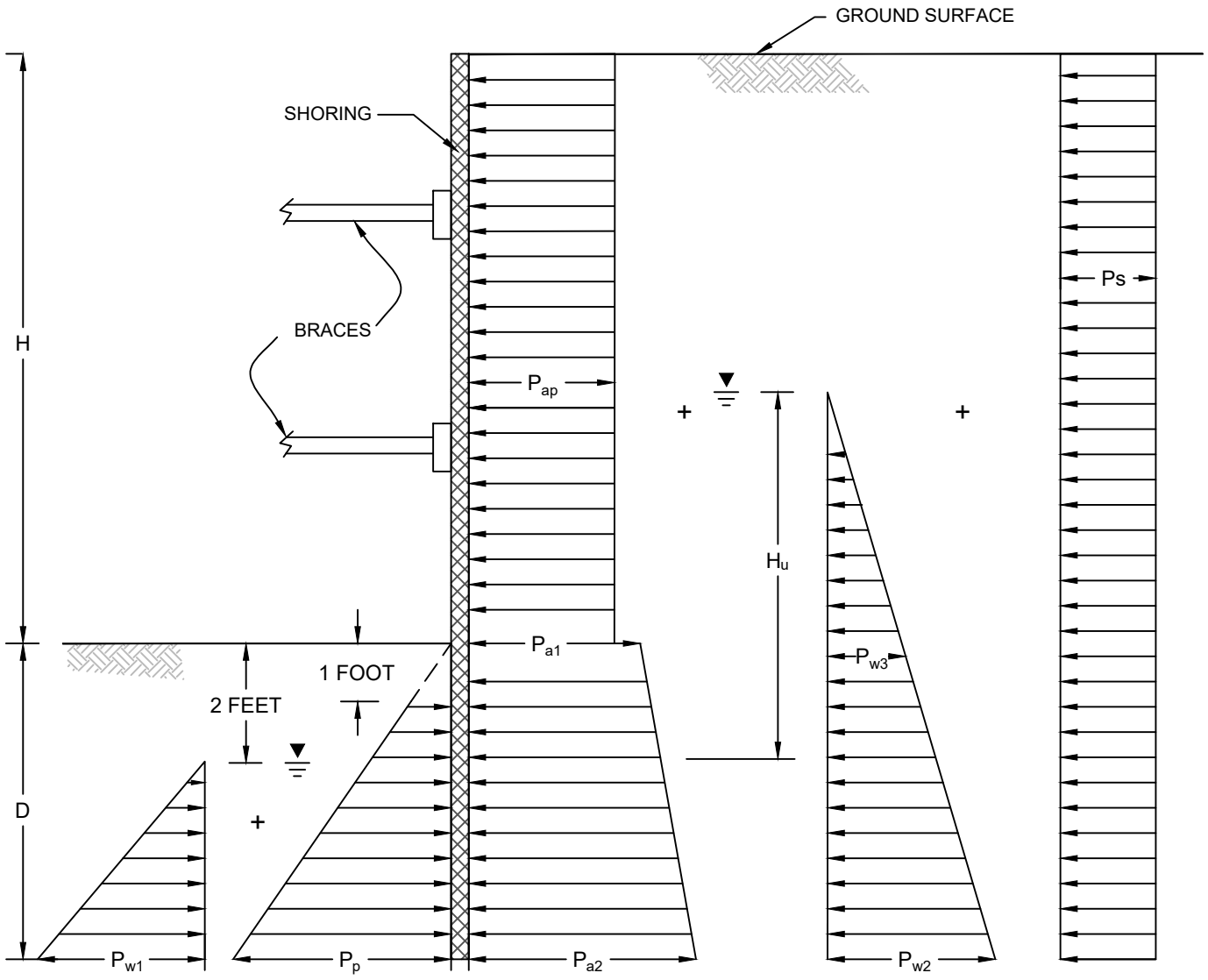

NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_{ap}
   $P_{ap} = 31H$ psf
2. ACTIVE LATERAL EARTH PRESSURE, P_a
   $P_{a1} = 0.39\ [120\ (H - H_u + 2) + 125\ (H_u - 2) - P_{w3}]$ psf; $P_{a2} = 0.39\ [120\ (H - H_u + 2) + 125\ (H_u - 2 + D) - P_{w2}]$ psf
3. PASSIVE LATERAL EARTH PRESSURE WITH 1.5 SAFETY FACTOR, P_p
   $P_p = 1.71\ [240 + 125\ (D-2) - P_{w1}]$ psf
4. NEGLECT PASSIVE LATERAL EARTH PRESSURE FOR 1 FOOT BELOW MUDLINE
5. HYDROSTATIC PRESSURE WITH SEEPAGE
   $P_{w1} = P_{w2} = 124.8\ (H_u + D - 2)(D - 2)/(2D + H_u - 4)$ psf; $P_{w3} = P_{w2}\ (H_u - 2)/(H_u - 2 + D)$ psf
6. LATERAL EARTH PRESSURE DUE TO CONSTRUCTION OR LIVE LOAD SURCHARGE, $P_s = 94$ psf
7. NEGLECT DYNAMIC EARTH PRESSURES FOR TEMPORARY CONDITION
8. H, H_u, AND D ARE IN FEET
9. ▼ GROUNDWATER TABLE

NOTE: NOT TO SCALE

403773001.dwg 11/13/2020 AEK

FIGURE 7

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

404619001 I 10/23

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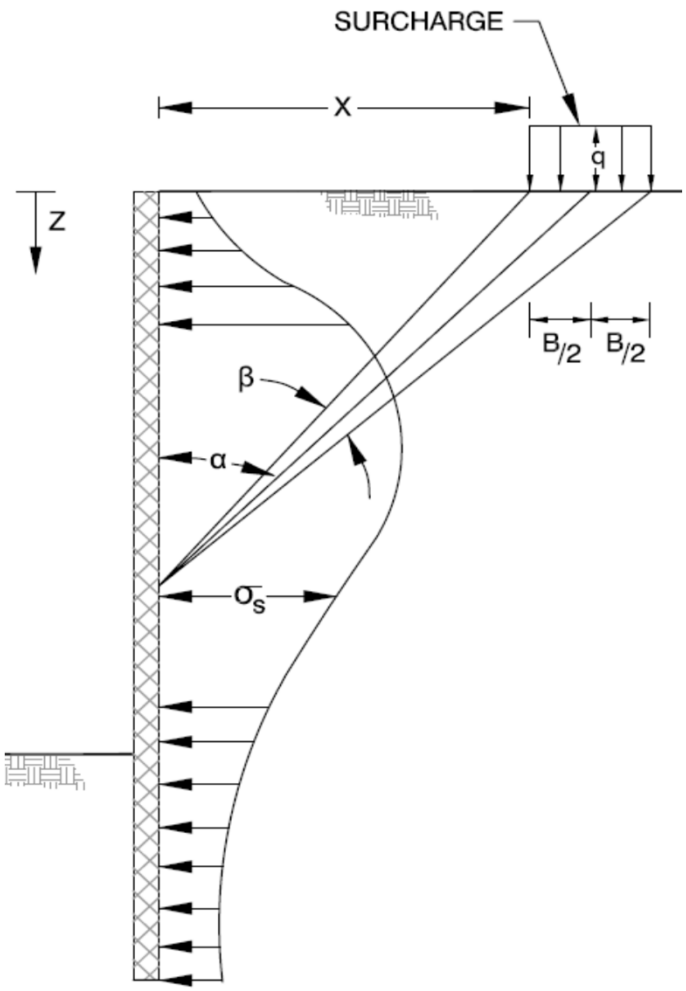
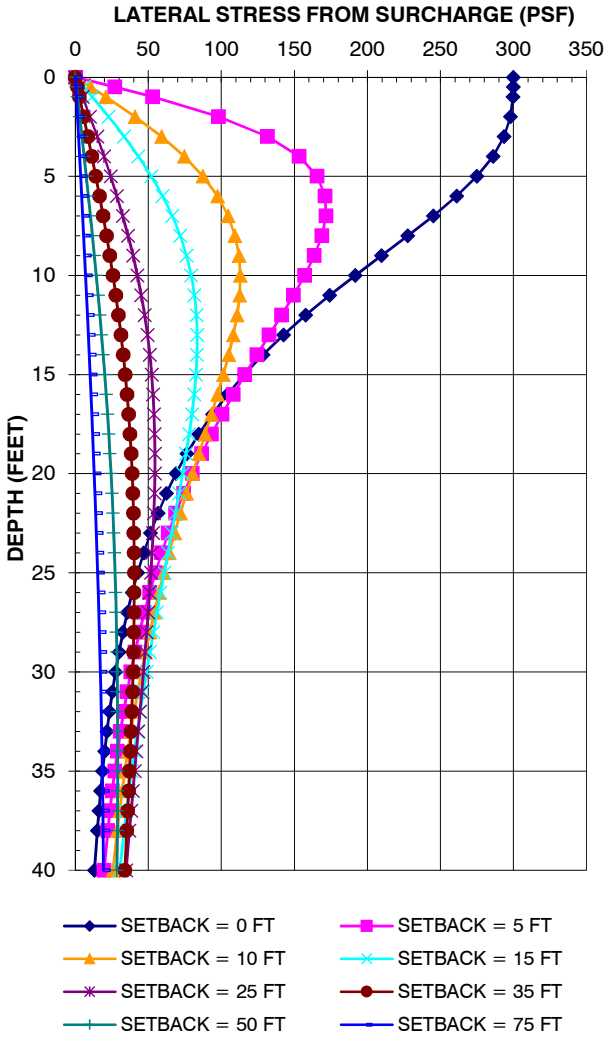
Geotechnical & Environmental Sciences Consultants





NOTES:

1. LATERAL EARTH PRESSURE DUE TO TRAFFIC LIVE LOAD STRIP SURCHARGE, σ_s

   $\sigma_s = (q / \pi) * (\beta - \sin \beta * \cos 2\alpha)$

   WHERE ANGLE α AND ANGLE β ARE IN RADIANS

   AND q IS SURCHARGE PRESSURE IN POUNDS PER SQUARE FOOT (PSF)

2. P_s COMPUTED FOR: SURCHARGE PRESSURE, q = 300 PSF

   SURCHARGE WIDTH, B = 25 FEET

   SETBACK X AND DEPTH Z IN FEET

FIGURE 8

LATERAL EARTH PRESSURES FOR TRAFFIC SURCHARGE

NORTH FAIR OAKS TRUCK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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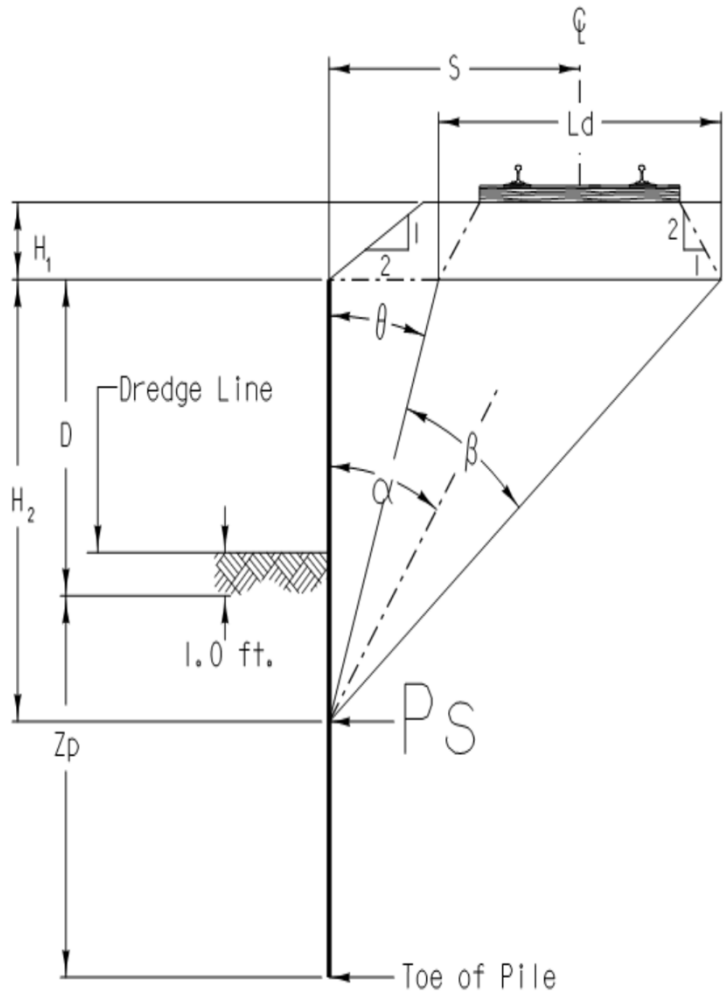
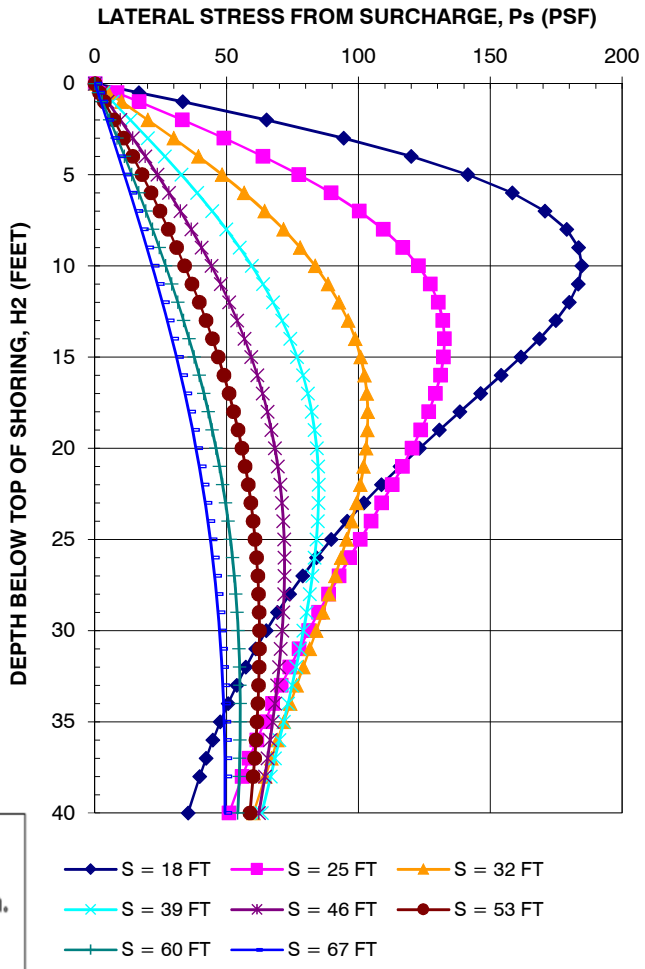


Ld = Length of tie (9 feet) plus H_1.
H_1 = Height from the bottom of tie to the top of shoring.
H_2 = Depth of point being evaluated with the Boussinesq equation.
S = Distance perpendicular from centerline of track to the face of shoring.
D = Top of shoring to one foot below dredge line.
Zp = The minimum embedment depth.



NOTES:

1. LATERAL EARTH PRESSURE DUE TO COOPER 80 LIVE LOAD SURCHARGE (FOR TRACK PARALLEL TO SHORING), P_s
   $P_s = (q / \pi) * (\beta - \sin \beta * \cos 2\alpha)$
   WHERE ANGLE α AND ANGLE β ARE IN RADIANS
   AND q IS SURCHARGE PRESSURE IN POUNDS PER SQUARE FOOT (PSF)
2. P_s COMPUTED FOR: SURCHARGE PRESSURE, q = 1,778 PSF
   FOR 80-KIP WHEEL LOAD ON 9-FOOT TIES AT 5-FOOT WHEEL SPACING
   DEPTH FROM BOTTOM OF TIES TO TOP OF SHORING, H1 = 0 FEET
   SETBACK S AND DEPTH H2 IN FEET

FIGURE 9

LATERAL EARTH PRESSURES FOR COOPER 80 SURCHARGE

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 18 inches or the interval recorded on the boring log where driving refusal occurred, with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the log are those for the last 12 inches of penetration or the interval reported. The soil samples removed from the sampler and placed in plastic bags that were sealed and transported to the laboratory for testing.

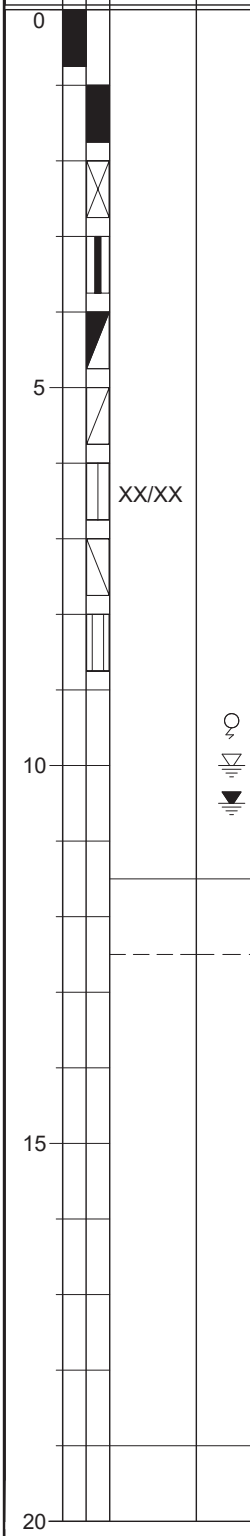
Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

Modified Split-Barrel Drive Sampler

Relatively undisturbed soil samples were obtained in the field using a modified split-barrel drive sampler. The sampler, with an external diameter of 3.0 inches, was lined with 6-inch-long, thin brass liners with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The sampler was driven into the ground 18 inches or the interval recorded on the boring log where driving refusal occurred. The approximate length of the fall, the weight of the hammer, and the number of blows for the last 12 inches of penetration or the interval reported are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass liners, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

SM

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

CL

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

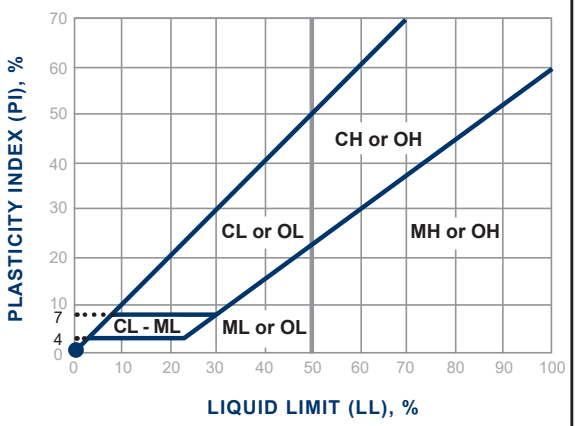
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

DATE DRILLED 9/5/2023 BORING NO. B-1

GROUND ELEVATION 9' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Brown, moist, stiff, sandy lean CLAY with gravel.
		29					Very stiff
5		18	28.1	94.5		CH	MARSH DEPOSITS: Grayish black, moist, stiff, sandy fat CLAY.
		18	26.4	98.4			
10		16	24.1	102.9			
		13	24.9	101.0		CL	Light brown, wet, stiff, lean CLAY with sand.
15		11	26.1	100.1			
20							

FIGURE A - 1

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

DATE DRILLED 9/5/2023 BORING NO. B-1

GROUND ELEVATION 9' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20	Driven	15	25.4	100.5		CL	MARSH DEPOSITS: Light brown, wet, stiff, lean CLAY; few sand.
25	Driven	14	32.2	90.8			
30	Driven	12	32.3	85.3			
35							Total Depth = 31.5 feet. Backfilled with neat cement and patched with cuttings on 9/5/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 12 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
40							

DATE DRILLED 9/1/2023 BORING NO. B-2

GROUND ELEVATION 9' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GC	FILL: Dark brown, moist, loose, clayey GRAVEL with sand.
		16	6.4	110.0			
5		18	25.2	96.0		CH	MARSH DEPOSITS: Dark brown, moist, stiff, fat CLAY with sand.
		15	29.2	93.4			Gray.
10		19	26.4	99.6			
		23				SC	Light brown, moist, medium dense, clayey SAND; few gravel.
15		22	11.2	131.8		SW-SC	Brown, wet, medium dense, well-graded SAND with clay and gravel.
20							

FIGURE A - 3

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

DATE DRILLED 9/1/2023 BORING NO. B-2

GROUND ELEVATION 9' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		7				SW-SC	MARSH DEPOSITS: Brown, wet, loose, well-graded SAND with clay and gravel.
25		5				CL	Yellow, wet, firm, sandy lean CLAY.
30		10					Brown; stiff.
35							Total Depth = 31.5 feet. Backfilled with neat cement and patched with cuttings on 9/1/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 15 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
40							

DATE DRILLED 9/5/2023 BORING NO. B-3

GROUND ELEVATION 9' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, stiff, sandy lean CLAY.
		13	21.6	96.7		CL	MARSH DEPOSITS: Grayish black, moist, stiff, sandy lean CLAY; few gravel.
5		13	28.6	94.6			
		10					Firm.
10		19					Stiff.
		33	12.9	123.7		GC	Light brown, moist, loose, clayey GRAVEL with sand. Wet; medium dense.
15		21					Brown, wet, loose, clayey GRAVEL with sand.
20							

FIGURE A - 5

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

DATE DRILLED 9/5/2023 BORING NO. B-3

GROUND ELEVATION 9' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		15				GC	MARSH DEPOSITS: Brown, wet, medium dense, clayey GRAVEL with sand.
						CL	Dark brown, wet, stiff, sandy lean CLAY.
25		9				SC	Brown, wet, loose, clayey SAND with gravel.
30		15					Medium dense.
35							Total Depth = 31.5 feet. Backfilled with neat cement and patched with cuttings on 9/5/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 13 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
40							

DATE DRILLED 8/31/2023 BORING NO. B-4

GROUND ELEVATION 9' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, very stiff, sandy lean CLAY; scattered organics.
		36	8.8	117.4			Light brown; with gravel.
5		7	23	95.1		CH	MARSH DEPOSITS: Brown, moist, firm, fat CLAY with sand; scattered organics.
10		12	25.0	102.3		CL	Reddish yellow, wet, stiff, sandy lean CLAY.
15		16	27.5	98.3			Light gray; decrease in sand content.
20							

FIGURE A - 7

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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DATE DRILLED 8/31/2023 BORING NO. B-4

GROUND ELEVATION 9' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		19	14.9			CL	MARSH DEPOSITS: Reddish yellow, wet, very stiff, sandy lean CLAY with gravels.
25		17				SP-SC	Brown, wet, medium dense, poorly graded SAND with clay and gravel.
		15	17.0				
30							Total Depth = 30 feet. Backfilled with neat cement and patched with cuttings on 8/31/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 10 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
35							
40							

DATE DRILLED 9/1/2023 BORING NO. B-5

GROUND ELEVATION 7' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, firm, lean CLAY; trace sand and organics.
		9	28.9	79.3			
5		10	29.9	90.7		CH	MARSH DEPOSITS: Dark brown, moist, firm, fat CLAY with sand.
		24					Very stiff.
						CL	Light brown, moist, very stiff, sandy lean CLAY; trace gravel.
10		14	24.7	102.6			Stiff.
		22					
			21.0	107.1		CH	Dark brown, moist, very stiff, fat CLAY with sand.
15			▼				Wet; stiff.
		19	23.4	104.0			
20							

FIGURE A - 9

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REDWOOD CITY, CALIFORNIA

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DATE DRILLED 9/1/2023 BORING NO. B-5

GROUND ELEVATION 7' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		14	21.8	105.8		CH	MARSH DEPOSITS: Light brown, wet, stiff, fat CLAY with sand.
25		26				SP-SC	Dark brown, wet, medium dense, poorly graded SAND with clay and gravel.
30		6					Brown; loose.
35							Total Depth = 31.5 feet. Backfilled with neat cement and patched with cuttings on 9/1/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 15 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
40							

DATE DRILLED 8/31/2023 BORING NO. B-6

GROUND ELEVATION 9' ± MSL SHEET 1 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		23	6.8	126.1		GC	FILL: Dark brown, moist, medium dense, clayey GRAVEL with sand.
5		16				SC-SM	MARSH DEPOSITS: Brown, moist, loose, silty clayey SAND with gravel.
		16					
10		12				CH	Gray, wet, stiff, fat CLAY with sand.
		11					Brown; trace gravels.
15		14					
		9				SC	Brown, wet, loose, clayey SAND.
20							

FIGURE A - 11

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

DATE DRILLED 8/31/2023 BORING NO. B-6

GROUND ELEVATION 9' ± MSL SHEET 2 OF 2

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted (California Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY MXH LOGGED BY MXH REVIEWED BY RPM

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20						SC	MARSH DEPOSITS: Brown, wet, loose, clayey SAND.
						SP	Brown, wet, loose, poorly graded SAND.
		10				CL	Light gray, wet, stiff, sandy lean CLAY; trace gravel.
25							
		11					Brown.
30							Total Depth = 30 feet. Backfilled with neat cement and patched with cuttings on 8/31/2023, shortly after completion of drilling. Notes: Groundwater was encountered at a depth of approximately 10 feet during drilling. It may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. (Google, 2023)
35							
40							

APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification
Soil was classified using visual-manual procedures (ASTM D 2488). Soil classifications were updated in accordance with the Unified Soil Classification System (USCS) and ASTM D 2487 based on laboratory test results for particle size characteristics and Atterberg Limits. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

Moisture Content
The moisture content of samples obtained from the exploratory borings was evaluated in accordance with ASTM D 2216. The test results are presented on the boring logs in Appendix A.

In Place Density Tests
The dry density of relatively undisturbed samples obtained from the exploratory borings was evaluated in accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

200 Wash Analysis
An evaluation of the percentage of soil particles finer than the No. 200 sieve in selected samples was performed in general accordance with ASTM D 1140. The test results are presented on Figures B-1 and B-2.

Gradation Analysis
Gradation analysis tests were performed on selected soil samples in general accordance with ASTM D 422. The grain size distribution curves are shown on Figures B-3 through B-8. The test results were utilized in evaluating the soil classification in accordance with the Unified Soil Classification System (USCS).

Atterberg Limits
Tests were performed on selected soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figures B-9 and B-10.

Direct Shear Tests
Direct shear tests were performed on undisturbed samples in accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures B-11 and B-12.

Unconfined Compression Tests
Unconfined compression tests were performed on relatively undisturbed samples in general accordance with ASTM D 2166. The test results are shown on Figure B-13.

Unconsolidated-Undrained Triaxial Compression Tests
Triaxial compression tests were performed on relatively undisturbed samples in accordance with ASTM D 2850. The test specimens were exposed to a confining stress without drainage for consolidation and then sheared at the as-received moisture content under undrained conditions. The test results are shown on Figure B-14.

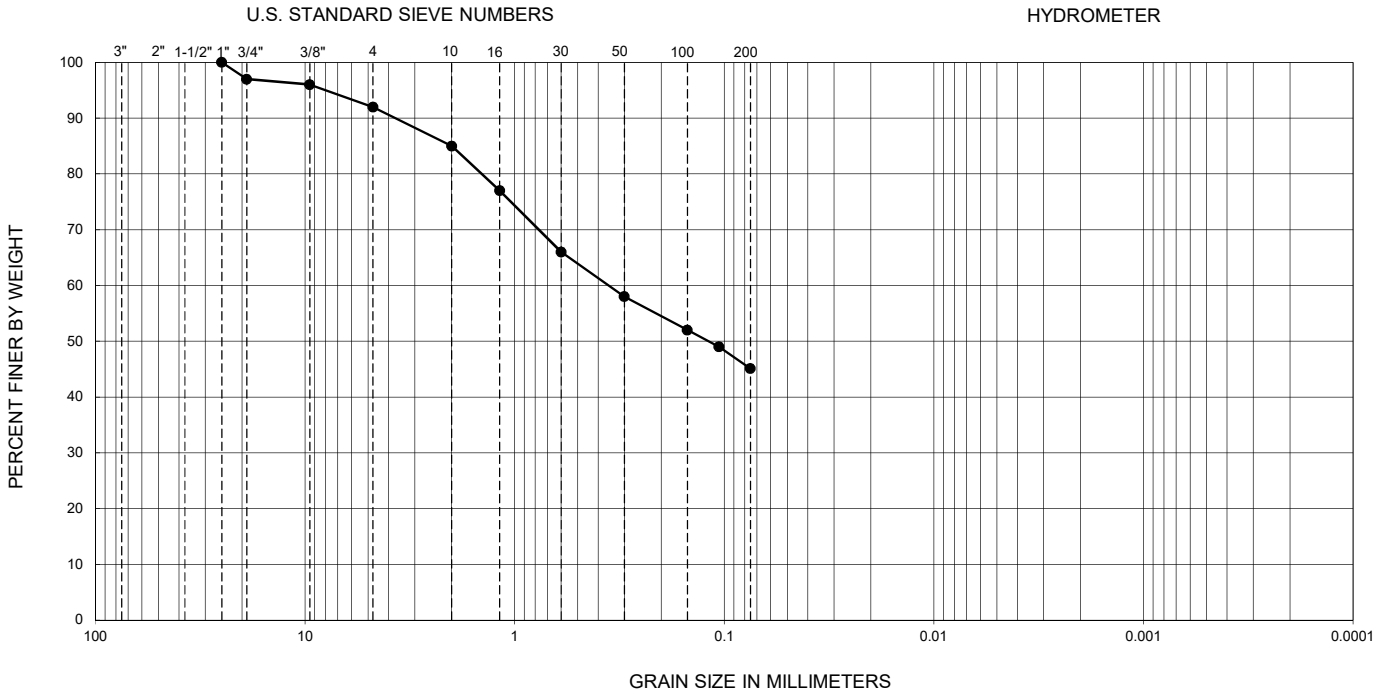
SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-1	12.5-13.0	Lean CLAY with sand	100	71	CL
B-2	3.5-4.0	Clayey GRAVEL with sand	34	14	GC
B-2	9.0-9.5	Fat CLAY with sand	98	84	CH
B-3	3.5-4.0	Sandy lean CLAY	91	66	CL
B-3	13.0-13.5	Clayey GRAVEL with sand	61	31	GC
B-4	6.0-6.5	Fat CLAY with sand	100	78	CH
B-4	11.0-11.5	Sandy lean CLAY	98	64	CL
B-5	6.0-6.5	Fat CLAY with sand	93	74	CH
B-5	13.0-13.5	Fat CLAY with sand	95	78	CH
B-6	3.5-4.0	Clayey GRAVEL with sand	53	19	GC

PERFORMED IN ACCORDANCE WITH 1140

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-6	10.0-11.5	Fat CLAY with sand	100	71	CH
B-6	19.0-20.0	Clayey SAND	100	35	SC

PERFORMED IN ACCORDANCE WITH 1140

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-2	12.5-13.0	34	12	22	--	--	0.38	--	--	45	SC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 2.0

Group Name: Clayey SAND

% Gravel 8

% Sand 47

% Fines 45

FIGURE B-3

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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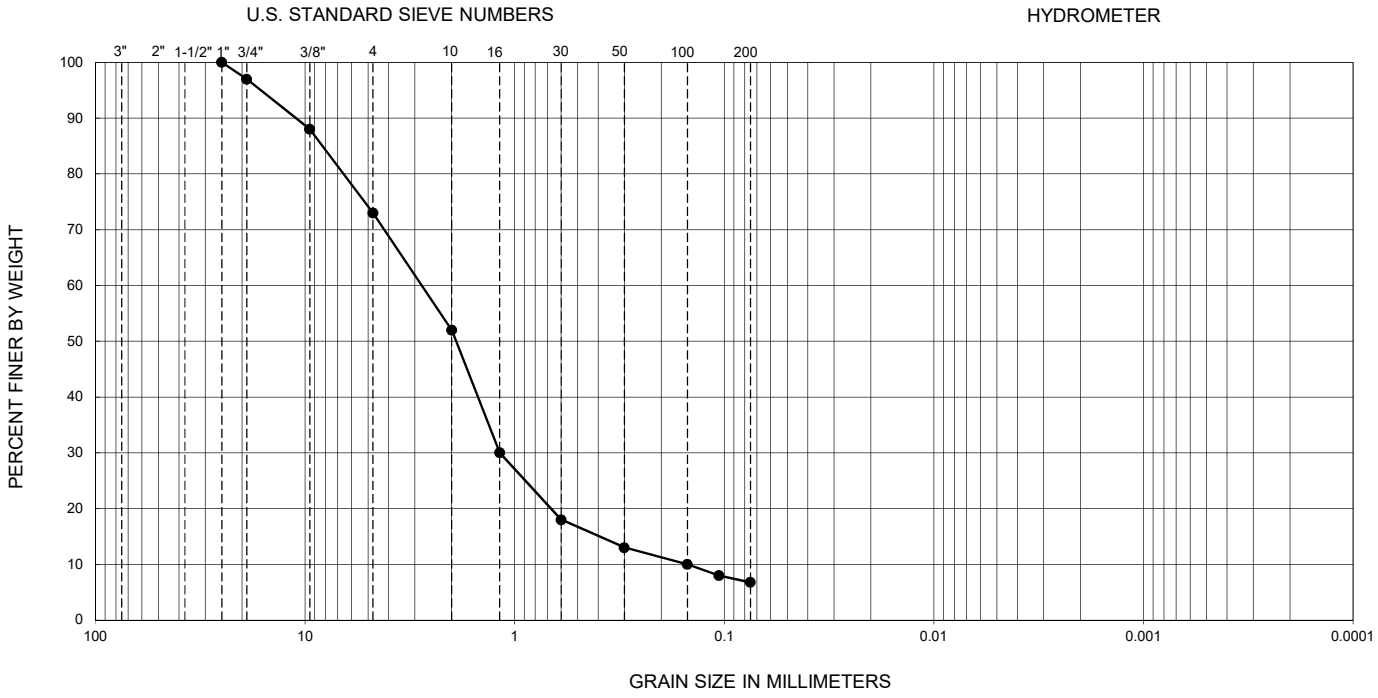
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-2	16.0-16.5	--	--	--	0.15	1.18	3.05	20.3	3.0	7	SW-SC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 2.1

Group Name: Well-graded SAND with clay and gravel

% Gravel 27

% Sand 66

% Fines 7

FIGURE B-4

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
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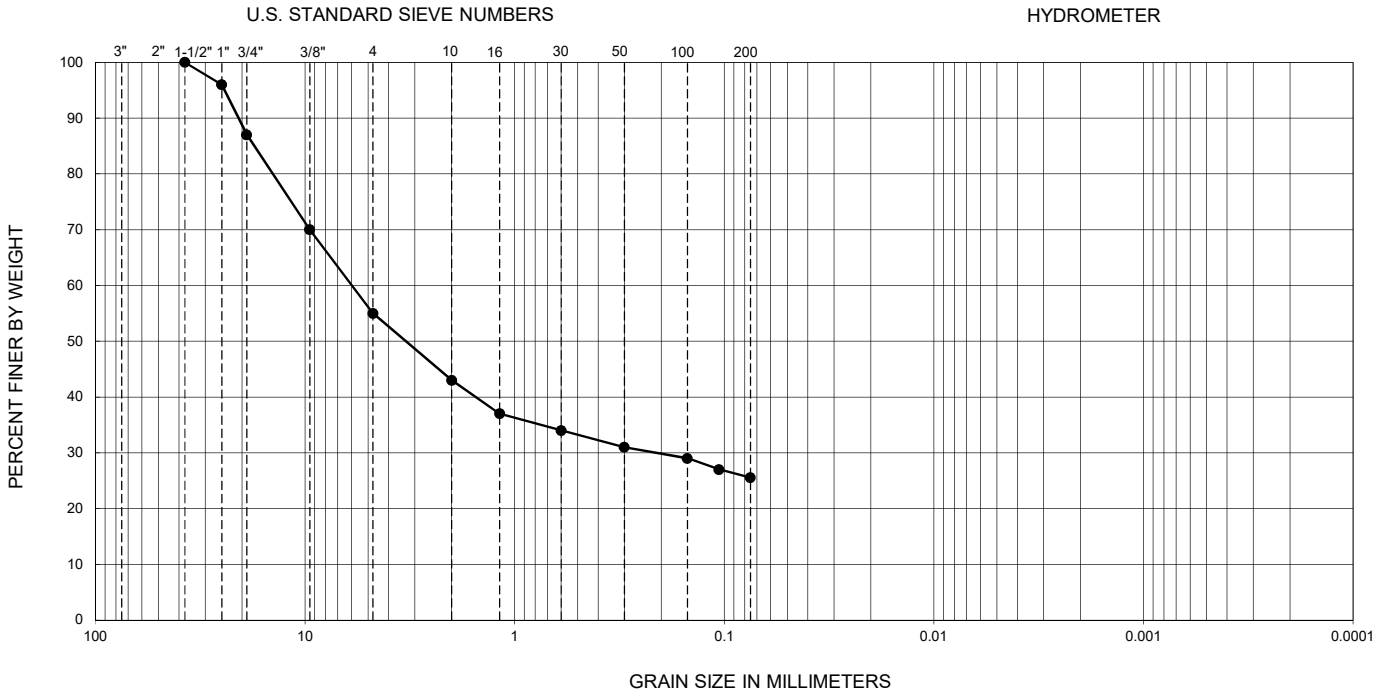
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-3	15.5-16.0	--	--	--	--	0.23	6.33	--	--	26	GC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 2.2

Group Name: Clayey GRAVEL with sand

% Gravel 45

% Sand 29

% Fines 26

FIGURE B-5

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
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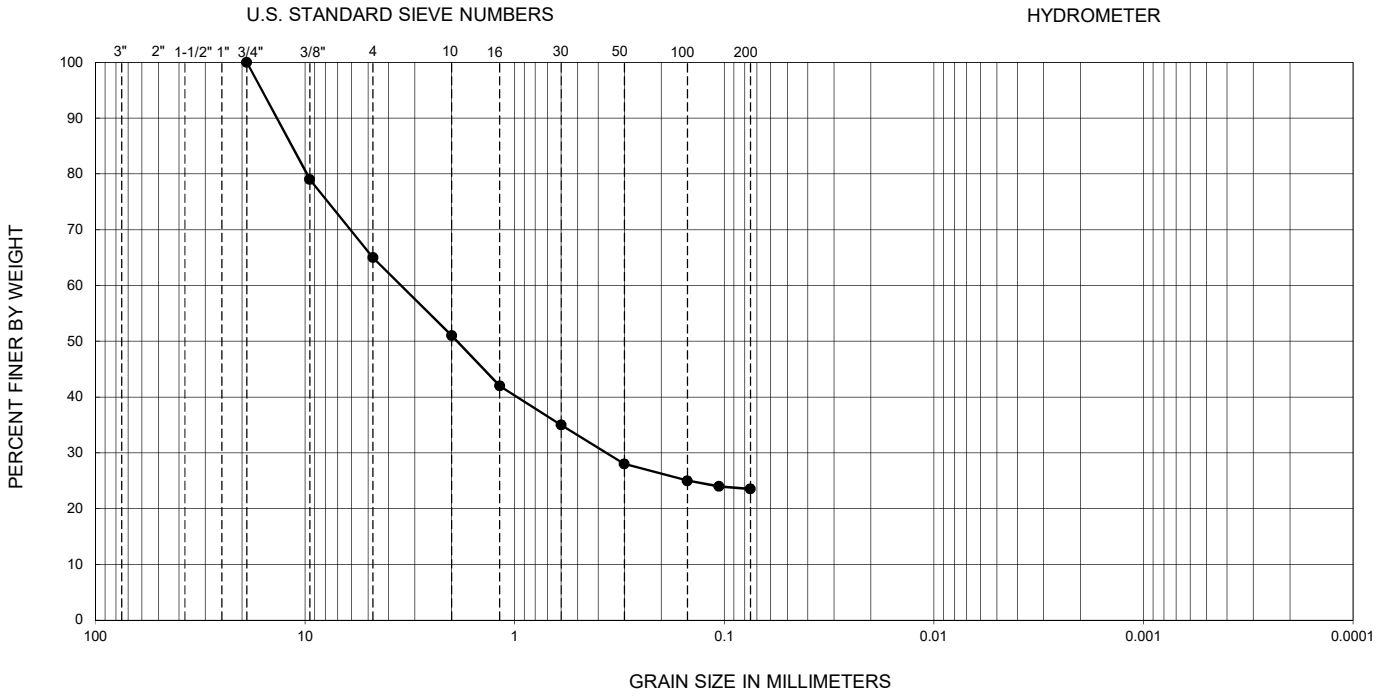
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-3	25.0-26.5	--	--	--	--	0.39	3.77	--	--	24	SC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 2.4

Group Name: Clayey SAND with gravel

% Gravel 35

% Sand 41

% Fines 24

FIGURE B-6

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
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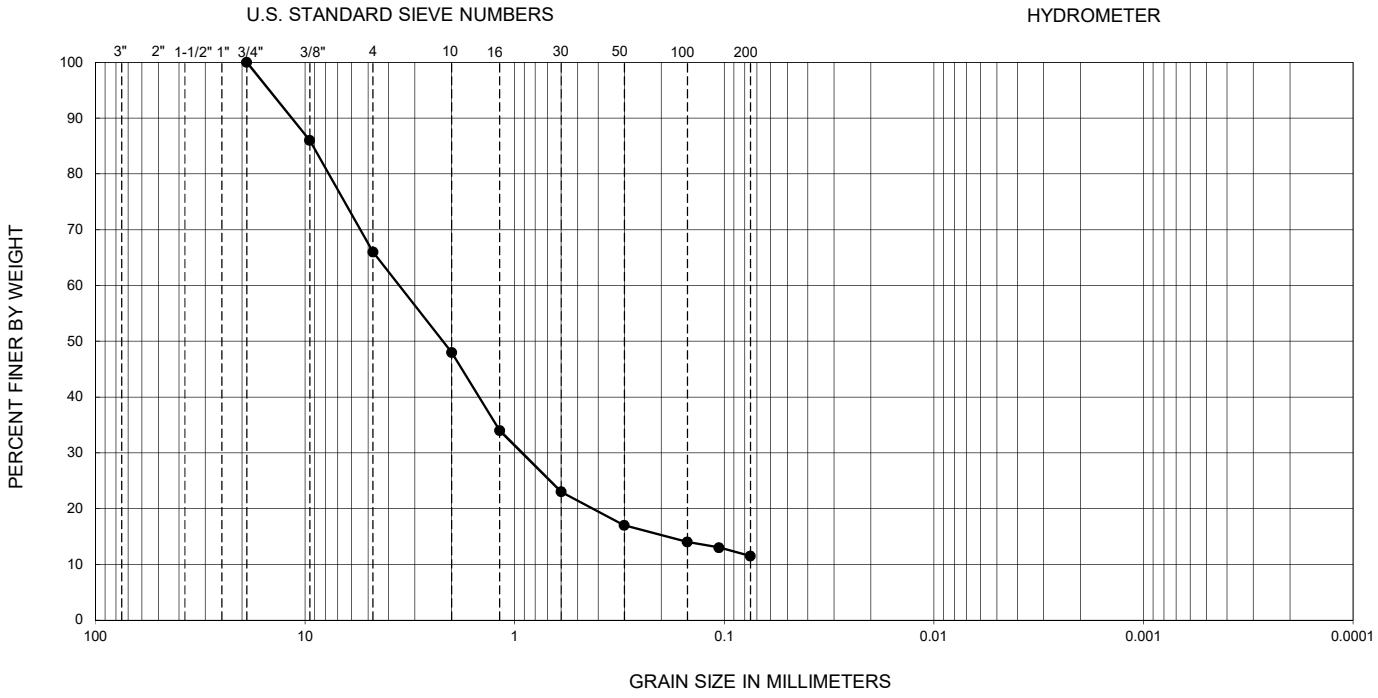
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-4	25.0-26.5	--	--	--	0.07	0.97	3.83	58.7	3.8	11	SP-SC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 2.5

Group Name: Poorly graded SAND with clay and gravel

% Gravel 34

% Sand 55

% Fines 11

FIGURE B-7

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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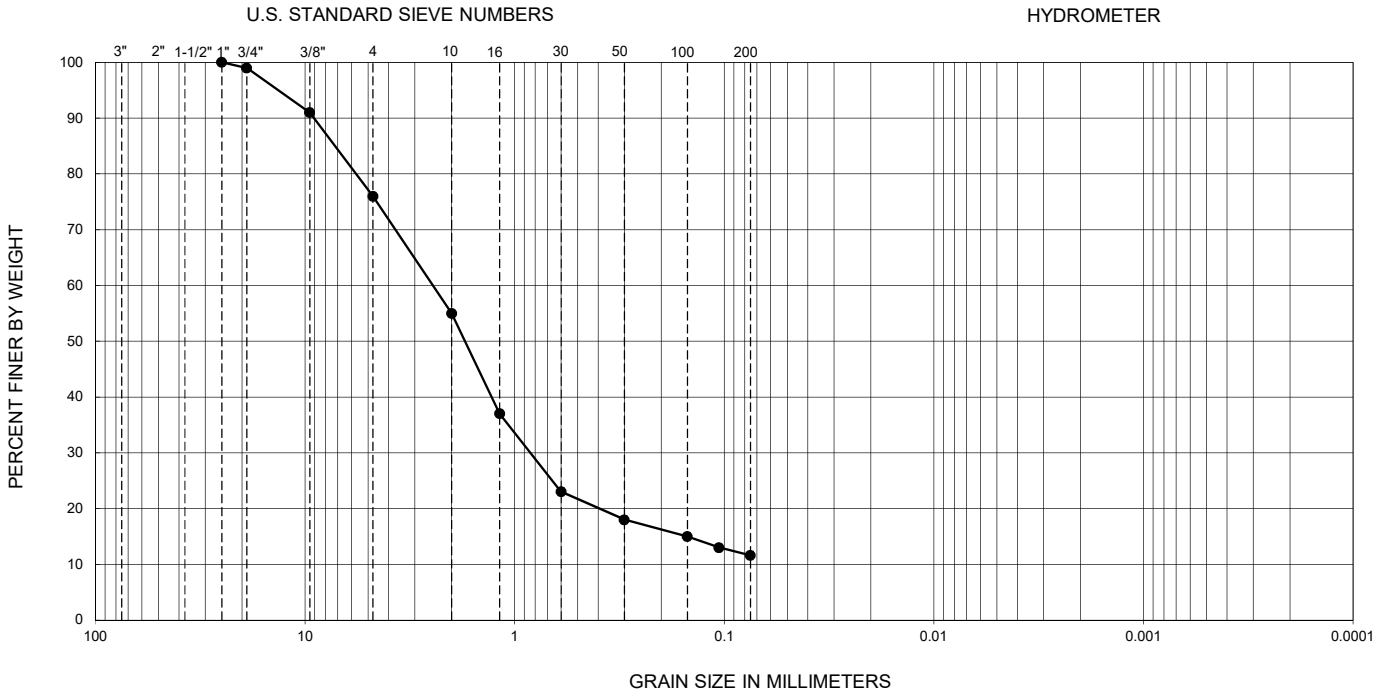
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-5	25.5-26.0	--	--	--	0.06	0.89	2.65	41.1	4.6	12	SP-SC

PERFORMED IN ACCORDANCE WITH ASTM D 422 / D6913

Soak Time: 3.0

Group Name: Poorly graded SAND with clay and gravel

% Gravel 24

% Sand 64

% Fines 12

FIGURE B-8

GRADATION TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
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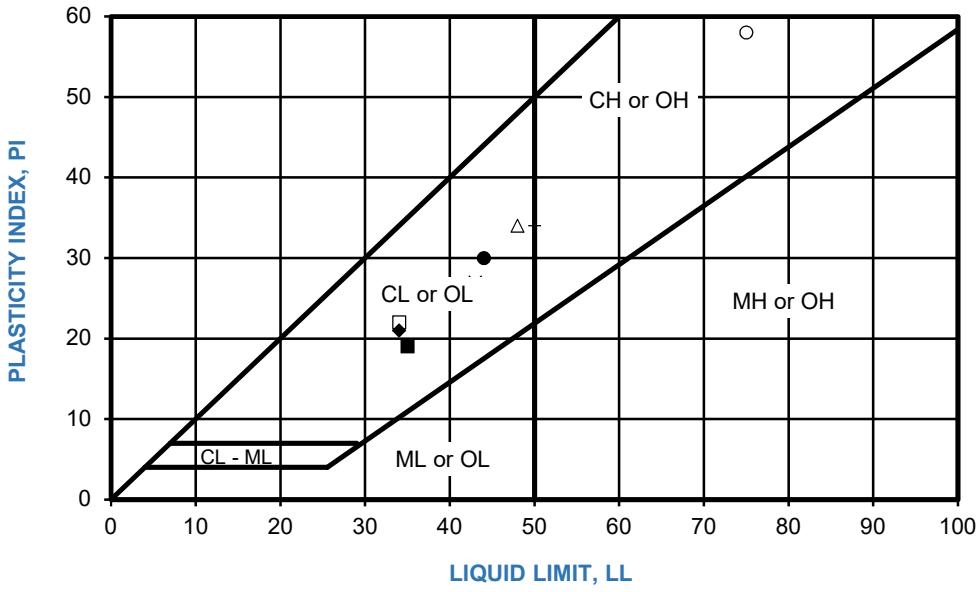
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	3.5-4.0	44	14	30	CL	CL
■	B-1	12.5-13.0	35	16	19	CL	CL
◆	B-2	3.5-4.0	34	13	21	CL	GC
○	B-2	9.0-9.5	75	17	58	CH	CH
□	B-2	12.5-13.0	34	12	22	CL	SC
△	B-3	3.5-4.0	48	14	34	CL	CL
x	B-3	13.0-13.5	43	16	27	CL	GC
+	B-4	5.5-6.0	50	16	34	CH	CH



PERFORMED IN ACCORDANCE WITH ASTM D 4318

FIGURE B-9

ATTERBERG LIMITS TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
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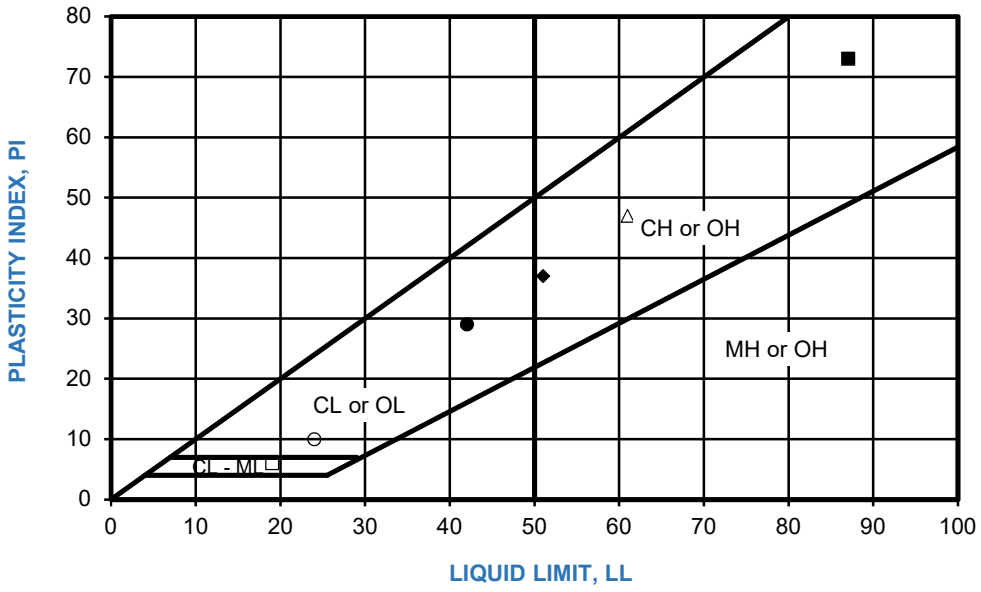
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-4	11.0-11.5	42	13	29	CL	CL
■	B-5	6.0-6.5	87	14	73	CH	CH
◆	B-5	13.0-13.5	51	14	37	CH	CH
○	B-6	3.5-4.0	24	14	10	CL	GC
□	B-6	6.0-6.5	19	13	6	CL-ML	SC-SM
△	B-6	10.0-11.5	61	14	47	CH	CH



PERFORMED IN ACCORDANCE WITH ASTM D 4318

FIGURE B-10

ATTERBERG LIMITS TEST RESULTS

NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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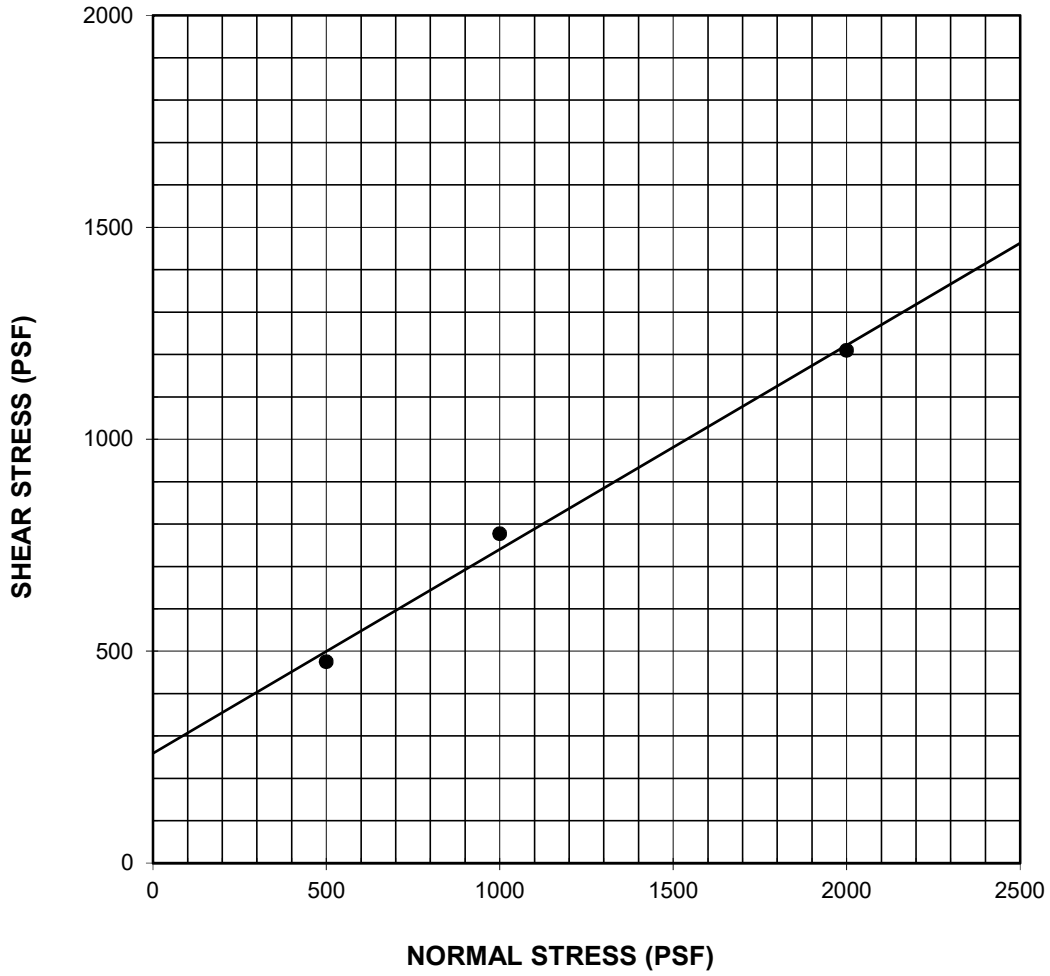

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Lean CLAY with sand		B-1	13.0-13.5	Peak	259	26	CL

PERFORMED IN ACCORDANCE WITH ASTM D 3080

FIGURE B-11

DIRECT SHEAR TEST RESULTS

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NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA

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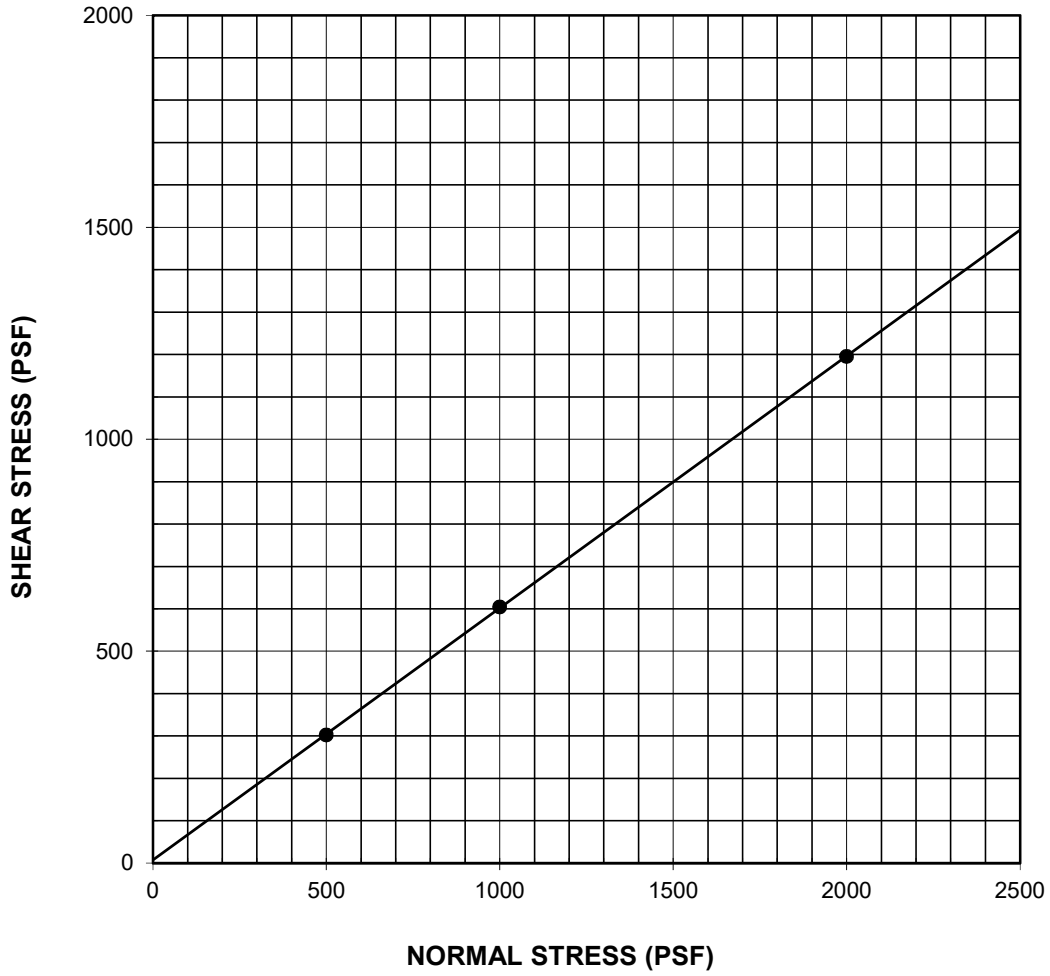

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Fat CLAY with sand	●	B-4	6.0-6.5	Peak	7	31	CH

PERFORMED IN ACCORDANCE WITH ASTM D 3080

FIGURE B-12

DIRECT SHEAR TEST RESULTS

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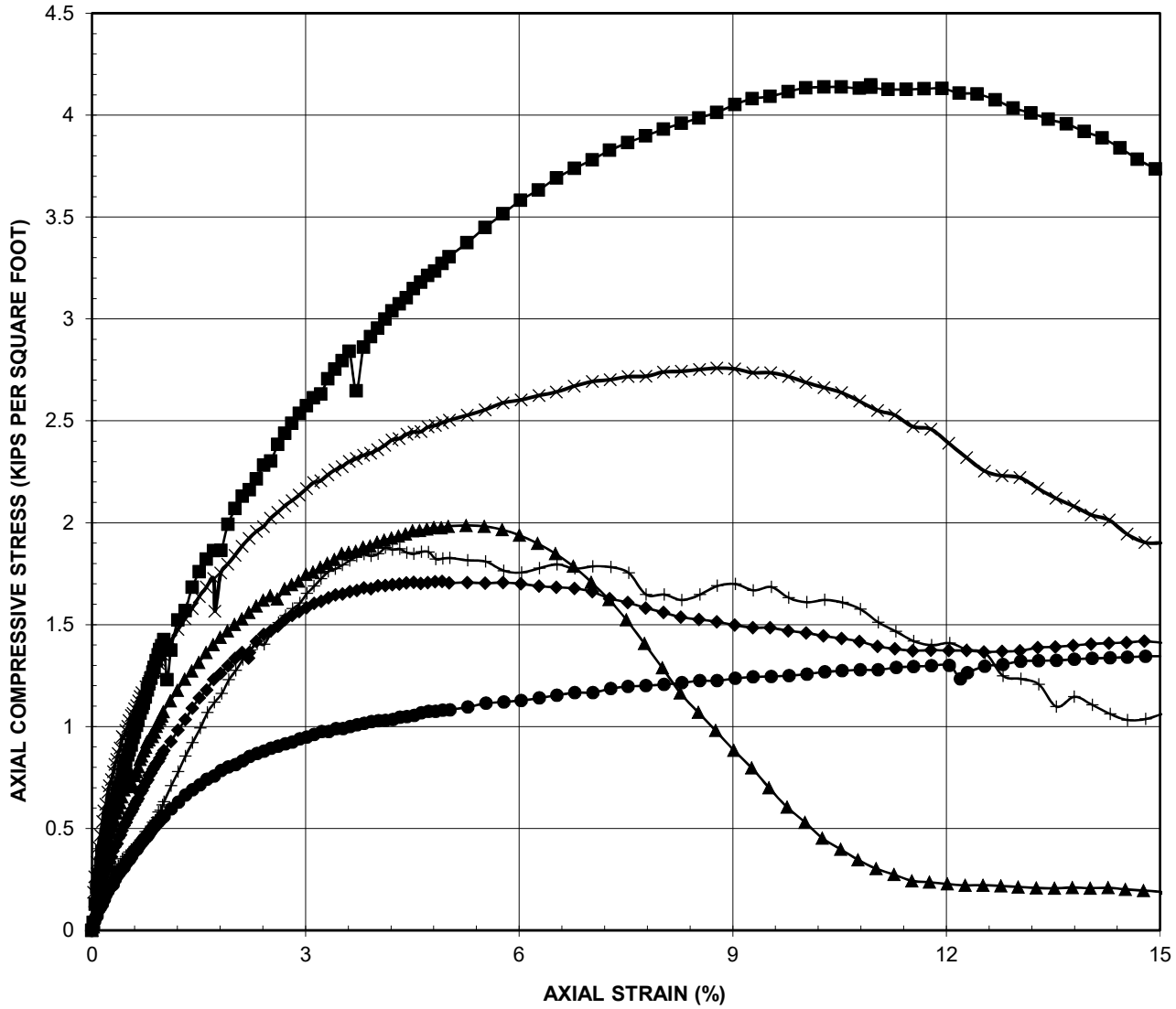
NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA



SYMBOL	DESCRIPTION	SOIL TYPE	SAMPLE LOCATION	SAMPLE DEPTH (ft.)	MOISTURE CONTENT w, (%)	DRY DENSITY γ_d, (pcf)	STRAIN RATE (%/min.)	UNDRAINED SHEAR STR s_u, (ksf)
◆	Fat CLAY with sand	CH	B-2	9.0-9.5	29.2	100.5	1.00	0.86
▲	Sandy lean CLAY	CL	B-3	3.5-4.0	21.6	96.7	1.00	0.99
X	Clayey GRAVEL with sand	GC	B-3	13.0-13.5	12.9	123.7	1.00	1.38
●	Sandy lean CLAY	CL	B-4	11.0-11.5	25.0	102.3	1.00	0.67
■	Fat CLAY with sand	CH	B-5	13.0-13.5	21.0	107.1	1.00	2.07
+	Clayey GRAVEL with sand	GC	B-6	3.5-4.0	6.8	126.1	1.00	0.94

PERFORMED IN ACCORDANCE WITH ASTM D 2166

FIGURE B-13

UNCONFINED COMPRESSION RESULTS

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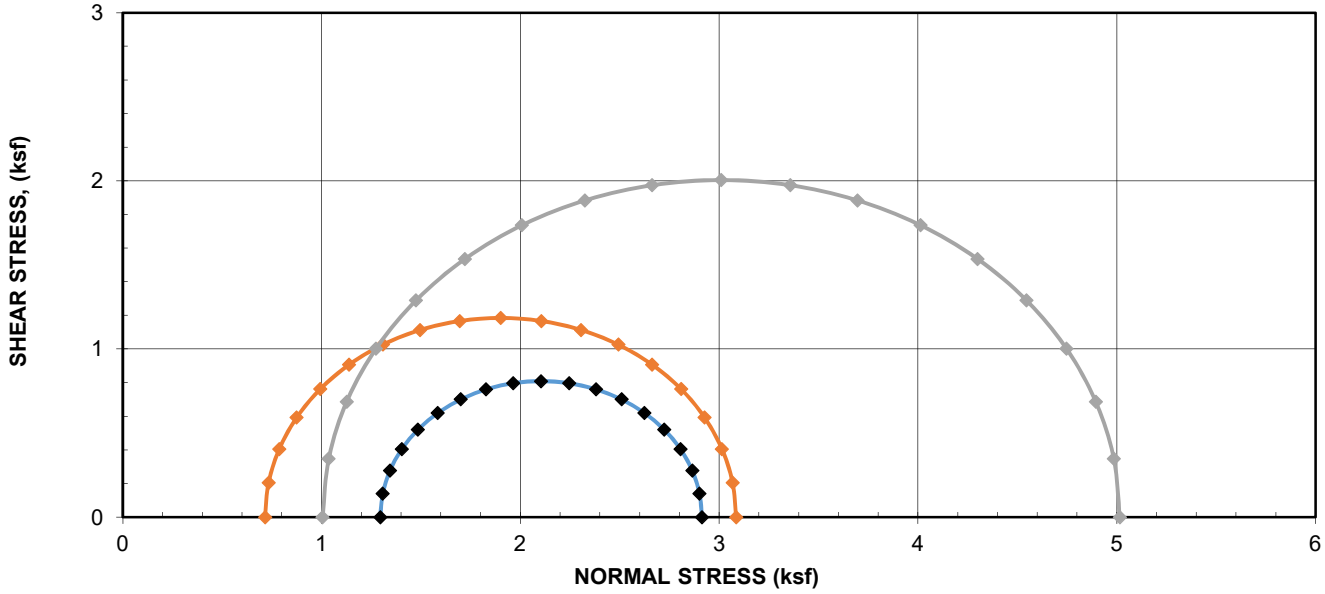
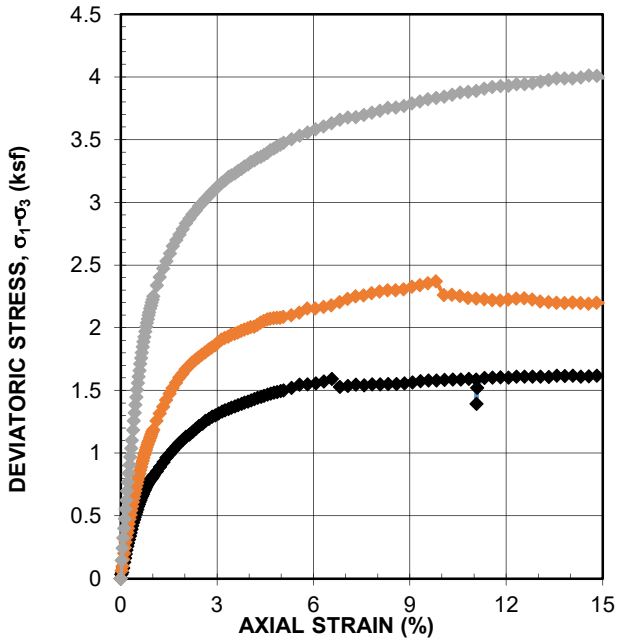
NORTH FAIR OAKS TRUNK SEWER RE-ALIGNMENT
REDWOOD CITY, CALIFORNIA





SYMBOL		◆	◆	◆	
SAMPLE LENGTH, (in)		6.00	6.00	6.00	
SAMPLE DIAMETER, (in)		2.41	2.39	2.40	
SPECIFIC GRAVITY, ( )		2.65	2.65	2.65	
INITIAL	MOISTURE, (%)	32.2	27.5	21.8	
	DRY DENSITY, (pcf)	90.8	98.3	105.8	
	VOID RATIO, ( )	0.8211	0.6822	0.5629	
	SATURATION, (%)	103.9	106.8	102.6	
CELL PRESSURE, (ksf)		1.3	0.7	1.0	
BACK PRESSURE, (ksf)		0.0	0.0	0.0	
STRAIN RATE, (%/minute)		1.0	1.0	1.0	
AT FAILURE	ELAPSED TIME, tf (min)	14.0	9.8	14.6	
	AXIAL STRAIN, εf (%)	13.6	9.8	14.6	
	DEVIATOR STRESS (ksf)	1.62	2.37	4.01	
	MAJOR STRESS, σ1f (ksf)	2.91	3.09	5.02	
	MINOR STRESS, σ3f (ksf)	1.29	0.72	1.00	
MEMBRANE CORRECTION USED		YES	NO	YES	

	DESCRIPTION (USCS SOIL TYPE)	SAMPLE LOCATION	SAMPLE DEPTH (feet)	COMPRESSIVE STRENGTH (ksf)	UU SHEAR STRENGTH s_u, (ksf)	REMARKS
◆	Lean CLAY; few sand (CL)	B-1	26.0-26.5	1.62	0.81	
◆	Sandy lean CLAY (CL)	B-4	16.0-16.5	2.37	1.18	
◆	Fat CLAY with sand (CH)	B-5	21.0-21.5	4.01	2.01	

PERFORMED IN ACCORDANCE WITH ASTM D 2850 ON INTACT SPECIMENS

MOISTURE CONTENT & DENSITY EVALUATED BY ASTM D 2216 & ASTM D 7263, SPECIFIC GRAVITY ASSUMED

FIGURE B-14

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION RESULTS

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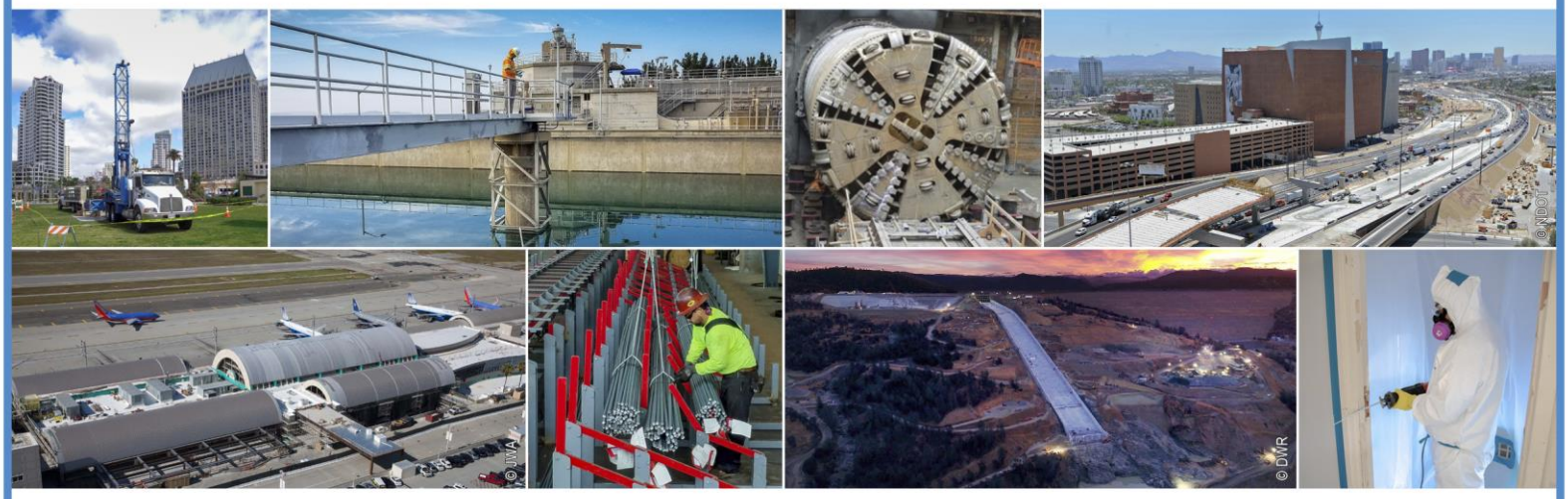

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